Urban Sustainability and Transforming Culture in the Arabian Gulf: The Case of Bahrain

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ABSTRACT

The deserted towns of the Arabian Gulf States were transformed at the beginning of the 20th century into developed cities a few years after the sudden growth in wealth, following the unearthing of oil, one of the main contributors to the transformation of cultures around the world. The effects of the sudden wealth have been a subject of curiosity and concern for many years. Nevertheless, limited attention has been given to the relationship between cultural transformation and urban sustainability in the Arabian Gulf States despite the vast environmental concerns the Gulf is facing today. This sudden urban transformation was argued to be a reflection of the parallel cultural transformation. Limited empirical evidence supports such claims. The study undertaken in this research attempts to investigate this relationship between cultural change and urban sustainability in the Arabian Gulf.

The thrust of this study further focuses on Bahrain, the only urban archipelago in the Arabian Gulf. Oil was introduced to the region through its discovery in Bahrain in 1931. Nevertheless, today Bahrain enjoys the least amount of resources in the area including water, food and oil, which drives the government to explore alternative sources for the economy and aspire to economic diversification. Bahrain today faces some environmental challenges and is also the smallest and densest of the Arabian Gulf states, which makes the argument of urban sustainability of particular importance.

The research attempts to examine the role of the government in preventing or stimulating urban sustainability by focusing on the work of some governmental organisations concerned with the built environment. The study aspires to first explore the social, cultural, environmental, economic and political mechanisms behind the formation of Bahrain's urbanism and to investigate the forces that contributed to the development of the phenomenon of cultural transformation. It then aims to examine the transformed culture of Bahrain and to assess the role of the existing culture in the development of urban sustainability in Bahrain. Finally, it intends to put forward a sustainable urban regeneration strategy consisting of a set of recommendations for Bahrain today and for a future urbanism that focuses on all aspects of sustainability.

The research uses a qualitative approach and a case study strategy by employing different methods of data collection and analysis. The methods include archival resources, comprising political reports and intelligence summaries of the British political officers and American missionaries in the Gulf, in addition to recent and historical maps and national governmental strategies, laws, and regulation. It also includes two sets of semi-structured interviews. The first, with academics and key officials working in different organisations concerned with the built environment, and the second, with foreign consultants and key officials who are working on three future mega urban development projects around Bahrain.

The study assisted in building knowledge about the effects of cultural change on urban sustainability in the Arabian Gulf or any other similar situation. The research resulted in an analysis of the notion of cultural change in the Arabian Gulf States, its causes and its consequences for the sustainability of the urban environment and lifestyle of people living in the Gulf today. Furthermore, it resulted in a redefining of "urban sustainability" that is relevant for the Arabian Gulf context to guide future research in the area. The study also investigated the understandings of academics and officials of the notions of cultural change and urban sustainability, which assisted along with other sources in outlining the different challenges facing urban sustainability in Bahrain today. Additionally, the research investigated the sustainability of three new mega urban development projects and concluded with a set of recommendations for the government to assist in informing decision makers and ensuring a more sustainable urban future for Bahrain. The research adds to the universal debates on urban sustainability by focusing on the urban environments of the less articulated region of the Arabian Gulf.

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DEDICATION

This work is dedicated to my parents, for their unconditional love

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My deepest gratitude goes to my first supervisor, Dr Nicola Dempsey, for her continued help and support throughout the years of my studies. Her words of encouragement and inspiration have pushed me to achieve more, even in my darkest days. This research would never have been completed without her commitment, reinforcement and valuable comments.

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ALBA Aluminium Bahrain: is an industrial company, including a large plant and its associated facilities, producing aluminium products. It is one of the most important in the Middle East and one of the ten largest in the world.

BAPCO Bahrain Petroleum Company: a governmental organisation established in 1929, it started exploring for oil in 1934 and refining in 1936 with the help of foreign management.

BSE the Bahrain Society of Engineers: established in 1972 and is a professional non-governmental engineering association, focused on the development of the industry and modernisation of Bahrain. Architecture, landscape architecture, urban design and urban planning are all disciplines that are represented by the BSE, along with engineering disciplines.

CLFs efficient compact fluorescent lamps: energy saving type of fluorescent lighting that contains mercury.

COE College of Engineering: is part of the University of Bahrain and includes five departments: Chemical Engineering, Civil Engineering, Architecture, Electrical and Electronics Engineering, and Mechanical Engineering.

COR Council of Representatives: also referred to as the Chamber of Deputies, established in 2002 and is the lower house of Bahrain's national assembly; the upper is the consultative council

CPO Central Planning Organization: The Ministry of Works Central Planning Organization (CPO) coordinates the planning and implementation of all infrastructure projects across the public sector as well as major industries, such as oil and gas.

CCASG Cooperation Council for the Arab States of the Gulf: also known as Gulf Cooperation Council GCC. It is an intergovernmental political and economic union consisting of all Arab states of the Arabian Gulf, excluding Iraq: Saudi Arabia, Oman, United Arab Emirates, Qatar, Bahrain and Kuwait.

DOA Department of Architecture: was separated from the civil engineering section in 2013 and includes two programmes, B.Sc. Architecture and B.Sc. Interior Architecture.

EIA Environmental Impact Assessment is a system formally adopted as a measure to protect the environment in Bahrain in 1998. The system is used to predict the positive and negative environmental consequences of a project or a plan.

EMP Environmental Management Plan is a site-specific plan developed following the production of EIA to ensure that all the necessary measures are identified and implemented to protect the environment and comply with the EIA and environmental legislation.

EWA Electricity and Water Authority is the governmental organisation responsible for the provision of electricity & water services in Bahrain.

FMO Facility management and engineering office: part of the UoB and handling the built assets of the University, their work includes maintaining existing buildings and the development of new facilities.

KSA Kingdom of Saudi Arabia: a state member of the Gulf Cooperation Council.

LED efficient light-emitting diode: an environmentally sustainable type of lighting that does not contain mercury. It is used to replace fluorescent lighting because of its longer lifespan, lower energy consumption, smaller size and speed in switching.

LEED Leadership in Energy & Environmental Design: an American sustainability assessment system developed by the US Green Building Council; is the American version of the British BREEAM.

MoC Ministry of Culture: is responsible for overseeing the culture and tourism sectors in Bahrain, including the protection of cultural heritage, the organisation of national cultural festivals and the participation in international exhibitions to present and advertise the Bahraini culture.

MoF Ministry of Finance: is responsible for making and implementing the financial policies of the Kingdom of Bahrain within the overall vision of the Government to improve the living standards and increasing the levels of economic growth. The ministry handles the preparation of the Budget in coordination with different ministries and public organisations to reflect the economic objectives of the country.

MoH Ministry of Housing: is responsible for providing adequate housing for families with limited income in Bahrain, including the provision of public and affordable houses, flats, loans, and gifted plots.

MoM Ministry of Municipalities Affairs and Urban Planning: handles municipal affairs and urban planning strategies, zoning and permits for construction and demolition; the ministry includes the country's four municipal councils.

MoT Ministry of Transport and Telecommunication: is responsible for regulating and developing Bahrain's transportation and telecommunication systems and infrastructures.

MoW Ministry of Works: handles all infrastructure services in Bahrain, including the public road network, buildings, and drainage systems.

NAAB the National Architectural Accrediting Board: is the only American agency authorised to accredit US professional degree programmes in architecture. It is the American equivalent of the British RIBA.

NPDS the National Planning Development Strategy: consists of the NPDS I, which is the Bahrain 2030 Vision, a document of 9 volumes produced by SOM in 2007; and NPDS II, which is the implementation plan for the NPDS I, is now being produced by ATKINS. Both documents were supervised by the Urban Planning Department at the Ministry of Municipalities Affairs and Urban Planning.

PCF Prince's Charles Foundation for building communities: is an educational charity established by HRH the Prince of Wales in 1986. It aspires to teach and demonstrate in practice the principles of engaging the people and the communities in the urban and architectural design processes.

PMC Prime Minister's Court: led by the Prime Minister of the Kingdom of Bahrain, the court includes all of the governmental ministries represented by their assigned minister.

PTP The Pearling Testimony of an island's economy Project: is a project, led by the MoC to conserve pearling, which was the main source of economy in Bahrain before the discovery of oil. The project includes 17 buildings in the old city of Muharraq, and 3 offshore oyster beds, in addition to a section of the seashore of Muharraq and the fortress of Qal'at Bu Maher in the south of the city.

QS Quantity Surveyor: is a profession within the field of the built environment concerned with contracts and the costs of construction.

QSAS Qatar Sustainability Assessment System: later renamed GSAS for the Global Sustainability Assessment System. It is a sustainability evaluation system firstly developed for Qatar, then expanded to become an international system for assessing the sustainability of buildings.

SCE Supreme Council of the Environment: is the governmental organisation responsible for the protection of the environment in Bahrain with its three components: air, water, and land.

SOM Skidmore, Owings & Merrill: an American firm founded in 1963, specialising in architectural designs, urban planning, and interior design.

SPD Strategic Projects Directorate: is a new directorate in the MoH, which handles the planning of mega-projects and new towns in Bahrain.

TIA Traffic Impact Assessment: is an evaluation of the impacts of development on the transport network.

UPD Urban Planning Directorate: is part of the MoM and is the governmental section responsible for the national planning, zoning, land use and future urban planning strategies for the kingdom.

UoB University of Bahrain: is the main and largest university in Bahrain. It includes ten colleges, including the COE, from which most of the engineers and architects graduate to feed into the public and private sectors. The University is public, and the government subsidises the fees.

UAE United Arab Emirates: a state member of the Gulf Cooperation Council.

CHAPTER 1   INTRODUCTION

Prince Faisal: ``No Arab loves the desert. We love water and green trees. There is nothing in the desert, and no man needs nothing. Or is it that you think we are something you can play with because we are a little people? A silly people, greedy, barbarous and cruel? What do you know, lieutenant? In the Arab city of Cordova, there were two miles of public lighting in the streets when London was a village" Spoken by Alec Guinness in Lawrence of Arabia[1].

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[1] David Lean, *Lawrence of Arabia* (Horizon Pictures, 1962) <http://www.youtube.com/watch?v=4ZD4153IubY> [accessed 22 December 2011].

1.1 The Research Problem

1.1.1 Urbanisation and Sustainability

Cities around the world witnessed vivid changes in their structure, form, and demographics following their Industrial Revolutions. The anatomy of this transformation has been investigated by scholars and researchers who are keen to learn about the transition of the world's cities from organic and traditional urban forms to modern, industrial and functional structures[2]. Furthermore, problems such as pollution, global warming, and the social and cultural degradation of cities and regions, are collective consequences of the industrial boom which hit most of the world's cities, and have been subject to extensive research, exploration and investigation[3].

In an attempt to overcome all the challenges that the world is facing today because of this dramatic change, in recent years new approaches to urbanism have been developed to accommodate the emerging urban conditions[4]. Sustainable urbanism, new urbanism, and sustainable developments are amongst the approaches debated and applied to the world metropolises today, in trials aimed at assessing their chances of survival and continuity[5]. The literature explains the need for such developments in the world today[6]. These, in addition to other movements such as the garden cities, the compact city, and transit-oriented developments, which, like new urbanism, are more specific urban models, comprise the sum of knowledge about urban sustainability in the literature. The Arabian Gulf in general and Bahrain in particular are no exception to this phenomenon of change; however, they have been given less attention in the literature. The vast social, environmental, economic, cultural and political challenges of urbanity in the Arabian Gulf is in need of further investigation.

The concepts of urban sustainability are extensively debated in western theory today and are quietly implemented by practitioners[7]. In recent years, people have come to realise that traditional forms of urbanism were more sustainable and associated them with a better quality of life[8]. Consequently, the importance of culture and the traditional forms of urban settlements and architecture are gaining more popularity today[9]. It can be argued that the newly introduced sustainability models mentioned above have markedly re-implemented the lost traditional arrangements that existed before the Industrial Revolution and are not entirely original to humankind or the art and science of urbanisation. Ideas like deindustrialisation and pedestrianisation are examples of these new approaches[10], as is the use of traditional building techniques and materials[11].

For instance, authorities and organisations are trying to reduce the usage of automobiles through encouraging the world's population to revive the "lost art of walking". This revival of pedestrianisation is achieved through eliminating the need to use the car whenever possible, an invention that has affectedly changed the setting and shape of cities around the world since it was

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[2] Lewis Mumford, *The City in History. Its Origins, Its Transformation, and Its Prospects* (New York: Harcourt. Brace & world, 1961); Jane Jacobs, *The Economy of Cities* (New York: Vintage Books, 1970).

[3] See Clemens Zimmermann, ed., *Industrial Cities: History and Future* (Germany: Campus Verlag, 2014); Spiro Kostof and Richard Tobias, *The City Shaped: Urban Patterns and Meanings Through History* (London: Thames and Hudson Ltd, 1999); Spiro Kostof and Greg Castillo, *The City Assembled: The Elements of Urban Form Through History* (London: Thames and Hudson Ltd, 1999).

[4] Ali Madanipour, 'Roles and Challenges of Urban Design', *Journal of Urban Design*, 11 (2006), 173–193.

[5] Douglas Farr, *Sustainable Urbanism: Urban Design With Nature* (New Jersey: John Wiley & Sons, 2008).

[6] See Mike Jenks and Rod Burgess, *Compact Cities: Sustainable Urban Forms for Developing Countries* (London: Spon Press, 2000); Katie Williams, Elizabeth Burton and Mike Jenks, *Achieving Sustainable Urban Form* (London: E & FN Spon, 2000).

[7] Michelle Hankinson and Amanda Breytenbach, 'Barriers That Impact on the Implementation of Sustainable Design', in *Cumulus Helsinki Conference* (Espoo: Aalto University, 2012).

[8] Kohei Okamoto and Yoshitaka Ishikawa, eds., *Traditional Wisdom and Modern Knowledge for the Earth's Future* (Japan: Springer, 2014).

[9] Simos Yannas and Willi Weber, eds., *Lessons from Traditional Architecture: Achieving Climatic Buildings by Studying the Past* (Routledge, 2012) <http://www.earthscan.co.uk/?tabid=49387> [accessed 22 December 2011].

[10] Farr.

[11] Carole Ryan, *Traditional Construction for a Sustainable Future* (Oxon: Spon Press, 2011).

first introduced in the 17th century[12]. Pedestrianisation is a clear example of the interconnection between new types of urbanism and the traditional urban settings that existed a long time ago. Culture has therefore been recently recognised as a fourth pillar for sustainable development that adds to the original three pillars: the environmental, the economic and the social[13]. Moreover, the most up-to-date literature on urban sustainability adds political support as a fifth pillar of sustainability. There is, however, limited empirical evidence in the literature that examines the importance of the two newly introduced pillars. This research will attempt to fill this gap by investigating the relationship between cultural change and urban sustainability and will further focus on the Arabian Gulf and the work and understandings of the government in Bahrain, a region that has been overlooked in most literature tackling urban sustainability.

1.1.2   Urban Sustainability and Cultural Change in Bahrain

In research within the Arabian Gulf context, many authors decide to focus more on the states of the United Arab Emirates, Qatar, Bahrain and Kuwait because they are at the forefront of change. Oman is the most traditional state in the Gulf and only began to transform in the 1980s[14]. Saudi Arabia is much larger in area and population compared to the other Gulf States, so researchers often discuss it separately. This research will also follow suit. Four countries/five cities are considered in this research: Kuwait, Qatar, and the United Arab Emirates (Dubai and Abu Dhabi), with a focus on Bahrain. Although the main case study in this research is the Kingdom of Bahrain, the situation in Bahrain is, however, very connected with the rest of the Gulf, especially to the other three states mentioned above. In studying cultural change and its connection to urban sustainability in Bahrain, the situation in Kuwait, Qatar, and the United Arab Emirates must also be discussed and understood. The situation in Bahrain cannot be divorced from the rest of the Arabian Gulf, especially given that the sum of literature in the area regarding urban sustainability is very limited. All these countries share common features such as their relatively small size and population, their high speed of urban development since the discovery of oil, and the number of immigrants in their total population. Also, there are similarities in culture, climate, environmental circumstances and crossover in knowledge between organisations concerned with urbanisation and sustainability in the region. This research will, therefore, contribute to knowledge about urban sustainability in the Arabian Gulf context by using Bahrain as a case study to investigate the effects of cultural change on the sustainability of the urban environment in those states.

Formerly known as the Kingdom of Bahrain, famous as Bahrain or Bahrein[15], pronounced: bɑːˈreɪn[16] Arabic: البحرين meaning two seas[17]. It is the smallest of the Gulf States and is an archipelago located in a strategic location in the middle of the western coast of the Arabian Gulf. The archipelago consists of 33 original islands, in addition to an increasing number of artificially reclaimed islands[18]. Because Bahrain is an urban archipelago, the kingdom faces many physical constraints. The major constraint is the obvious scarcity of land, which makes Bahrain one of the densest countries in the world with a population density of more than 1,000 persons per Sq. Km. This is an extremely high number compared to the United Arab Emirates (56.79), Kuwait (171.21) and Qatar (148.34)[8].

Other constraints are the lack of fresh water resources, arable soils, and the harsh climate[19]. Bahrain is also one of the least developed countries in the region, with a relatively slower pace of

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[12] Geoff Nicholson, *The Lost Art of Walking: The History, Science, Philosophy, Literature, Theory and Practice of Pedestrianism* (York: Harbour Press, 2010).
[13] Paul James, *Urban Sustainability in Theory and Practice: Circles of Sustainability* (New York: Routledge, 2015).
[14] John Fox, Nada Mourtada Sabbah and Mohammed Al-Mutawa, *Globalization and the Gulf* (New York: Routledge, 2006).
[15] Collins English Dictionary, 'Bahrain', *Complete & Unabridged 10th Edition*
<http://dictionary.reference.com/browse/bahrain> [accessed 12 June 2013].
[16] Oxford Dictionaries, 'Definition of Bahrain', 2014
<http://www.oxforddictionaries.com/definition/english/Bahrain?q=Bahrain> [accessed 4 June 2014].
[17] M. Th Houtsma, *Encyclopedia of Islam I* (Leiden: E.J. Brill, 1960).
[18] Gordon Robison and Paul Greenway, *Bahrain, Kuwait & Qatar* (Hawthorn: Lonely Planet, 2000).
[19] Curtis Larsen, *Life and Land Use on the Bahrain Islands: The Geoarcheology of an Ancient Society* (Chicago: The University of Chicago Press, 1983).

development and the least amount of oil remaining. For these reasons, Bahrain is the best candidate for the investigation of the relationship between cultural change and urban sustainability in the Arabian Gulf context. The country's manageable size, compactness, and its dense urban structure, in addition to the environmental challenges, lack of resources and the author's Bahraini nationality, familiarity with the context and ease of access to data, nominates the Kingdom of Bahrain to be the primary case study for this research.

Bahrain is one of the countries hit by an Industrial Revolution after the discovery of oil. Today, like many countries around the world, it is trying to fight for and ensure its survival by drafting sustainable solutions in the hope of achieving continuity. The major challenge in Bahrain's case, as in many of the Gulf countries, is that the country skipped an enormous amount of gradual urbanisation in between the discovery of oil – the Industrial Revolution – and the extreme opposite of the desert rural life which existed before the unearthing of petroleum in 1931[20]. There was a huge jump into complete modernisation in an extremely short period of around 60 years.

Although the resources for reform and development were available, the residents of Bahrain, like all other Gulf States, were not ready for such an extreme transformation. Moreover, it did not have the expertise or capabilities needed at that time to deal with such a new industry[21]. Consequently, many expatriates were employed to lead not only the new oil manufacturing but also some of the major urban development and planning projects in Bahrain. This import of foreign experts resulted in urban forms that were entirely alien to the context, caused by a lack of understanding of the traditions and urban identity of Bahrain. As a consequence, an urban gap was created, detaching the modern from the traditional in Bahrain[22].

In 2007, the government of Bahrain, with the help of foreign consultants, established criteria for its sustainable economic development that was summarised by officials in a plan to be implemented by the year 2030[23]. Although the country has progressed steadily since its independence in 1971 in ensuring economic sustainability because of its leading role as the financial centre of the Middle East[24], unfortunately, things did not continue to develop following the global financial crises, the collapse of the Islamic banking, and the development of Saudi Arabia's own financial industry[25]. Bahrain was later argued to be "no longer and probably will never be again the preeminent financial centre in the Arabian Gulf"[26]. This economic underdevelopment was parallel to a wide range of political, cultural, environmental and social problems. The authorities in Bahrain seem to have become completely preoccupied with their new plans to provide state-of-the-art infrastructure services, housing opportunities for the underprivileged and right conditions for investment to ensure economic sustainability and growth and avoid political uprising. On the other hand, these actions have resulted in matters of equal importance being neglected in the long term, such as ensuring social and political justice, and the protection of the environment and culture[27].

Economic reclamation projects took over most of Bahrain's shoreline, destroying some important natural habitats for marine life and some of the vital cultural aspects of the daily life of Bahraini residents[28]. This segregation between the country's economic needs and its cultural, social and environmental necessities further widened the urban gap created earlier by the extreme urban

[20] Oxford Business Group, 'The Report: Bahrain 2009 | Oxford Business Group', 2009
<http://www.oxfordbusinessgroup.com/product/report/report-bahrain-2009> [accessed 22 December 2011].
[21] Mehran Kamrava and Zahra Babar, eds., *Migrant Labour in the Persian Gulf* (London: C.Hurst & Co. Ltd., 2012).
[22] Fay Al-Khalifa, 'An Urban Healing Agenda for Reform in Bahrain: Where the Dweller Falls into the Urban Gap and the Sailing Boat Hits the Skyscraper', in *Sustainable Development and Planning VI*, ed. by Carlos Brebbia (Wessex: WIT Press Publishing, 2013).
[23] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies* (Manama, 2007).
[24] Matein Khalid, 'The Global Crisis and the Gulf's Money Souk', in *Al Manakh II* (Netherlands: Stichting Archis, 2010).
[25] Khalid.
[26] Khalid.
[27] Fay Al Khalifa, 'An Urban Healing Agenda for Reform in Bahrain: Where the Dweller Falls into the Urban Gap and the Sailing Boat Hits the Skyscraper.' (University of Sheffield, 2012).
[28] Ministry of Culture, *RECLAIM: Kingdom of Bahrain National Participation in Venice Biennale 2010* (Manama, 2010).

transformation led by foreigners in Bahrain[29]. It has become clear today that there is segregation between the historic urban fabric and the newly developed contemporary urbanisation taking place mostly on the waterfront[30].

The literature tackling urban sustainability in Bahrain is extremely limited, and is mostly focused on the urban morphology of Bahrain's oldest cities[31], the quality and quantity of public open spaces[32], the effects of the various reclamation projects[33], the relationship between the villages and the city[34] and a few proposals for a new master plan for Bahrain[35]. Moreover, most of these studies were conducted by foreigners who worked or spent some of their lives in Bahrain and a few were conducted by consultants hired by the Bahraini government. There are a number of studies tackling the historic urban fabric of Bahrain, the indigenous architectural style and the traditional community, but hardly any regarding the connection between the cultural transformation and the sustainability of the urban planning system in Bahrain. This research aims to fill this gap in the literature by focusing on the relationship between cultural change and the sustainability of the urban environment in Bahrain.

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[29] Fay Al Khalifa, 'An Urban Healing Agenda for Reform in Bahrain: Where the Dweller Falls into the Urban Gap and the Sailing Boat Hits the Skyscraper.'

[30] Fuad Al Ansari, 'Public Open Space on the Transforming Urban Waterfronts of Bahrain- The Case of Manama City.' (University of New castle, 2009).

[31] See Mustapha Ben-Hamouche, 'The Changing Morphology of the Gulf Cities in the Age of Globalisation: The Case of Bahrain', *Habitat International*, 28 (2004), 521–540; Mustapha. Ben-Hamouche, 'Manama: The Metamorphosis of a Gulf City', in *The Evolving Arab City: Tradition, Modernity and Urban Development.*, ed. by Yasser Elsheshtawy (London: Routledge, 2008); Mustapha Ben-Hamouche, *Plans of Manama City: Urban Transformations of the Gulf Cities* (Manama: Sh Ibrahim Centre for Culture and Research, 2009).

[32] See Al Ansari.

[33] See Ministry of Culture, *RECLAIM: Kingdom of Bahrain National Participation in Venice Biennale 2010*.

[34] See Wafa AL-Ghatam, 'The Village and the City: A Diagnostic Study of the Spatial Embedding Patterns in Villages Absorbed by Cities in Bahrain', in *7th International Space Syntax Symposium*, ed. by Daniel Koch, Lars Marcus, and Jesper Steen (London: UCL, The Bartlett School of Graduate Studies, 2009).

[35] See Skidmore Owings and Merill, *Bahrain 2030 National Planning Development Strategies: The National Plan* (Manama, 2008); Harry Gugger, *Bahrain Lessons* (Switzerland: laboratoire de la production d'architecture (lapa), 2010).

1.2 Research Questions, Aims and Objectives

This research aspires to contribute to the understanding of urban sustainability within the context of transformed cultures by investigating the effects of cultural change on the urban sustainability of the Arabian Gulf, one of the regions which has suffered extreme cultural transformation since the beginning of the 20th century. This broader aim will be achieved by focusing on Bahrain's urbanism and studying the relationship between changes in the cultural identity, skills and knowledge in Bahrain and the resulting urban environment of the islands. To accomplish the targeted aim, the study must fulfill the following objectives:

1. To investigate the forces that contributed to the development of the phenomenon of cultural transformation in Bahrain by exploring the mechanisms behind the formation of Bahrain's urbanism.

2. To examine the transformed culture of Bahrain and to assess the roles of the government, academia and practice in the development of urban sustainability in Bahrain.

3. To put forward a set of recommendations for Bahrain to move towards a more sustainable urbanism.

Achieving the objectives mentioned above will contribute to answering the central research questions:

How has cultural transformation affected the sustainability of the urban environment in Bahrain? What is the role of governmental practices in stimulating or preventing urban sustainability in Bahrain today?

The cultural, social, environmental, economic and political effects cultural transformation has on the sustainability of Bahrain's urban environment are examined to put forward an agenda for reform that aspires to assist in ensuring a sustainable urban future for Bahrain. As the country continues to develop and as the culture keeps on transforming, it is important to examine the ideologies of people who lived in Bahrain in the past and how those ideologies informed the formation of the built environment at that time. The research then further compares the process of development of the built environment in the past with the way it is shaped today, and sheds light on the sustainability of the urban environment of Bahrain in each case.

The research is conducted in three stages; each stage employs a number of methods to achieve one of the research objectives. The first stage attempts to trace the roots of the current problem and to identify gaps in the literature. It also aims to record the development of cultural transformation and urban sustainability in Bahrain and to compare Bahrain's situation in terms of urban sustainability to other countries of the Arabian Gulf where cultural transformation also took place. This aims to achieve the first objective of this study by answering questions related to: why did cultural transformation start in the Arabian Gulf countries? How did the urban fabric of the Arabian Gulf cities in general and Bahrain in particular transform? Why did cultural transformation affect the urban form of those countries?

The second stage attempts to examine the transforming culture of Bahrain and assesses the role of the existing culture in stimulating or preventing the development of urban sustainability. This is achieved by investigating how sustainable the urban environment in Bahrain is today. Moreover, how sustainable it is in comparison to its situation before the British presence and the discovery of the oil, and how the ideologies of officials in Bahrain today contribute to the stimulation or prevention of the development of urban sustainability in the country. Further still, it asks how sustainable are the new governmental mega projects in Bahrain? Finally, the third stage was implemented to put forward a sustainable urban regeneration strategy for Bahrain, which focuses on all aspects of sustainability. This is achieved by publishing an academic piece of work (thesis) that offers suggestions for governmental agencies to improve the sustainability and quality of the urban environment in Bahrain. This research does not indicate that the effects of the cultural transformation are reversible or that this study attempts to bring back the lost indigenous, sustainable form. However, the suggestions are designed to contribute to knowledge about the effects of cultural change on urban sustainability in Bahrain and to help better inform decision makers.

1.3 Research Methodology

This research is conducted through a qualitative approach using a case study strategy. Both the approach and strategy adopted in this study allowed for the use of multiple primary and secondary data sources. These are archival resources, comprising national documents, and the political reports and intelligence summaries of the British political officers and American missionaries in the Gulf. Also, this includes recent and historical maps and national governmental plans, laws, and regulation. The first set of data sources are used to achieve the first research objective (see section 1.2). The study also includes two sets of semi-structured interviews. The first, with academics and key officials working in different organisations concerned with the built environment; and the second, with foreign consultants and key officials who are working on three future mega governmental projects around Bahrain. The interviews are supported by the most recent governmental strategies, laws and regulations, which, in addition to newspaper articles, are used to achieve the second research objective.

The contextual nature of this research, the types of questions asked, and the need to use a number of methods, brought about the utilisation of a qualitative approach to a case study strategy. Moreover, qualitative research is more suitable in the context in which this research takes place because of the oral tradition in Bahrain. People in Bahrain, as well as in the entire Arabian Gulf, believe in word of mouth and are willing to communicate more in a conversation rather than via a piece of paper. The data collection required travelling back and forth to the Arabian Gulf a number of times. The process can be summarised into four stages. The first phase consisted of a group of trips in 2013. The trips were short, an average of 2 weeks each. Networking was achieved during those trips in the four countries of Bahrain, Kuwait, Qatar, and the United Arab Emirates.

The second stage was preceded by a complete ethics approval process and entailed a short trip for the pilot study, two weeks at the beginning of December 2013. The third stage consisted of a longer trip for the first phase of the data collection that took place in January to March 2014. This data collection phase focused on semi-structured, in-depth interviews with governmental officials: 35 interviews were conducted with officials in governmental organisations concerned with the built environment and researchers from the UoB. The meetings aimed to develop an understanding of the officials' ideologies and understandings of cultural change and urban sustainability and their perception of the sustainability of the urban environment in Bahrain today. The fourth and last stage consisted of another relatively long visit to Bahrain that took place from September to October 2014, for the second stage of data collection. This was designed to develop an understanding of the sustainability of the most recent governmental mega projects and the role of the government and overseas consultants in assessing or preventing the development of more sustainable urban environments in Bahrain today. Five interviews were conducted with officials

from the MoH and SCE, in addition to interviews with overseas consultants PCF and WSP, and were focused on the three selected projects: NGNT, SGNT and EHNT.

Comparative analysis and grounded theory were used as methods of analysis. All the interviews collected in the first and second phases were transcribed in full. Interviews were all conducted in English, for all interviewees were fluent in English, so there was no need for translation. Nevertheless, some interviewees used Arabic terminologies on a few occasions to express certain matters related to the culture and context. Thus, language editing was carried out for some of the interviews while transcribing, to prepare them for an English reader. The data analysis was followed by writing up the strategy that was based mainly on the three main subunits of analysis: cultural change, urban sustainability, and the relationship between the two. Nevertheless, the impact of foreign consultants and lack of local skills and expertise was a very dominant subtheme that emerged throughout the interviews. The initial plan was to explain the main challenges to urban sustainability in the relevant section; however, it was found after the preliminary analysis of data that it is essential first to set out the lack of local experts and the consequent dependency on overseas consultancy and foreign knowledge because of its importance in understanding other matters relating to cultural change and urban sustainability in Bahrain. That explains the need for outlining the educational and training difficulties in chapter 7.

1.4 Structure of the Thesis

This thesis is divided into ten chapters, which can be grouped into five parts. Chapters 2 and 3 explain the theoretical framework for this research mainly based on the worldwide literature. Chapter 5 describes the methodological standpoint undertaken in this investigation. Chapters 5 and 6 describe the context in which this study takes place using mostly the limited existing regional and local literature. Chapters 7–9 outline and discuss the research findings. And chapter 10 summarises the results of the study, its contribution to current knowledge, and gives recommendations for policymakers, practitioners and academics.

Chapter One explains the research problem and summarises the gap in knowledge and the research questions, aims, and objectives. The chapter also gives a summary of the research context, the methodological standpoint undertaken in the investigation of the research problem, and outlines the structure of the thesis.

Chapter Two explains the definitions and history of the concepts associated with urban sustainability. It starts by outlining the different national, regional and local understandings of the term "urban" and its related notions, and then it moves on to explain "sustainability" and its relationship to sustainable development. The chapter then presents the chronological and contemporary theories, approaches and movements related to urban sustainability, and discusses the existing criticism and debates around the most influential movements in urban sustainability. Then, the chapter identifies the sum of knowledge existing in the literature around the relationship between urbanism and sustainability and explains the local understanding of urban sustainability in Bahrain's governmental strategies.

Chapter Three discusses the transformation of cultures and their relationship to urban sustainability. The chapter reviews the literature concerning the transformation of culture, its background, definition, dynamics, and sources. It then presents the literature discussing the relationship between cultural change and urban sustainability, first through examining the relationship between cultural change and urbanisation, then its relationship to climate change, and finally its relationship to sustainable urban planning.

Chapter Four explains the methodology used in this research. The chapter starts with a demonstration of the methodological standpoint taken in this research and explains the adaptation of a qualitative approach that depends principally on the case study strategy. The chapter explains the selection of Bahrain as the main case study of this research. A thorough explanation of the methods used is then discussed, including the data collection process and the strategies undertaken when analysing the data. Finally, the chapter presents an assessment of the methodological approach for drawing conclusions and recommendations.

Chapter Five contextualises the relationship between cultural change and urban sustainability in the Arabian Gulf. The chapter starts by introducing the Arabian Gulf, its location, and its culture. It discusses the urbanisation of the Gulf, its history, its transformation, and its current status, in addition to the challenges and environmental threats it is facing today. Finally, the chapter focuses on knowledge and education of sustainability in the Arabian Gulf states, the different projects concerned with urban sustainability, and the emergence of sustainability rating systems in the Gulf.

Chapter Six contributes to achieving the first research objective by focusing on Bahrain, the main case study for this research. It gives an introduction to its context, location, and physical character and climate circumstances, in addition to an exploration of the country's demographic, social, economic and political landscapes. Bahrain has a relatively young and simple planning system, which is discussed in this chapter. The history of planning in Bahrain is presented, followed by a narrative of the existing planning laws and policies. This section also includes a presentation of the latest planning strategies developed for Bahrain by the UPD. As a small urban archipelago, Bahrain

consists of a number of areas, each with a different character. These are displayed with a description of the morphology of each area, its history and the circumstances that led to its development. The chapter concludes with a presentation of the contemporary condition of each unique region in Bahrain, which is essential to the understanding of the arguments in the other chapters.

Chapter Seven illustrates the first set of findings and their discussion, and contributes to achieving the second research objective. It mainly focuses on the education and training barriers and difficulties and their consequences on the sustainability of the urban environment in Bahrain. It starts by illustrating the continuation of the phenomenon of dependency on foreign knowledge, workforce and consultancy, which started with the oil boom in Bahrain. Then, it moves on to tackle its causes and consequences, with a particular focus on the deficiencies of the working environments, processes, and internal systems. In addition, the insufficiencies of policies, laws, and programs in the governmental organisations concerned with the built environment emerge as key findings.

Chapter Eight addresses the second research objective by discussing the transforming culture of Bahrain and the role of government in stimulating or preventing this change. The chapter starts by examining the officials' and academics' understandings of the concept of cultural change, and the degree to which they think this process is understood and addressed within their organisations. The chapter then examines the recognised effects of cultural change on the urban environment in Bahrain and ends by explaining how this change materialised in different urban areas in Bahrain.

Chapter Nine also addresses the second research objective by illustrating the interviewed officials' understanding of the concepts of sustainability in general and urban sustainability in particular. The chapter then discusses the degree to which sustainability is addressed in academia and professional and governmental practices. It then illustrates the interviewees' realisation of the current unsustainable condition of the urban environment and further compares it with the endogenous urban environment. Then, a discussion of the challenges to implement sustainability in Bahrain is set out, and finally the sustainability of the working environments and the projects of the interviewed organisations are highlighted.

Chapter Ten addresses the last research objective by giving recommendations for policy makers, planners, and academics. This chapter, in its first section, discusses the research findings. It then offers recommendations for academics, planners, and decision makers. The main research contribution to knowledge is later outlined and followed by recommendations for further studies.

CHAPTER 2   URBAN SUSTAINABILITY

"[Cities] are the result of a steady coalition between geography, human settlement, available labor, wealth, and natural resources. However, this is not how we should look at the Gulf cities of today. This unique and unprecedented urban experiment is creating a world without this natural coalition of good conditions, from wealth underground, and from much knowledge and labor coming from outside."[36]

Ole Bouman

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[36] Ole Bouman, 'Vision', in *Al Manakh II*, ed. by Rem Koolhaas and others (Netherlands: Stichting Archis, 2010).

2.1 Introduction

This chapter attempts to explain the definitions and history of the concepts associated with urban sustainability. It starts by outlining the different national, regional and local understandings of the term "urban" and its related notions, and then it moves on to explain 'sustainability' and its relationship to sustainable development. The chapter then presents the chronological and contemporary theories, approaches and movements related to urban sustainability, and discusses the existing criticism and debates around the most influential movements in urban sustainability. Then, the chapter identifies the sum of knowledge existing in the literature around the relationship between urbanism and sustainability and explains the local understanding of urban sustainability in Bahrain's future strategies.

2.2 Understanding Urbanity

2.2.1   The Global Perspective

The association between human activities and the deterioration of our planet has occurred as long as humans have existed on planet earth[37]. The use of fire, for instance, in the Stone Age, and needing particular foods for human consumption transformed the natural arrangement of the plant and animal groups on earth[38]. The strong connection between humanity's actions and decisions on the built and natural environments is now established in research. Some researchers have questioned the impact of humans on the environment while others have questioned the effects of the urban and natural environments on people, their behaviours, social relationships and the community in general[39]. The sustainability of our urban, rural and natural environments is, therefore, reliant on our behaviour and consumption patterns, and that is why sustainability is rooted in and is researched more within the social sciences. It is, however, not limited only to the social sciences, for it has also been discussed in many other disciplines, varying from law[40], chemistry[41], engineering[42], agriculture[43], and medicine[44]. In this research, sustainability will be considered under the social sciences paradigm, and this two-way relationship between human beings and the environment is firmly recognised. Specifically, this research focuses on the sustainability of the urban environment, rather than the rural or natural, because of the continued global increase in urban populations and the strong relationships between humans and the built environment in urban areas. This relationship will be discussed in detail later. However, it is essential for the purpose of understanding this research, to first investigate what is "urban", in the global, regional and local perspectives.

"Urban" is an adjective for the noun "urbanism,". It dates back to the early 17th century and is derived from the Latin word *urbanus*, from *urbs*, *urb*- "city." It is defined mostly by academics as "In, relating to or characteristic of a town or city" [45] and cities have been defined by Madanipour (2014) as "historical creations, collections of people and objects, defined by their size-density-diversity with economic-political-cultural meaning"[46]. The noun "urbanism", which dates back to the 20th century, and was imported into English from the French "urbanisme", refers to the scientific method of studying, controlling, analysing and shaping cities[47]. Urbanism refers more to the policies and sociologies of planning, than to the principles of urban design[48]. It refers to the way people interact with their towns, cities or areas of an urban character or, in other words, urbanism

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[37] Richard Forman, *Urban Ecology: Science of Cities* (Cambridge: Cambridge University Press, 2014).

[38] Karl Butzer, 'Environment, Culture, and Human Evolution: Hominids First Evolved in Mosaic Environments, but Stone Toolmaking Accelerated the Emergence of Homo, and Both Culture and Environment Subsequently Served as Catalysts for Evolution', *American Scientist*, 65 (1977), 572–584; Richard Scholars, 'Stories from the Stone Age. Beyond Productions in Association with S4C and S4C International' (Australian Broadcasting Corporation, 2003).

[39] Edward Krupat, *People in Cities: The Urban Environment and Its Effects* (Cambridge: Cambridge University Press, 1985); Sandra Scarr and Kathleen McCartney, 'How People Make Their Own Environments: A Theory of Genotype, Environment Effects', *Child Development*, 54 (1983), 424–435.

[40] Klaus Bosselmann, *The Principle of Sustainability: Transforming Law and Governance* (Ashgate Publishing, Ltd., 2008), p. 242.

[41] T. Collins, 'Essays on Science and Society. Toward Sustainable Chemistry', *Science (New York, N.Y.)*, 291 (2001), 48–9 <doi:10.1126/science.291.5501.48>; Gabriele Centi and Siglinda Perathoner, 'Catalysis and Sustainable (green) Chemistry', *Catalysis Today*, 77 (2003), 287–297 <doi:10.1016/S0920-5861(02)00374-7>.

[42] Thomas E. Graedel and Braden R. Allenby., *Industrial Ecology and Sustainable Engineering* (NJ: Prentice Hall, 2010).

[43] M. A. Altieri et al., *Agroecology: The Science of Sustainable Agriculture* (Westview Press, 1995); N. G. Roling and M. A. E. Wagemakers, *Facilitating Sustainable Agriculture: Participatory Learning and Adaptive Management in Times of Environmental Uncertainty* (Cambridge University Press, 2000), p. 348.

[44] Mona C. Shediac-Rizkallah and Lee R. Bone, 'Planning for the Sustainability of Community-based Health Programs: Conceptual Frameworks and Future Directions for Research, Practice and Policy', *Health Education Research*, 13 (1998), 87–108 <doi:10.1093/her/13.1.87>; W. A. Silverman, 'Restraining the Unsustainable', *Pediatrics*, 111 (2003), 672–674 <doi:10.1542/peds.111.3.672>.

[45] Oxford Dictionaries, 'Definition of Urban -(British & World English)', 2012 <http://oxforddictionaries.com/definition/english/urban?q=urbanism#urban__5> [accessed 28 January 2013].

[46] Ali Madanipour, *Urban Design, Space and Society* (Hampshire: Palgrave Macmillan, 2014).

[47] Peter Weibel, 'The City in the Post-Industrial Information Society: Transforming from a Place of Production to a Place of Consumption', in *City Fights: debates on urban sustainability*, ed. by Mark Hewitt and Susannah Hagan (London: James & James Ltd, 2001).

[48] Susannah Hagan, *Ecological Urbanism: The Nature of the City* (London: Routledge, 2015).

is the "character of city life and the study of it"[49]. "Urban" is therefore a characteristic of populated areas, which are created and developed by a process called "urbanisation", that is, the "making and growing of urban areas by migration of people from rural areas and the suburbs". "Urbanising" therefore, is the process of "building residential and commercial facilities in the countryside to create a town." There is, however, little agreement in the literature about how populated an area should be to qualify as "urban". Therefore, and unsurprisingly, the United Nations does not use one generalised description to define "urban" populations. Instead, it uses a unique definition for each region in the world, which is significantly influenced by the individual countries' understandings and acceptances of what is "urban" and "rural". The United Nations methodology report clearly indicated that generalisation was not adopted in determining urban areas. United Nations (2014): "Given the variety of situations in the world, it is not currently possible (or indeed even desirable) to adopt uniform criteria to distinguish urban areas from rural areas". Nevertheless, the report failed to clarify the methodology used for every particular country and simply discussed the various criteria used in estimating the proportion of "urban" in general. The report stated that one or a combination of criteria have been used including "a minimum population threshold; population density; proportion employed in non-agricultural sectors; the presence of infrastructure such as paved roads, electricity, piped water or sewers; and the presence of education or health services"[50].

The Canadian understanding of "urban" is an area having at least 1,000 inhabitants and a minimum of 400 persons per square kilometer[51], while in Australia a density of 200 persons per square kilometer is enough for an area to be considered urban[52]. Those figures vary considerably in comparison to countries that are more populated. In China, for instance, a density higher than 1,500 persons per square kilometer is required for an area to be considered urban[53], and even this is tiny in comparison to Japan, where a density requirement of 4,000 inhabitants per square kilometer is needed. Furthermore, other countries have additional requirements for an area to be defined as "urban". India, for instance, specifies that in addition to the usual requirements of a minimum of 5,000 inhabitants and a density of at least 400 inhabitants per square meter, the area should also have a municipality, a cantonment board, a corporation, or a notified town area committee. In addition, it also requires at least 75% of the male population to be working in non-agricultural jobs[54]. Although most of the literature is very vague about the definition of "urban", some recognises this fluidity of the term. For example, Smith (2002) explains "The Urban is being redefined just as dramatically as the global. The old conceptual containers, our 1970 assumptions about what 'the urban' is or was, no longer hold water. The new concatenation of urban functions and activities vis-à-vis the national and the global change not only the make-up of the city but the very definition of what constitutes – literally – the urban scale"[55]. The concept of the "city" itself is also understood in different ways across nations. Madanipour (2011) explained "while the everyday use of the term suggest a common understanding, technical and legal definitions of the city vary widely across countries and cultures"[56]. Despite this disagreement about what is considered urban, the literature mostly agrees that an urban area anywhere in the world would contain a higher population density than other areas surrounding it.

[49] Dictionary.com, 'Urbanism', *Collins English Dictionary - Complete & Unabridged* (HarperCollins Publishers, 2013) <http://dictionary.reference.com/browse/urbanism> [accessed 29 January 2013].
[50] Department of Economic and Social Affairs, *World Urbanization Prospects The 2014 Revision: Methodology* (New York, 2014). P 13.
[51] Statistics Canada, 'Urban Area', 2009 <http://www12.statcan.gc.ca/census-recensement/2006/ref/dict/geo049-eng.cfm> [accessed 16 May 2011].
[52] Australian Bureau of Statistics, '1216.0 - Australian Standard Geographical Classification (ASGC)', 2011 <http://www.abs.gov.au/ausstats/abs@.nsf/0/B03C37D9D89F7C19CA256AD4007F67F8?Open> [accessed 6 May 2013].
[53] Institute of Geographic Sciences and Natural Resources Research and Chinese Academy of Sciences, 'Scenario Analysis on Urbanization and Rural-Urban Migration in China', 2003 <http://webarchive.iiasa.ac.at/Admin/PUB/Documents/IR-03-036.pdf> [accessed 29 January 2013].
[54] Ministry of Home Affairs Government of India, 'Provisional Population Totals Urban Agglomerations and Cities', *Census of India 2011*, 2011 <http://www.censusindia.gov.in/2011-prov-results/paper2-vol2/data_files/India2/1. Data Highlight.pdf> [accessed 8 September 2012].
[55] Neil Smith, 'New Globalism, New Urbanism: Gentrification as Global Urban Strategy', *Antipode*, 34 (2002), 427–450. P. 7.
[56] Ali Madanipour, *Knowledge Economy and the City: Spaces of Knowledge* (Oxon: Routledge, 2011).

Today, more than half of humanity living on earth is resident in urban areas: 54% in 2014, according to the latest United Nations World Urbanization Prospects. In 1950, only 30% of the world's population was considered "urban". In the future, it is predicted that this growth in the urban population and urban areas will continue, to reach 60% by 2030[57] and 66% by 2050[58]. Moreover, cities of the world occupy only 2% of the earth's surface, but account for 60–80% of global energy consumption and 75% of its carbon emissions[59]. Cities are therefore hubs for human settlements and are main contributors to climate change. In an urbanising world, we need to understand better the impacts of urban living and manage the way we use resources. The growth of the world's large cities with their big dependence on resources is said to be endangering the future of humanity and life on earth[60]. Drew and Tutu (2011) wrote about the 100 places you should visit before they disappear. Because of its dramatic and compelling presentation, their book was published in seven different languages around the globe[61]. Drew and Tutu predicted from an environmental perspective that because of global warming, which is caused by the various human activities on earth in general and urban areas in particular, the face of the planet is under threat of being disfigured. The authors questioned what the world would look like if the earth's average temperature were to rise by only a few degrees "Venice, Bangkok, London, Chicago and New York could experience severe flooding. Crops in the tea fields of Sri Lanka and vineyards of France would suffer under increased heat and drought. Beijing and Timbuktu would be transformed into deserts, and the Great Barrier Reef's coral colonies would perish. The entire nation of Tuvalu would disappear into the Pacific Ocean."[62] This hypothesis of the disfiguration of the earth's surface is not the only one put forward in the literature and is supported by many others[63]. As we shall see later in chapter 5, the Arabian Gulf in general, and Bahrain in particular, are no exception to this phenomenon; yet they have been given less attention in the literature. This disfiguration threat, in addition to the vast environmental, economic, cultural and political challenges of urbanity in the Gulf, is in need of further investigation. Thus, this research attempts to enhance our understanding of urbanism and the different effects it has on earth by focusing on the Arabian Gulf region in general and Bahrain in particular, a context that has so far had very little attention in literature.

2.2.2   The Local Perspective

For the purpose of investigating the "urban" in the Arabian Gulf, or in any setting, it is first essential to define it within its context. The proportions of urban and rural in the six countries of the Arabian Gulf are extracted and presented in (Table 2-1). The table indicates that like many regions of the world, the Arabian Gulf has also been under a process of urbanisation, which varies between 77% urban population in Oman and 99% in Qatar. It is, however, not possible to compare the degree of urbanisation in those countries based on those figures because of the different and unknown criteria used in estimating them. No other figures estimating the level of urbanity in the GCC states was found in the literature. Establishing such comparisons could be useful for any research investigating an urban phenomenon in the region; however, this is hard to achieve given the very different geographical circumstances of each country.

Often in the literature, Bahrain is characterised by its highly populated northern part and the almost vacant south. This will be further outlined in Chapter 6. Gugger (2010) explained "the urban areas are mainly located on the northeastern coast of the main island. Approximately two-thirds of the country is urbanized while the remaining third to the south is relatively devoid of

[57] United Nations, 'Facts and Figures', *Rio+20 The Future We Want* (United Nations, 2013)
<http://www.un.org/en/sustainablefuture/cities.shtml> [accessed 30 January 2013].
[58] Department of Economic and Social Affairs.
[59] United Nations, 'Facts and Figures.'
[60] Steffen Lehmann, *The Principles of Green Urbanism: Transforming the City for Sustainability* (London: Routledge, 2010).
[61] Pernille Bigum, '100 Places', 2009 <http://www.100places.com/> [accessed 3 February 2012].
[62] Patrick Drew and Archbishop Desmond Tutu, *100 Places to Go Before They Disappear* (New York: Abrams, 2011).
[63] Peter Cox and others, 'Acceleration of Global Warming due to Carbon-Cycle Feedbacks in a Coupled Climate Model.',
Nature, 408 (2000), 184–7; Terry Root and others, 'Fingerprints of Global Warming on Wild Animals and Plants.', *Nature*,
421 (2003), 57–60; Peter Vitousek, 'Beyond Global Warming: Ecology and Global Change', *Ecology*, 75 (1994), 1861; United
Nations Intergovernmental Panel on Climate Change, *Climate Change 1992: The Supplementary Report to the IPCC Scientific
Assessment* (Cambridge University Press, 1992).

urbanization"[64]. Nevertheless, even those less populated areas to the northwest and south are well connected to infrastructure and services, which comprise many of the requirements of which an area is considered "urban" according the United Nations, including "paved roads, electricity, piped water and sewer" and in most cases also "education and healthcare facilities". In addition, some of the very highly populated areas in Bahrain, like Muharraq[65], part of the northeastern coast which is considered "urban" according to Gugger and most of the literature, do not have work opportunities, and most of the inhabitants have to commute to other areas at least once a day for work. Gugger (2010) explained, describing the different parts of Bahrain: "Although each of these entities is autonomous and physically disconnected from another, they do not function independently"[66]. Those areas will be outlined in Chapter 6.

The only area in Bahrain where all the requirements of living, working and playing are strongly emphasised is the capital Manama[67]. Bahrain could then be seen as "the country of a single city"[68]. However, it is also true that the majority of the locals who work in Manama would in most cases be living in one of the other residential areas around Bahrain, so Bahrain could also be seen as "the city country", for the whole country operates as a single city, with the capital Manama as the city centre and other areas comprising its urban sprawl. In fact, Manama is already, as we shall see later, often referred to as "the City Centre". United Nations (2014) explained "Urban living is often associated with higher levels of literacy and education, better health, greater access to social services, and enhanced opportunities for cultural and political participation"[69], all of which are features of the entire Bahraini populations resident in the small islands. Therefore, if it is unjust to consider the highly populated Muharraq to be rural simply because its inhabitants mostly have to find job opportunities elsewhere, then it is also unfair to describe the southern coastal areas as rural simply because they are less dense.

Given the tiny size of the islands, all of those indicators of urban living listed above are characteristics of the relatively remote areas to the south and northwest of Bahrain as well as the highly populated centre. (Table 2-1) indicates that the total urban population in Bahrain was 89% in 2014, which signposts that 11% of the population are considered rural. However, for the reasons mentioned above, this research will not attempt to identify or exclude those from the discussion, and the entire population on the three main islands of Bahrain, Muharraq and Sitra will be considered urban. Having said that, it is now important to clarify that the non-inhabited islands which are not connected to the mainland, such as Jidda, Um Al Nassan, Falkland and others, in addition to Hawar Island,[70] will not be considered urban and therefore will not be part of this study.

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[64] Gugger.
[65] Muharraq is one of Bahrain's largest cities, located on a separate island and connected to the mainland Bahrain with three bridges. It will be explained in detail in chapter 6.
[66] Gugger.
[67] Manama is the capital of Bahrain, located on the north east side of the main island, and is the largest and most dense area in Bahrain. It will be further explained in detail in chapter 6.
[68] Fay Al Khalifa, *Bahrain: The Country of a Single City* (Manama, 2011).
[69] Department of Economic and Social Affairs.
[70] Hawar is a set of Islands not connected to the main land and is reachable via a thirty minutes journey from the south eastern coast of the mainland by fast boat. It is a natural reserve, in close proximity to Qatar and most of its land remains virgin with very little human activity. It includes one resort, and a population of about 4000 inhabitants, mostly working on overseeing the natural reserve or in a military base established in 1984 on the island.

Country	Urban			Rural			Proportion Urban %			Average Annual Change Rate %
	1990	2014	2050	1990	2014	2050	1990	2014	2050	2010-2015
Bahrain	437	1192	1684	59	152	151	88	89	92	0.1
Kuwait	2018	3421	6268	42	58	74	98	98	99	0
Qatar	442	2249	2978	34	19	6	93	99	100	0.1
UAE	1428	8054	14058	378	1392	1421	79	85	91	0.4
KSA	12411	24355	35839	3795	5015	4549	77	83	89	0.3
Oman	1197	3030	4380	614	896	685	66	77	86	0.6

Table 2-1 Proportion of urban and rural in the GCC countries[71]

2.3 Understanding Urban Sustainability

The human impact on the environment today is greater and more complex. Thus, the need for a more sustainable way of living is nowadays essential and will become even more important in the near future[72]. We should by now certainly be past the debate on whether there is a need to be more sustainable and instead looking for ways to achieve sustainability in various fields[73]. This assumption will be challenged in this research. Now that the understanding of "Urban" has been established in the previous section, it is important to understand sustainability in relation to the urban environment. That literature which recognises the relationship between the two concepts of urbanity and sustainability will be the focus of the coming pages, and to understand it, first sustainability should be understood.

"Sustainable" is an adjective in the English language (Sustain: Verb, Sustainability: Noun, Sustainably: Adverb) derived from the Latin *sustinere* (*tenere*, to hold; *sus*, up)[74]. The most popular meanings of the verb "sustain" are to "maintain", "support", and "endure"[75]. In general terms, sustainability merely indicates that an activity or an action is capable of being sustained[76]. That action, activity, service or object is therefore referred to as "sustainable", e.g. a sustainable product, sustainable living, sustainable building, sustainable neighborhood, and a sustainable city. Having initially defined the terms "sustainable" and "urban" separately, it is now possible to form an understanding of what "urban sustainability" or "sustainable urbanism" points towards. In very simple terms, it means urbanism that is sustainable, or in other words, it means that the way inhabitants of a particular city interact with their built environment is sustainable and will, therefore, enable the sustaining of that environment for the future.

Most of the literature showed that there are four principle changes transforming our lives, environment and the planet on which we all live[77]:

1. The ongoing increase in the world's population
2. The increase of human consumption and industrial activities
3. The increase in waste production and pollution

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[71] Department of Economic and Social Affairs.

[72] Forster Ndubisi, *The Ecological Design and Planning Reader* (Washington: Island Press, 2014).

[73] Robert Goodland, 'The Concept of Environmental Sustainability', *Annual Review of Ecology and Systematics*, 26 (1995), 1–24; John Morelli, 'Environmental Sustainability: A Definition for Environmental Professionals', *Journal of Environmental Sustainability*, 1 (2011), 1–9.

[74] Oxford Dictionaries, 'Definition of Sustainable - Ecology (British & World English)', 2013 <http://oxforddictionaries.com/definition/english/sustainable> [accessed 28 January 2013].

[75] Little Onions, ed., *The Shorter Oxford English Dictionary* (Oxford: Clarendon Press, 1964); Donia Zhang, *Courtyard Housing and Cultural Sustainability: Theory, Practice and Product* (Surrey: Ashgate Publishing, Ltd., 2013).

[76] Paul Johnston and others, 'Reclaiming the Definition of Sustainability', *Environmental science and pollution research international*, 14 (2007), 60–6.

[77] Dr. Anirban Adhya, Prof. Philip Plowright and Prof. James Stevens, 'Defining Sustainable Urbanism: Towards a Responsive Urban Design', in *Proceedings of the Conference on Sustainability and the Built Environment* (Saudi Arabia, 2010) <http://ipac.kacst.edu.sa/edoc/2010/183239_1.pdf>; Ed Ayres, *God's Last Offer: Negotiating for a Sustainable Future* (Four Walls Eight Windows, 2000).

4. The continuous extinction of flora and fauna

All of these changes are connected in one way or another to the process of urbanisation and the way we inhabit our cities and towns. Thereafter, cities or urban areas were seen by many as the cause for the majority of our environmental and social problems, including the degradation of the environment, the depletion of our resources, congestion, pollution, crime, poverty and other negative things[78]. However, Larson (2012) explained "it is where people want to be." James (2010) also debated that cities are "at the center of this human-made maelstrom. For all their vibrancy and liveliness, cities face a growing challenge to provide secure and sustainable places to live."[79] The large size of cities and their high densities causes problems to concentrate in those locations[80]; for instance, the excessive use of resources including land, water and energy, the various social and economic imbalances, the straining infrastructure and the many sanitation and health concerns[81].

Nevertheless, researchers also acknowledged the potentials of urban areas, especially from an economic perspective. For instants, Jenks (2000) debated "it is cities that drive economies, and it is within them that innovation accurse and an increasing part of global output in produced ... cities may have problems, but they are not necessarily a problem in themselves"[82]. James (2015) also argued that cities are "places of passion, hopes, and dreams ... Cities are the engine house of economic growth"[83]. This also relates to other recent notions such as the "knowledge economy", which will be further explained later. Madanipour (2011) defined it as "an economy in which knowledge is used as an economic asset"[84]; Griggs (2005) explained that the cities in which there is an emphasis on the quality of space are potential "key sites of the knowledge economy"[85]. Cities are therefore concentrators of problems but also centres of potential and have been viewed recently as "economic assets" rather than "urban liabilities"[86]. Thus, it is now a question of how we can have all the benefits of urbanisation without its disadvantages.[87] Recent initiatives were created to answer such a question; one of the most predominant is the LSC cities international centre at the London School of Economics and Political Science which advocates its research to investigate the relationship between the city and its inhabitants. It focuses on the effects of city designs on society, culture and the environment[88]. Nevertheless, the centre gives very limited consideration to the Arabian Gulf region cities. This research will attempt to challenge such a question by focusing on the Arabian Gulf in general and the sustainability of the urban environment in Bahrain in particular.

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[78] Harbert Girardet, *The Gaia Atlas of Cities: New Directions for Sustainable Urban Living* (London: Gaia Books, 1996); Jenks and Burgess.
[79] James.
[80] Forman.
[81] Jenks and Burgess.
[82] Jenks and Burgess.
[83] James.
[84] Madanipour, *Knowledge Economy and the City: Spaces of Knowledge*.
[85] Guy Briggs, 'The Intelligent City: Ubiquitous Network or Humane Enviroment', in *Future forms and design for sustainable cities*, ed. by Mike Jenks and Nicola Dempsey (Oxford: Architectural Press, 2005).
[86] Martin Boddy and Michael Parkinson, eds., *City Matters: Competitiveness, Cohesion and Urban Governance* (Bristol: The Policy Press, 2004).
[87] Kent Larson, 'Brilliant Designs to Fit More People in Every City' (TEDx Boston, 2012).
[88] London School of Economics and Political Science, 'LSE Cities', 2015 <https://lsecities.net/about/lsecities/> [accessed 4 June 2015].

2.4 Theories, Approaches and Movements Related to Urban Sustainability

The approaches and movements explained in this section are illustrated in Figure 2-1, and the main principles for the latest most influential movements are shown (Figure 2-2). The movements originated mostly in the US and the UK. Nevertheless, the urban planning system in Bahrain, as shall be seen later, is more influenced by the American models. Thereafter, although both contexts are of importance and will be discussed here, a focus is given to the American movements, which will later enable the understanding of the urban planning system and the urban setting in Bahrain.
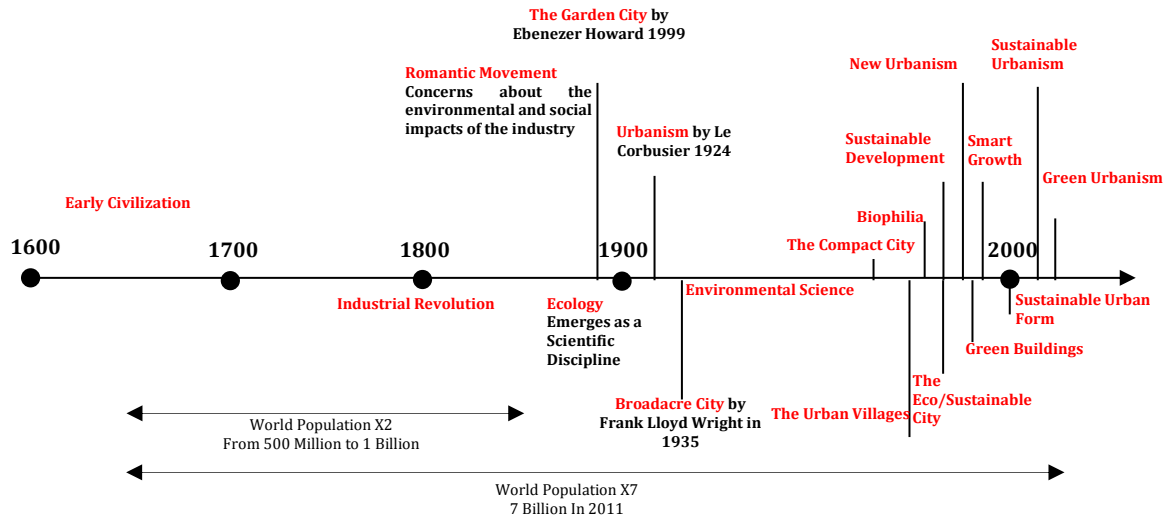
Figure 2-1 Movements related to urban sustainability

2.4.1 Cities of Tomorrow

The environmental and social impacts of the industry have resulted in concerns that date back to as early as the Romantic Movement at the beginning of the 19th century[89]. Those concerns were followed by the establishment of the "Garden Cities of To-morrow" concept and the foundation of the Garden City Association in 1899[90]. The movement was established by Ebenezer Howard and had some underlying principles relating to land values, community estates management, harmonising development with the natural environment, and optimising resources through planning[91]. Howard's model suggested that "Town and country must be married, and out of this joyous union will spring a new hope, a new life, a new civilization." Thomas (1985) criticised Howard's idea of the new "Town Country" as a separate solution. He explained that migrating from the old cities to those new towns was rather a fragile solution and that old cities should relate to the new towns[92]. Moreover, Edwards (1913) strongly criticised the garden city model for being dull and lacking ventilation despite being in the suburbs. He also criticised the environmental inefficiency of the detached garden houses and their social failures. He explained that man is a "social animal" that needs to be in close proximity to the town centre, where all the attractions are easily accessible: "Of all suburbs, perhaps the most shoddy and depressing is the typical Garden Suburb. It has neither the crowded interest of the town nor the quiet charm of the country."[93] Edwards explained that instead of building new towns, the existing ones should be upgraded to accommodate society's needs[94]. This criticism was also supported by Cullen (1953) and Richards (1953)[95].

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[89] Larry H. Peer, ed., *Romanticism and the City* (Canada: Palgrave Macmillan, 2011).
[90] Ebenezer Howard, *Garden Cities of To-Morrow* (Attic: Eastbourne, 1985).
[91] David Hall, 'Foreword', in *Garden Cities of To-morrow* (Attic: Eastbourne, 1985).
[92] Ray Thomas, 'Introduction', in *Garden Cities of To-morrow*, New rev. e (Attic: Eastbourne, 1985).
[93] Howard.
[94] Trystan Edwards, 'A Criticism of the Garden City Movement', *The Town Planning Review*, 4 (1913), 150–157.
[95] Richard Llewelyn, 'The Failure of the New Towns', *Architectural Review*, 114 (1953), 29–32; Gordon Cullen, 'Prairie Planning in the New Towns', *Architectural Review*, 105 (1953), 33–36.

Sustainable Development	Eco-Sustainable Cities	Sustainable Urban Form	Sustainable Urbanism	Green Urbanism
Environmental Protection: the conservation and preservation of natural resources and of the environment by ways we develop and use technology in balance with economic growth	The revision of land-use priorities for the creation of divers, dense, ecological, safe and pleasant mixed use habitations around transit and transfer facilities.	Compactness in Various forms		City based on its climatic conditions and site context
	Prioritizing walking, cycling, and carting by encouraging 'access by proximity'.		Increasing sustainability through density	City as a self-sufficient energy producer
	Restoring the natural environment including shore lines, creeks wetlands and ridgelines.	Mix of uses		Zero-waste city as closed loop eco-system
	Economically and culturally varied housing opportunities, which are safe, decent and convenient.			Closed urban water management and high water quality
Economic Growth without damage to the environment: specifically but not exclusively to meet the basic needs of developing nations of food, energy, water, sanitation, and employment	Enforcement of social justice through the empowerment of women and minorities.	Interconnected Street Layouts	Integrating transportation and landuse in an auto dependent era	The city that maximizes landscapes, gardens and biodiversity
				Eco-mobility and an efficient low impact public transport system
	Improvement of community gardens, greening projects and local agricultural activities.		Sustainable Neighbourhoods with walk-to-work neighborhood centres of locally owned businesses, share cars on every block, and walkable neighbourhoods	Construction using regional materials and prefabricated systems
	Encouraging innovative technologies, recycling and the conservation of resources to reduce hazardous wastes and pollution.	Strong Public Transport networks		Densification and intensification of existing districts
				Deep green building design and solar access
	Supporting ecological economic projects while avoiding polluting sources of the economy.	Environmental Control	Linking Humans to nature, including walk to open spaces, neighbourhood stormwater systems and waste treatment, and food production.	Special concern for affordable housing and mixed usage
				Local food supply and high food security
Social Equity: to achieve an equitable share of benefits of economic activities across all sections of the society	Proper management of material resources and encouraging volunteering and simplicity.			Public health and cultural identity: A safe and healthy city
				Urban governance and sustainable procurement methods
	Spreading awareness about the importance of the environment and biodiversity through educational activities that promotes sustainability matters to the public.	High standards of urban management	High Performance buildings and Infrastructure	Education and training in a sustainable urban development
				Particular sustainability strategies for developing countries

Table 2-2 Movements related to urban sustainability and their main principles

The Garden City concept was nevertheless one of the earliest models that can be related to urban sustainability. More recent movements such as the Eco-City, which will be explained separately later, have adopted similar principles to the 19th century Garden City, encouraging the establishment of entirely new towns because the existing ones became "completely dysfunctional" from an environmental sustainability perspective. However, because of the bad reputation of the Garden City and its new towns as an example of urban planning failure, the new towns of the later 20th century were rebranded as Eco-Cities[96]. Howard's model was followed by Le Corbusier's view of the city which was published in 1924 in his book "Urbanism". The book was later translated into English in 1929 by Frederick Etchells and renamed "The City of Tomorrow"[97]. Le Corbusier, like Howard, explained that the existing towns of the 20th century had done their job and that they were no longer worthy of inhabitation because they lacked order and geometry[98]. Le Corbusier's work was mostly criticised for relying on strict geometry and lacking variety and historical continuity[99]. In addition to Howard and Le Corbusier, Frank Lloyd Wright exhibited in 1935 his plan for Broadacre City, his ideal city of tomorrow. The plan, similar to the previous two examples, encouraged the building of new towns that are in stronger connection with nature; he explained in his model that the town "had gone to the countryside"[100]; nevertheless, Wright's model was more decentralised than Howard's earlier example of the Garden City. The three examples explained above were the most ambitious examples of urban planning in the 20th century[101] and have affected ever since the practice of urban planning worldwide. By the late 20th century, others like Jane Jacobs[102], Kevin Lynch[103] and Christopher Alexander[104] reflected on the social and environmental effects of such approaches to urban planning in western countries[105]. Nevertheless, no literature was found regarding the impact of such movements on the Bahraini urban planning context. This research will investigate the influence of those movements on the architecture and planning of towns in the Arabian Gulf states in general and Bahrain in particular.

2.4.2 Sustainable Development

Sustainability, as we shall see later, is commonly associated and often substituted for the term "sustainable development", which was defined in the Brundtland Report (Our Common Future) in 1987 as: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs"[106]. This concept was developed in response to concerns relating to the abuse of natural and environmental resources, and initiated from earlier arguments that highlighted the limitations of economic activities due to physical constraints of the environment[107]. Those concluded that "species and ecosystems should be utilized in ways that allow them to go on renewing themselves indefinitely."[108] In that sense, and from an environmental perspective, sustainability is the long-term and ongoing goal of sustaining humans and their ecosystems[109]. Bertolini (2005) argued that environmental sustainability today is given less attention than economic performance and social equity in political agendas worldwide. He suggested that environmental sustainability should be integrated with other objectives for it to

[96] Anthony Alexander, *Britain's New Towns: Garden Cities to Sustainable Communities* (London: Routledge, 2009).

[97] Frederick Atchells, *The City of To-Morrow and Its Planning by Le Corbusier*, Translated (London: The Architectural Press, 1971).

[98] Robert Fishman, *Urban Utopias in the Twentieth Century: Ebenezer Howard, Frank Lloyd Wright* (Cambridge: MIT Press, 1982); Atchells.

[99] Frederick Etchells, 'Introduction to the 1971 Edition', in *The City of To-morrow and its planning* (London: The Architectural Press, 1971).

[100] Fishman.

[101] Fishman.

[102] Jane Jacobs, *The Death and Life of Great American Cities* (London: Penguin UK, 1961).

[103] Kevin Lynch, *A Theory of Good City Form* (Cambridge: MIT Press, 1981).

[104] Christopher Alexander, *The Timeless Way of Building* (Oxford: Oxford University Press, 1980).

[105] Kevin Thwaites and others, eds., *Urban Sustainability through Envrional Design: Approaches to Time-People-Place Responsive Urban Spaces* (London: Routledge, 2007).

[106] United Nations, *Report of the World Commission on Environment and Development: Our Common Future - A/42/427 Annex - UN Documents: Gathering a Body of Global Agreements*, 1987 <http://www.un-documents.net/wced-ocf.htm> [accessed 22 December 2011].

[107] Hildebrand Frey and Paul Yaneske, *Visions of Sustainability: Cities and Regions* (London: Taylor & Francis, 2007).

[108] Sudhir Anand, 'Human Development and Economic Sustainability', *World Development*, 28 (2000), 2029–2049.

[109] Lehmann.

have a presence in urban developments[110]. Thus, environmental sustainability was associated with the economy from at least the mid-19th century. Robert Repetto (1985) explained that the decisions we make today should not affect the maintenance or improvements of the living standards of future generations and that the economic system should be managed in a way that allows us to consume the greatest amount possible without jeopardising future consumption patterns[111].

Both the environmental and economic threats to resources discussed above are consequences of human activities. Thus, the social is also rooted in this understanding of sustainable development. It is not only the social matters of a single community that is of the essence, but also worldwide humanity. United Nations (1987) stated "The Earth is one but the world is not. We all depend on one biosphere for sustaining our lives. Yet each community, each country, strives for survival and prosperity with little regard for its impact on others." The report further explained that while some nations consume resources in ways that exceed their actual needs, others consume far too little which exposes them to hunger and health problems[112]. The failure of the US along with Canada and the Arabian Gulf states to ratify the Kyoto Protocol[113] is an example of this[114].

The report stated six challenges that encouraged the establishment of the sustainable development concept:

1. Population and Human Resources
2. Food Security
3. Species and Ecosystems
4. Energy
5. Industry
6. The urban

The above challenges show the focus on environmental and economic concerns. Social concerns were less addressed in this notion at its earlier stages. Nonetheless, they were later given equal importance. United Nations (2014): "Urbanization is integrally connected to the three pillars of sustainable development: economic development, social development, and environmental protection."[115] These pillars will be discussed further later. Jenks (2000) debated that the United Nations definition of sustainable development remains valid only as a starting point and is often interpreted in different ways according to the interests of the interpreter. He defined sustainable development as "development that does not require resources beyond its environmental capacity, is equitable, promotes social justice, and is created through inclusive decision making procedures"[116]. While sustainability of the urban environment simply means to maintain or to endure that environment, the notion of sustainable development suggests that different multidimensional goals should be balanced and the succession of this balance should be judged[117]. This was criticised by Norgaard (1994) as being impossible to achieve: he suggested that each objective of sustainable development should be managed at a time to grant it the level of detail and control of it requires to be logically embarked upon[118]. Some researchers decide today to focus on one particular pillar of sustainability[119], while a few others articulate sustainability holistically[120].

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[110] Luca Bertolini, 'The Multi-Modal Urban Region: A Concept to Combine Enviromental and Economic Goals', in *Future forms and design for sustainable cities*, ed. by Mike Jenks and Nicola Dempsey (Oxford: Architectural Press, 2005).

[111] Robert Repetto, *The Global Possible: Resources, Development, and the New Century* (New Haven: Yale University Press, 1985); Anand.

[112] United Nations, *Report of the World Commission on Environment and Development: Our Common Future - A/42/427 Annex - UN Documents: Gathering a Body of Global Agreements*.

[113] The Kyoto Protocol adopted in 1997, aims to commit the party states to reduce greenhouse gases.

[114] Mohsen Mostafavi and Gareth Doherty, eds., *Ecological Urbanism* (Baden: Lars Muller Publishers, 2010).

[115] Department of Economic and Social Affairs.

[116] Jenks and Burgess.

[117] Jonathan M. Harris, 'Sustainability and Sustainable Development', in *Internet Encyclopaedia of Ecological Economics* (International Society for Ecological Economics, 2003).

[118] Richard Norgaard, *Development Betrayed* (London: Routledge, 1994); Jonathan M. Harris.

[119] See for example; Goodland; Mario Polèse and Richard Stren, eds., *The Social Sustainability of Cities: Diversity and the Management of Change* (Toronto: University of Toronto Press, 2000).

This research will consider the three pillars of sustainability, in addition to the two latest pillars that are going to be introduced in the coming chapter.

2.4.3   The Eco-city

The association of the many problems with the city and the focus on ecological concerns resulted in an aspiration to create more ecologically friendly cities and the introduction of the "Eco-city" concept in the 20th century. The concept was based on earlier discussions that had been taking place since 1971 by the United Nations[121] but was first introduced by Richard Register in his book, "Ecocity Berkeley: Building Cities for a Healthy Future", published in 1987[122] just at the time of the establishment of the sustainable development concept by the United Nations. Since then, many researchers have been interested in the production of Eco-cities and the term became very popular, particularly by the end of the 20th century[123]. The Urban Ecology organisation that was founded by Register in 1975 established some principles for the Eco-city[124], illustrated in (Table 2-2) Very often, the term "Eco-City" is used in relation to and sometimes substituted for the term "Sustainable City" which matured in the first few years of the 21st century. Lehmann (2010) explained that a sustainable city leaves the smallest ecological impact and produces as little pollution as possible. Also, it uses land and materials efficiently and implements waste-to-energy technology to minimise the city's overall contribution to climate change. He suggested that an Eco-city is "A holistic urban design solution that enhances the wellbeing of its citizens and society as a whole through integrated urban planning and management that fully harnesses the benefits of ecological systems and renewable energies, and aims for zero-emissions and zero-waste"[125]. However, similar to the concept of sustainable development, the term "Eco/sustainable city" meant different things to the different interest groups using it. Bulkeley and Bestsill (2005) explained that although there is almost a worldwide recognition of the importance of the sustainable cities concept as a policy goal, there is, however, less understanding of what this concept means in practice[126]. The concept of the sustainable city was tempting to use in many disciplines, but it was also very complex and intangible. Thus, the term was being measured differently by different interest groups. For instance, in engineering, the "sustainable city" was linked to the efficient use of resources, while in the social sciences the term was linked more to the social sustainability of communities in urban areas and concepts of social equity and cohesion. Guy and Marvin (1999) explained that when debating sustainable cities one can identify long drawn out diverse groups of interest, and that the different groups challenge each other's conception of what the future sustainable city should be[127]. This complexity is also related to the lack of universal understanding of urban areas, which was discussed in previous sections.

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[120] Williams, Burton and Jenks.

[121] Lehmann.

[122] Richard Register, *Ecocity Berkeley: Building Cities for a Healthy Future* (North Atlantic Books, 1987); Lehmann.

[123] David Satterthwaite, *The Earthscan Reader in Sustainable Cities (Earthscan Reader Series)*, ed. by David Satterthwaite (Routledge, 1999).

[124] Mark Roseland, 'Dimensions of the Eco-City', *Cities*, 14 (1997), 197–202.

[125] Lehmann.

[126] Harriet Bulkeley and Michele Betsill, 'Rethinking Sustainable Cities: Multilevel Governance and the "Urban" Politics of Climate Change', *Environmental Politics*, 14 (2005), 42–63; Katie Williams, 'Sustainable Cities: Research and Practice Challenges', *International Journal of Urban Sustainable Development*, 1 (2010), p.128–132 <http://find.shef.ac.uk/primo_library/libweb/action/display.do?tabs=detailsTab&ct=display&fn=search&doc=TN_tayfranc 10.1080%2f19463131003654863&indx=23&recIds=TN_tayfranc10.1080%2f19463131003654863&recIdxs=2&elementId =2&renderMode=poppedOut&displayMode=full> [accessed 20 January 2013].

[127] Guy Simon and Marvin Simon, 'Understanding Sustainable Cities: Competing Urban Futures', *European Urban and Regional Studies*, 6 (1999), 268–275; Williams, 'Sustainable Cities: Research and Practice Challenges.'

2.4.4 Urban Sustainability in the 21st Century

An Eco-city in its 21st century conceptualisation comes closer to the definition of terms like "sustaining cities"[128], "sustainable cities"[129], "Sustainable Urbanism"[130], "Ecological Urbanism"[131] and "Green Urbanism"[132] which were introduced at the beginning of the 21st century. The concepts relate more to the sustainability of urban rather than suburban developments and are rooted in earlier movements that emerged in the late 20th century[133]. Those have not only influenced planning in the United States but also, as we shall see later, in the Arabian Gulf: In brief, those are:

- **New Urbanism:** Is a movement that emerged in the early 1990s by the Congress for the New Urbanism (CNU), and is close to the Urban Villages concept in the UK, which was promoted in the 1980s[134], and the Poundbury example by Prince Charles Foundation in Dorchester[135]. New Urbanism is a movement that was more focused on designing better suburban developments[136] and unlike the models of the early 20th century explained above, new urbanism is also concerned with the restoration and upgrade of existing towns and city centres[137]. New urbanism bases its designs on traditional urban forms and encourages the organisation of urban areas into mixed-use, diverse, compact, pedestrian-oriented neighbourhoods around transit facilities[138]. The movement claims to encourage people to drive less and to build more compact communities[139]. However, New Urbanism has been criticised for creating "bedroom communities" where the dweller has to commute elsewhere for work[140], in addition to its implementation of 19th-century urban forms to settlements of the 20th century and its lack of green building design and landscape[141]. It has also been criticised for implementing general guidelines for design instead of respecting the local requirements[142]. Despite this criticism, new urbanism is the most influential planning movement in the US since the Modernist movement[143], due to the effectiveness of its design, its influence and selling of the CNU membership[144]. One of the latest examples of New Urbanism is the University of Taxes campus, shown in Figure 2-2.

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[128] Joseph Leitmann, *Sustaining Cities: Environmental Planning and Management in Urban Design* (New York: McGraw-Hill, 1999).

[129] Herbert Girardet, *Creating Sustainable Cities* (Devon: Green Books, 1999); David Satterthwaite, *The Earthscan Reader in Sustainable Cities* (London: Earthscan Publications Ltd, 1999); Graham Haughton and Colin Hunter, *Sustainable Cities* (London: Routledge, 2004).

[130] Farr.

[131] Mostafavi and Doherty.

[132] Lehmann.

[133] Hagan.

[134] Peter Williams and Helena Webster, 'Envisioning the Future: Sustainable Models for Rural Communities', in *Future forms and design for sustainable cities*, ed. by Mike Jenks and Nicola Dempsey (Oxford: Architectural Press, 2005).

[135] Louise Nystrom, *City and Culture: Cultural Proccesses and Urban Sustainability* (Kalmar: Lenanders Tryckeri AB, 1999).

[136] Derya Oktay, 'Human Sustainable Urbanism: In Pursuit of Ecological and Social-Cultural Sustainability', *Procedia - Social and Behavioral Sciences*, 36 (2012), pp.16–27 <http://dx.doi.org/10.1016/j.sbspro.2012.03.003> [accessed 8 October 2012].

[137] Congress for The New Urbanism, 'Charter of The New Urbanism', 2015 <https://www.cnu.org/charter> [accessed 5 June 2015].

[138] Charles Bohl, 'New Urbanism and the City: Potential Applications and Implications for Distressed Inner-City Neighbourhoods', *Housing Policy Debate*, 11 (2000), 761–801.

[139] Charles Tu and Mark Eppli, 'Valuing New Urbanism: The Case of Kentlands', *Real Estate Economics*, 27 (1999), 425–451.

[140] Ethan Goffman, 'The Smart Growth Manual Book Review', *Sustainability: Science, Practice and Policy*, 7 (2011), 89–90.

[141] Oktay, pp. 16–27.

[142] Jill Grant, *Planning the Good Community: New Urbanism in Theory and Practice* (London: Routledge, 2005); Geoff Boeing and others, 'LEED-ND and Livability Revisited', *Berkeley Planning Journal*, 27 (2014), 31–55.

[143] Bohl.

[144] Farr.

Figure 2-2 University of Texas at San Antonio, an example of New Urbanism

- **Smart Growth:** Is a movement that started in the US a short time after the establishment of New Urbanism in the mid-1990s. It emphasises the creation of denser, walkable and economically efficient urban developments[145]. The movement is also related to the "compact city" or "urban intensification" concepts in the UK[146]. Smart Growth does not encourage sprawl. Instead, it aims to create compact urban developments that require less maintenance, consume less land and are more appealing than sprawl[147]. An example of a city that benefits from Smart Growth is *Victoria, British Columbia[148],* Figure 2-3.The leading principles of Smart Growth are to[149]:

  1. Mix land uses.
  2. Take advantage of compact building design.
  3. Create a range of housing opportunities and choices.
  4. Create walkable neighbourhoods.
  5. Foster distinctive, attractive communities with a strong sense of place.
  6. Preserve open space, farmland, natural beauty, and critical environmental areas.
  7. Strengthen and direct development towards existing communities.
  8. Provide a variety of transportation choices.
  9. Make development decisions predictable, fair, and affordable.
  10. Encourage community and stakeholder collaboration in development decisions.

  Smart Growth policies were criticised for driving up the housing prices, which pushes minorities and lower income citizens out of the market[150]. It has also been criticised for the vagueness of its standards and the very limited impact it had on development patterns and the

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[145] Karen Danielsen, Robert Lang and William Fulton, 'Retracting Suburbia: Smart Growth and the Future of Housing', *Housing Policy Debate*, 10 (1999), 513–540; Oktay.

[146] Katie Williams, 'Can Urban Intensification Contribute to Sustainable Cities? An International Perspective', *City Matters: Official Electronic Journal of Urbanicity*, 2004.

[147] Tom Daniels, 'Smart Growth: A New American Approach to Regional Planning', *Planning Practice & Research*, 16 (2010), 271–279.

[148] Todd Litman, *Evaluating Criticism of Smart Growth* (Victoria, 2009).

[149] United States Environmental Protection Agency, 'About Smart Growth', 2015 <http://www2.epa.gov/smart-growth/about-smart-growth> [accessed 5 June 2015]; Danielsen, Lang and Fulton.

[150] QuantEcon, *Smart Growth and Its Effects on Housing Markets: The New Segregation* (Washington, D.C, D.C, 2002).

land use decision making processes in local jurisdictions, even after many years of its adoption by the general assembly of Maryland, in the US[151].

Figure 2-3 Victoria, British Columbia, an example of Smart Growth[152]

- **Green Buildings:** Is a movement led by the United States Green Building Council (USGBC) which was founded in 1993. It is said to be the most successful environmental movement in the United States[153]. A final version of the standard for green building was completed in 1995 and the Leadership in Energy and Environmental Design (LEED) was adopted one year later in 1996, followed by the pilot version in 1998 and its rating system in 2000[154]. The LEED system is close to the British BREEAM rating system. LEED aims to accredit professionals and certify projects based on their point score towards sustainability[155]. There are, however, two drawbacks to this movement. The first is the limited number of buildings that have achieved certification by the LEED system, due to the LEED documentation being "too rigorous" and "no longer cutting edge"[156]. The second is that LEED buildings are "centric-focused" and have a very low consideration of the project's location and context. It is instead focused on the stand-alone building[157]. The last drawback was resolved when the USGBC introduced the LEED for the Neighborhood Development rating system in collaboration with the Congress for New Urbanism and the National Resource Defense Council. After the establishment of the LEED for the Neighborhood Development rating system, the USGBC board modified the organisation's mission to include both buildings and the community. Today, because of the increasing number of LEED-accredited professionals, it is essential to the development of sustainable urbanism in the United States[158].The green building movement and the LEED programme has the most influence, as we shall see later, on the work of governmental organisations who aspire to achieve sustainability in Bahrain.

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[151] Rebecca Lewis, Gerrit-Jan Knaap and Jungyul Sohn, 'Managing Growth With Priority Funding Areas: A Good Idea Whose Time Has Yet to Come', *Journal of the American Planning Association*, 75 (2009), 457–478.

[152] Aryze, 'Picture of Victoria', 2015 <http://aryze.ca/neighborhoods/james-bay> [accessed 5 June 2015].

[153] Charles Kibert, *Sustainable Construction: Green Building Design and Delivery* (John Wiley & Sons, 2007).

[154] Farr; Megan Turner, 'Is LEED a True Leader? Studying the Effectiveness of LEED Certification in Encouraging Green Building', *Pomona Senior Theses* (Pomona College, 2010), Paper 1.

[155] U.S. Green Building Council, 'LEED Rating Systems', 2013 <http://new.usgbc.org/leed/rating-systems> [accessed 8 February 2013].

[156] Ted Smalley Bowen, 'Constructive Criticism for Green Standards', *Grist Magazine*, April 2005.

[157] Bowen.

[158] Farr.

Figure 2-4 Melrose Commons, New York, and example for LEED of Neighbourhood Development[159]

In addition to the three most debated principles of sustainability that were introduced in the sustainable development model – environmental protection, economic growth, and social equity – density and mixed use, the reduction of automobile dependency, the neighbourhood as the city building block, and using advanced technologies are shared principles among the latest different movements related to urban sustainability (see Table 2-1).

1. **Density**

The concept of density or the "concentrations in space and time" [160] provided by cities leads to one of the central debates in urban planning. Researchers and practitioners continue to question whether the compact, dense urban areas are more sustainable than low-density sprawl developments[161]. Farr (2007) explained in his model that density is "the hot button of sustainable urbanism" and highlighted the need to create more dense urban settlements because density provides across-the-board decrease in per-capita resource use. He also argued that increasing density has many benefits not only on the local level but also the regional and global, for example, by reducing greenhouse gases that contribute to the global problem of climate change[162]. Cities were argued to have the potential to combine the advantages of having safe, healthy, culturally rich and enjoyable lifestyles with much lower levels of energy consumptions, resource use and production of waste[163]. Williams, Burton and Jenks (2000) explained that the compactness provided by cities reduces travel distances and the emission of gases. They also stressed that density contributes to making service provision, waste disposal, transport, education and

[159] Congress for The New Urbanism, 'Melrose Commons LEED for Neighborhood Development', 2012 <https://www.cnu.org/resources/projects/melrose-commons-leed-neighborhood-development-2012> [accessed 5 June 2015].

[160] Madanipour, *Knowledge Economy and the City: Spaces of Knowledge*.

[161] Akiko Okabe, 'Towards the Spacial Sustainability of City-Regions: A Comparative Study of Tokyo and Randstad', in *Future forms and design for sustainable cities*, ed. by Mike Jenks and Nicola Dempsey (Oxford: Architectural Press, 2005).

[162] Farr.

[163] UN Centre for Human Settlement, 'Cities as Solutions in an Urbanizing World', in *An Urbanising World: Global Report on Human Settlements* (Oxford: Oxford University Press, 1996), pp. 417–421; Satterthwaite, *The Earthscan Reader in Sustainable Cities (Earthscan Reader Series)*.

healthcare more feasible[164]. Jenks and Dempsey (2005) also argued that densification is a strategy that could only work if the development was to provide a good quality of life. They suggested that living in dense developments is a fashionable and desirable lifestyle[165].

This connection between the need to create more dense urban forms and sustainability has been discussed not only by researchers but also by people who work in regenerating cities around the world. Jaime Lerner, an architect and urban planner, reinvented the urban space in his native home of Curitiba, Brazil, and changed, through his experience of regenerating cities, the way city planners worldwide view the potentials in the metropolitan landscape. He discussed in a TED talk the eccentric solutions to vexing urban problems. He started his talk by saying "City is not a problem, city is a solution … and more and more I am convinced that it is not only a solution for a country but a solution of climate change"[166]. This notion corresponds to Farr's and others' explanations of density. Therefore, Density is an essential requirement to attain urban sustainability, not only in western models, but also in the global sense, and especially in Bahrain, a country that suffers from land scarcity. Thus, it is one of the requirements accounted for in this study.

Farr, Dempsey, and most of the literature focus on the western and Far-Eastern worlds, but Jenks dedicates some of his work on the impact of compactness on the sustainability of developing countries, specifically 11 countries including but not exclusive to South African cities, Latin American cities, and Asian cities, although he still gave close to zero consideration to the situation in the GCC countries. Given that, as we shall also see in chapter 6, Bahrain is one of the densest countries in the world, this research will thereafter add to this notion by examining the impact of density in Bahrain through investigating the overall sustainability of the urban environment. Nevertheless, as discussed before, many blame cities and dense urban areas for our various failures, such as environmental degradation, and the lack of social cohesion and justice[167]. Also, some argue that higher densities do not necessarily mean more connectivity or accessibility. For instance, Kaido (2005) explained that density will only offer higher levels of accessibility in areas of large populations (700,000 residents or more) while in medium-sized urban settlements (200–500,000 residents) it is hard to define reliable levels of accessibility. He also explained that other variables such as climate affect the standard of accessibility in some areas[168]. Thus, due to the harsh climate of Bahrain and since all of Bahrain's settlements, as shall be presented in chapter 6, are of small to medium scale, density will have to be carefully considered in the contextual understanding of urban sustainability.

2. Reduction of automobile dependency: Sustainable Corridors

The reduction of automobile use and encouraging more sustainable forms of transportation is rooted, as seen from (Table 2-2), in many movements of sustainability. For instance, Farr (2007) explained the concept of "Sustainable Corridors" which are a means of connecting one area to another in a cheap, efficient and safe way. In addition, they allow people to move from one area to another without depending on cars or insufficient automobiles, and they also include biodiversity corridors to allow flora and fauna to live inside and around urban areas[169]. Farr explains the importance of sustainable corridors by illustrating the necessity to create another alternative for people to move around so they can be freed from their dependency on automobiles. He further explains the connection between sustainable corridors and density by, for example, illustrating that for a basic bus service there should be a minimum of 7 dwelling units per acre[170] and for a light rail service it is advised to have a density of at least 22 dwelling units per acre. The sustainable corridors system allows the integration of three important elements in planning today – transportation, land use, and technology – to create a proper sustainable dense urban scheme. In

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[164] Williams, Burton and Jenks.

[165] Mike Jenks and Nicola Dempsey, 'The Language and Meaning of Density', in *Future forms and design for sustainable cities*, ed. by Mike Jenks and Nicola Dempsey (Oxford: Architectural Press, 2005).

[166] Jaime Lerner, 'Jaime Lerner Sings of the City ' (TED Talks, 2007).

[167] Satterthwaite, *The Earthscan Reader in Sustainable Cities (Earthscan Reader Series)*; UN Centre for Human Settlement.

[168] Kiyonobu Kaido, 'Urban Densities, Quality of Life and Local Facility Accessability in Principal Japanese Cities', in *Future forms and design for sustainable cities* (Oxford: Architectural Press, 2005).

[169] Farr.

[170] 1 ac = 4046.8564224 m^2

addition to Farr's explanation of the system, sustainable corridors have been discussed by other researchers as well. Oswald and McNeil (2010) explained the importance of urban transportation corridors. The primary outcome of their research was a sustainable corridor rating system (SCRS); the methodology defined by the authors is meant to be applied universally to the development of sustainable rating systems similar to the sustainable corridor rating system (SCRS)[171]. No evidence that investigates the concept of sustainable corridors within the context of the Arabian Gulf Countries in general and Bahrain in particular was found in the literature. In the Bahraini policies, the closest to the idea of sustainable corridors is the "Organic Growth" concept suggested by SOM in 2007 to "create distinct communities connected by farmlands, palm groves and active open spaces to preserve existing character"[172]. This research does not attempt to use the specific area requirements in measuring the provision of public transportation illustrated above. The American model cannot, and should not, be replicated in Bahrain for many geographic, environmental and cultural reasons. Those will be explained later. Nevertheless, the very concept of connecting one area to another in an affordable, efficient and safe manner is recognised as a requirement for urban sustainability. The mobility of both humans and other living creatures should be respected when planning urban areas.

3. Sustainable neighbourhoods

Cities, towns, and suburbs consist of a number of adjacent neighbourhoods. The Oxford dictionary defines a neighbourhood as "A district or community within a town or city."[173] Nevertheless, similar to "urban" and "city", "Neighborhood" has been argued to be a subjective term, which is not only defined differently across nations and cultures but also perceived differently by the inhabitants of the same neighbourhood[174]. The neighbourhood is defined by the US National Commission on Neighborhood States as "what the inhabitants think it is". Jenks and Dempsey (2007) attempted to understand the English neighbourhood by examining the neighbourhood boundaries as perceived by the residents and using the emergent description to assess the validity of theory-based definitions of the term. The research concluded that "it is possible to capture the total area that residents consider to be their neighborhood by employing objective delineation methods."[175] To Farr, one neighbourhood allocated alone in the suburbs is a "village"; two or more neighbourhoods gathered in one area sharing a main street or a centre is a "town"; and an assembly of many high-quality neighbourhoods will make up a "city"[176]. Madanipour (2003) considered the neighbourhood to be the 'unit of city building'[177]. The neighbourhood scale was argued to be the best at which social sustainability is measured[178]. Dempsey and Jenks (2007) explained that there is a lack of consensus on what components an area should have to be considered a neighbourhood. The authors summarised some of the key components of a neighbourhood in the literature, which included: a primary school, primary healthcare, local shops, open space, a pub, a café/restaurant, and a bus stop. The literature advises that those facilities ideally be situated within a walking distance of 400–900 metres of residential areas[179].

Kent Larson, an American practitioner, also identified the neighbourhood as "the compact urban cell" and advised on providing most of what people want within a 20-minute walk. He argued that the neighbourhood could also be "a resilient electrical micro-grid. Community heating, power, communication networks, etc., can be concentrated there"[180]. He further illustrates the possible variation of densities in those urban cells: "you can dial up the density of about 20,000 people per cell [neighborhood] if it is Cambridge. Go up to 50,000 if it is Manhattan density".

[171] Michelle Oswald and Sue McNeil, 'Rating Sustainability: Transportation Investments in Urban Corridors as a Case Study', *Journal of Urban Planning and Development*, 136 (2010), 177–185.
[172] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.
[173] Oxford Dictionaries, 'Neighbourhood' (Oxford University Press, 2010)
<http://oxforddictionaries.com/definition/english/neighbourhood?q=neighbourhood> [accessed 16 March 2011].
[174] Nicola Dempsey and Mike Jenks, 'Defining the Neighbourhood: Challenges for Empirical Research', *The Town Planning Review*, 78 (2007), 153–177.
[175] Dempsey and Jenks.
[176] Farr.
[177] Ali Madanipour, *Public and Private Spaces of the City* (New York: Taylor & Francis, Inc., 2003).
[178] Nicola Dempsey, 'Quality of the Built Environment in Urban Neighbourhoods', *Planning Practice and Research*, 32 (2008), 249–264.
[179] Dempsey and Jenks.
[180] Larson.

The different ideas of what makes up a neighbourhood are recognised. However, this research attempts to investigate urban sustainability in the broader context; it does not try to look at individual neighbourhoods, but rather is focused on the overall urban areas and new towns. Thus, the public understandings and perceptions of what makes up a neighbourhood in the Bahraini context are outside the scope of this research.

4. High-performance buildings and infrastructure

The use of high-performance buildings and infrastructure is being increasingly debated by many researchers and practitioners of urban sustainability and has established the basis of sustainable movements such as the sustainability building performance and the USGBC certification programme explained earlier[181]. Kent Larson, an architect who is interested in designing technologies that solve the biggest problems facing cities, argued that two of the biggest problems are mobility and density. Both of which, he suggested, can be solved using high technology solutions. For example, using shared-use compact foldable vehicles, which in his argument, should not only enable the cutting down of vehicle use from one to four persons per vehicle, but also reduce the car-parking footprint[182]. He explained how "you get out of the car, you park at your destination, you pat it on the butt, it goes and parks itself, it charges itself and you can get something like seven times as many vehicles in a given area as conventional cars, and we think this is the future. Actually we could do this today. It is not a problem … We can get something like 28 times the land utilization with that kind of strategy"[183]. Similar concepts are crucial in the context of Bahrain because of its very high density and small size, which will be further explained in chapter 6. Earlier in history, Giddings at al. (2005) highlighted that technology could be used as a tool for solving urban problems, but it cannot cure all of our problems. He suggested that what is today needed is a change in the present economic and political norms of cities[184]. Larson (2012) also discussed housing as another challenge facing cities today where improvements can be made using technology[185]. This, as we shall see later, is also the case in Bahrain. He suggested that small lofts with personalised technology-enabled infill components, furniture and carpentry could be the solution. Larson explained that using technology can enable designers to make a small apartment function as if it were double its size: "I do not believe in smart houses. That is sort of a bogus concept. I think we should build dumb homes and put smart stuff in them"[186]. Thus, technology is recognised as a tool to achieve urban sustainability in this research. Along the same line of discussion, Eduardo Paes (2012), the mayor of Rio de Janeiro, discussed in a talk the four big ideas that could lead cities in the future, which included a "bold and do-able infrastructure upgrade and how to make a city smarter"[187]. He explained that it is "not a necessity for cities to be rich or powerful to improve", and stressed that "improvements can be done using original yet basic ideas with the help of new technology"[188].

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[181] Farr.

[182] Black asphalt contributes to the urban heat island because its stores heat. It also causes storm water runoff and the degradation of water quality. For more about this see; Lawrence Baker and others, 'Urbanization and Warming of Poenix (Arizona, USA): Impacts, Feedback, and Mitigation', *Urban Ecosystems*, 6 (2002), 183–203; Danilo Palazzo and Frederick Steiner, *Urban Ecological Design: A Proccess of Regenerative Places* (Washington: Island Press, 2011).

[183] Larson.

[184] Bob Giddings and others, 'Back to the City: A Route to Urban Sustainability', in *Future forms and design for sustainable cities*, ed. by Mike Jenks and Nicola Dempsey (Oxford: Architectural Press, 2005).

[185] Larson.

[186] Larson.

[187] Eduardo Paes, 'The 4 Commandments of Cities' (TED Talks, 2012).

[188] Paes.

2.5 Quality of Sustainability

Some very recent literature has debated the quality of sustainability. Matters of what constitutes a "good" or "high" quality urban environment were argued to be lacking in the literature, despite the recognition of the direct impact it has on the everyday lives of people[189]. James (2015) questioned what is "good", "positive" and "strong" sustainability as appose to "weak" sustainability which will "enable urban life to endure in a minimal sense"[190]. All three are subjective terms that cannot be easily measured. He questioned what made a development "good or positively sustainable" and why our cities continue to fall into a series of crises if sustainability experts and planners can identify the problems and have answers for them[191]. The limitations of knowledge and understandings of sustainability will be challenged in this research.

James (2015) highlighted some "urban paradoxes" in answering those questions. The first is that the more language of sustainability is articulated, the more it indicates attempts to rationalise unsustainable developments. The second paradox reassures us that cities are at the centre of problems facing the world today; however, James argued that developing a "positive" and sustainable urban living is the only way to ensure the continuation of social life as it is past the end of this century[192]. This research recognises the importance of good quality urban living and the sustainability of the urban environment and will focus on the understanding of what is "good" urban sustainability within regions of cultural change, particularly in the Arabian Gulf context which is going to be threatened with more cultural change in the coming years upon the depletion of oil[193].

The third paradox identified by James is related to acknowledging the complexity of this topic and the importance of studying urban sustainability holistically, rather than focusing on the environmental, the economic or the social. He argued that the "contradictory pressures" of the requirements of sustainability should not be seen as an excuse for dealing with sustainability incomprehensively. The fourth paradox is related to social cohesion: "As social life is mediated by technologies of communication and is reduced to consumption choices, the more the immediacy of face-to-face community life is romanticized". This was also discussed by Dempsey (2009) who argued that a large sum of literature tackling sustainable communities adheres to the "community lost" theory and explains the need to recapture those lost traditions[194]. The interest in strengthening the "lost" community intactness was argued to be important by some. Flint (2012), for example, explained that regeneration and renewal programs attempt to "strengthen the cohesion and fabric of the social dynamics within neighborhoods"[195]. Although, as discussed before, the strength of the community or social relationships is very subjective and can be perceived differently by different social groups, it is recognised as an important element in the sustainability of urban areas. This research is, however, more concerned about the ideologies of the implementers and the decision making process that governs the sustainability of the urban environment, rather than assessing sustainability at the neighbourhood or building scale. Nevertheless, the perceptions of officials who work with the built environment on matters relating to the loss of the community will be investigated. Finally, the last paradox identified by James argues that planning has often resulted in worse outcomes than leaving development to serendipity, however, with the shared global tragedies, long-term planning is now a necessity. This research focuses on the decision making process, and the understandings and perceptions of

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[189] Jahn Gehl, *Life Between Buildings: Using Public Space* (Copenhagen: Island Press, 2001); Dempsey, 'Quality of the Built Environment in Urban Neighbourhoods.'
[190] James.
[191] James.
[192] James.
[193] Rem Koolhaas, *Al Manakh*, ed. by Ole Bouman, Mitra Khoubrou, and Rem Koolhaas (Netherlands: Stichting Archis, 2007).
[194] Nicola Dempsey, 'Are Good-Quality Enviroments Socially Cohesive?: Measuring Quality and Cohesion in Urban Neighbourhoods', *Town Planning Review*, 80 (2009), 315–345; Raymond Pahl, 'The Search for Social Cohesion: From Durkheim to the European Comission', *European Journal of Sociology*, 32 (1991), 345–360.
[195] John Flint, 'Neighbourhood Sustainability: Residents' Perceptions and Perspectives', in *The future of sustainable cities: Critical reflections* (Bristol: The Policy Press, 2012).

officials who work in disciplines related to the built environment, and in particular, those who are overseeing the planning of mega-urban projects and areas in Bahrain.

2.6 Urban Sustainability in the Bahraini Governmental Strategies

Given the very different cultural and environmental circumstances of Bahrain, the above-discussed models of urban sustainability cannot and should not be directly copied into the context. Nevertheless, the latest governmental strategies in Bahrain, which were prepared by overseas consultants and are influenced by the western models explained earlier, suggest five scales for the national plan: the national scale, the island scale, the governorate scale, the community (neighbourhood) scale and the street scale. The governmental strategy encourages a number of concepts and principles, some of which are directly related to the government's aspirations for a local neighbourhood in Bahrain; see also Figure 2-5 and Figure 2-6[196]:

1. **Organic growth:** distinct communities connected by farmlands, palm groves, and active open spaces to preserve existing character.
2. **Distinct district:** adjoining neighbourhoods can combine to form a larger district with a district core. Facilities found in the core include Juma Mosques[197], secondary schools, social/cultural buildings, and municipal offices.
3. **Walkable neighbourhoods:** neighbourhoods provide local identity and affiliation and are the basic component of Bahrain's urban form.
4. **Neighbourhood centres:** centres with public services, such as mosques and schools around open spaces, parks or major pedestrian streets provide new housing to complement existing villages by following traditional growth patterns with vernacular housing and infill in villages within 500 metres of the historic centre.
5. **Commercial corridors:** commercial corridors, or souks, should run along main streets or special places. In the larger district, these commercial corridors define the boundaries of residential neighbourhoods. Commercial corridors arise and thrive when adjacent to residential areas to promote walking and daily usage.
6. **Organic street patterns:** irregular street patterns create short view corridors adding to a sense of privacy. This adds a layer of character not present in newer neighbourhood projects.
7. **Agricultural preservation:** preserves and interweaves agricultural land, palm groves and heritage sites.
8. **Open waterfront:** enhances opportunities for new mall marinas, fishing piers, and open space along the public waterfront.
9. **Direct village expansion:** initiatives by the village expansion unit should be incorporated and supported by the national plan.

The above concepts and principles were outlined in response to critical issues facing the urban environment in Bahrain: "much of the cultural structure of Bahrain is built upon village identity, and fragmented growth does not support the strong community framework encouraged by the national plan"[198]. The national plan pointed out the lack of social and community structures in the isolated new developments in Bahrain, which relates to the earlier discussion by James, Dempsey and Flint. The plan also points to the growth of single-use areas and the decline in traditional uses such as agricultural practices that was said to be "endangering the character and district nature of communities". It also highlights the degradation of building values and spaces and the rapid infill of areas between communities. Another issue that led to the emergence of the above concepts is that houses are being built on vacant land, before infrastructure is put in place. Finally, it highlighted the prevention of the successful planning and completion of national road systems by isolated developments.

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[196] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.
[197] Grand mosques usually used for the weekly Friday prayers, would be the equivalent of a cathedral in a Christian country.
[198] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.

All of the movements mentioned above towards urban sustainability acknowledge in one way or another the three pillars of sustainability: economic efficiency, social benefits, and environmental control. Echenique (2005) explained "Like a tripod, the omission of any of the three legs supporting a plan would unbalance a city and affect its long term sustainability"[199]. Even at the local level, the three pillars of sustainability were used as base concepts for the Bahraini 2030 National development plan, which advises to "establish a strategic sustainable development framework that is centered on three pillars of sustainability"[200]. Thus, very limited consideration has been given to the global perspective of cultural sustainability, a fourth pillar that emerged recently in other countries in the Arabian Gulf. This will be discussed in relation to the cultural change in the coming chapter.

The above discussion also showed that there is less agreement in the literature as to what the three pillars constitute, and how they should be implemented and measured. Even if there was an understanding of the three pillars, there is still a dilemma of how to integrate them holistically[201]. The various global models of urban sustainability explained above, and the regional models that are yet to be described in the next chapters are recognised; nevertheless, this research does not attempt to invent an original methodology or a model to measure or assess sustainability. This is usually the scope of research targeted at the building or neighbourhood scales. This research is, however, focused on the decision making process, and its role, particularly in the sustainability of urban planning at the city or national scale. Therefore, it will instead use the above-mentioned and yet to be explained models in assessing the role of the government in stimulating or preventing urban sustainability in Bahrain today. This will be further explained in the methodology chapter. Williams and Webster (2005) stressed that when implementing sustainable principles in local environments, policy and decision makers face real challenges in "understanding the multi-dimensional dynamics of the existing heterogeneous condition, let alone finding mechanisms to steer change towards integrated sustainable futures"[202]. This, as we shall see later, is also evident in Bahrain. The government is struggling to implement the different strategies of urban sustainability suggested by consultants. Thus, this research aspires to conclude with recommendations to assess future policy modifications in Bahrain in order to incorporate mechanisms that will attain a more sustainable future for the urban environment.

The literature mentioned above explains western models of Sustainable/Green/Eco-cities, Urbanism or Urban Forms, but limited models have been created in the context of the Arabian Gulf in general and Bahrain in particular. This will be further illustrated in chapter 5. An emerging body of literature focuses on criticising such models, systems and strategies of sustainability developed during the 1990s and 2000s. In their book, "The Future of Sustainable Cities: Critical Reflections", Flint and Raco (2012) discussed the work of leading scholars to rethink the challenges facing sustainable urban development today. Their book concluded with an examination of the key conceptual and empirical challenges facing researchers of sustainability today, and identified the themes and matters in need of urgent review by those who play a role in the development of cities. The authors argued that there were early signs of the intensification of the tension and dilemmas around urban sustainability, its theory, and practices. They further suggested two new research agendas to rethink sustainability. The first is to rethink the relationship between the state and civil society, and the second is to research the growing importance of multi-level scales of governance[203]. Thus, this research will add to our understanding of urban sustainability in the context of the Arabian Gulf by focusing on the work of the government. The understanding of sustainability and urban sustainability concepts between officials will be investigated, and the sustainability of the processes and outputs of governmental organisations concerned with the built environment will be questioned.

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[199] Marcial Echenique, 'Forcasting the Sustainability of Alternative Plans: The Cambridge Futures Experience', in *Future forms and design for sustainable cities*, ed. by Mike Jenks and Nicola Dempsey (Oxford: Architectural Press, 2005).
[200] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.
[201] Echenique.
[202] Williams and Webster.
[203] John Flint and Mike Raco, *The Future of Sustainable Cities: Critical Reflections* (Bristol: Policy Press, 2012).

Distinct Districts
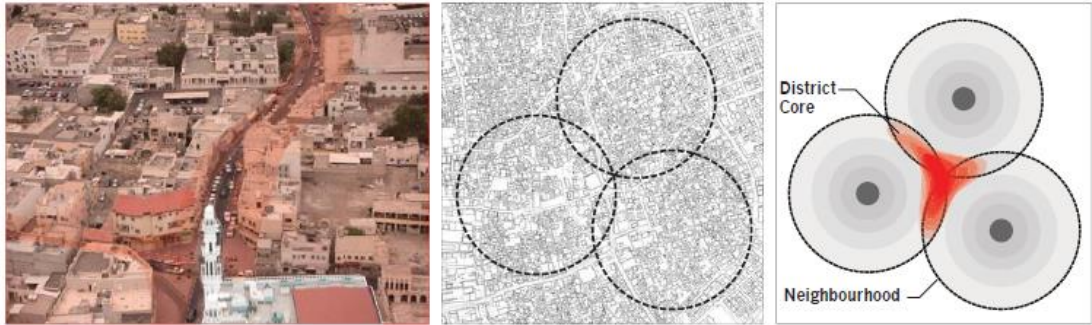
Walkable Neighbourhoods

Neighbourhood Centres

Figure 2-5 Principles of organic growth of villages, towns and cities in the Bahrain National Plan 2030[204]

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[204] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies.*

Commercial Corridors

Organic Street Patterns
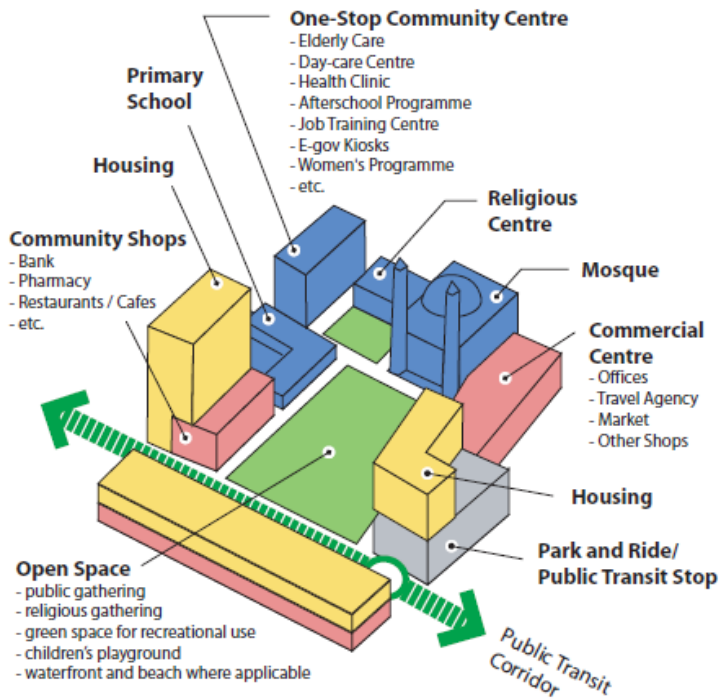
Figure 2-6 Community centre within the neighbourhood, proposal of the Bahrain National Plan 2030[205]

[205] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies.*

2.7 Role of Urban Governance and Local Knowledge in Urban Sustainability

2.7.1 Urban Governance and Sustainability

Urban change and the study of cities are now vital to policy makers, practitioners and academics alike, not only in the UK or Europe but also internationally[206]. Furthermore, urban governments are argued to have an increasingly important role, with the support of the institutional regulatory and financial framework, in controlling consumption, reducing pollutants and adapting to the consequences of climate change[207]. Often, western analysts point out the lack of knowledge and experience between local decision makers and councillors. This research will examine this notion within the Bahraini context. Commentators further stress that knowledge about the impact of urbanity on the environment, in addition to the modelling and monitoring of the flow of resources and assessing sustainability indicators, are prerequisites for improving urban sustainability[208]. Bulkeley and Bestsill (2005) argued that understanding how urban sustainability is constructed and challenged requires the analysis of multilevel scales of governance, rather than choosing between levels or scales of analysis[209]. Both the personal characteristics of local leaders and the wider structure they operate, including the nature of policy, the institutional arrangement and the relationship between leaders and their employees, are important in the overall understanding of urban sustainability[210]. This research focuses first on the understandings and knowledge of officials working with the built environment in Bahrain, then on the relationships between governmental organisations and the implications of those relationships and knowledge on the local urban planning policy and practices.

Madanipour, Hull and Healey (2001) debated that for spatial planning systems to be transformed into valued governance activities in the next century, governance needs to be linked to new ideas of space[211]. Furthermore, Birkmann et al. (2010) called for new types of "adaptive urban governance" which are more advanced than the conventional concepts of urban planning. They argued that there was a need for a change of focus from merely adjusting physical structures and built environments to be more sustainable, to improving the existing planning tools and governmental processes and structures. Furthermore, the authors stressed the need to work with multiple kinds of knowledge, the local and the expert, to improve the integration of different sorts of "measures, tools and norm systems"[212]. Public participation has also been identified as an important contributory tool for urban sustainability[213]. Therefore, local governments have become increasingly interested in encouraging and promoting good quality, long-term public participation[214]. In a research undertaken within the context of the UK, Macnaghten and Jacobs (1997) investigated, using focus groups, the degree to which the public in Lancashire understands the concepts of sustainable development and accepts that there is "a problem of unsustainability". The research concluded that both the "unsustainable situation" and the "desired sustainable future" received public recognition. The researchers suggested that the term "sustainability" was not used throughout the focus groups or recognised by the participants. Nevertheless, its meaning was

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[206] Martin Boddy, ed., *Urban Transformation and Urban Governance: Shaping the Competitive City of the Future* (Bristol: The Policy Press, 2003).

[207] David Satterthwaite, *Climate Change and Urbanization: Effects and Implications for Urban Governance* (New York, 2008).

[208] Roberta Capello, Peter Nijkamp and Gerard Pepping, *Sustainable Cities and Energy Policies* (Berlin: Springe-Verlag, 1999); Joe Ravetz, *City-Region 2020 : Integrated Planning for a Sustainable Environment* (London: Earthscan Publications Ltd, 2000).

[209] Bulkeley and Betsill.

[210] Boddy and Parkinson.

[211] Ali Madanipour, Angela Hull and Patsy Healey, *The Governance of Place: Space and Planning Processes* (Aldershot: Ashgate Publishing, Ltd., 2011).

[212] Jörn Birkmann and others, 'Adaptive Urban Governance: New Challenges for the Second Generation of Urban Adaptation Strategies to Climate Change', *Sustainability Science*, 5 (2010), 185–206.

[213] Richard George Rogers, *Towards an Urban Renaissance* (London: Urban Task Force, 1999).

[214] Judith Innes and David Booher, 'Reframing Public Participation: Strategies for the 21st Century', *Planning theory & practice*, 5 (2004), 419–436; Marcus Andre Melo and Gianpaolo Baiocchi, 'Deliberative Democracy and Local Governance: Towards a New Agenda', *International Journal of Urban and Regional Research*, 30 (2006), 587–600; Robert Dahl, 'A Democratic Dilemma: System Effectiveness versus Citizen Participation', *Political science quarterly*, 109 (1994), 23–34; James Creighton, *Involving Citizens in Community Decision Making: A Guidebook* (Creighton: Creighton & Creighton Inc., 1992); Lisa Bingham, Tina Nabatchi and Rosemary O'Leary, 'The New Governance: Practices and Processes for Stakeholder and Citizen Participation in the Work of Government', *Public administration review*, 65 (2005), 547–558.

understood widely once clarified. Their study also showed that the participants considered governmental institutions as being "part of the system" which contributes to the various environmental and social problems rather than solving them[215]. Moreover, Weber and Stern (2011) looked at the public understanding of climate change within the context of the US, and concluded that there is an inherited difficulty in understanding such concepts. The authors suggested ways in which psychology can assist in increasing the public understanding of climate change and link this understanding with stronger actions[216]. Nevertheless, no empirical research has been conducted within the context of the Arabian Gulf in general or Bahrain in particular that deals with such inquiries. This research does not attempt to investigate the public understanding of sustainability for various reasons that are going to be explained in Chapter 4. It will, however, investigate the understandings of officials working in fields related to the built environment in Bahrain, an inquiry that has never been tested via empirical evidence.

2.7.2   The Knowledge Economy

Recent literature focuses on the ability of cities to attract and retain knowledgeable workers and creative groups, in attempts to thrive in the knowledge-based new economy[217]. Hospers (2003) argued that although it is not possible to plan innovation, creativity and knowledge from scratch, policy makers and local governments can accelerate the emergence of urban creativity by preparing their cities for the necessities of the knowledge economy[218]. Cooke (2001) stated that if western societies want to maintain their levels of welfare, greater investments have to be made towards a more knowledgeable economy[219]. The knowledge economy concept was introduced in the 1960s and focused on the role of new science-based industries in social and economic developments[220]. One of the main foundations of the knowledge economy is acknowledging the importance of theoretical knowledge as a driver for innovation[221]. The literature on the knowledge economy, however, focuses extensively on the production of information and gives less consideration to the dissemination and impact of knowledge[222]. The relationship between knowledge, innovation, and the urban space has also received increasing attention in the literature[223]. This research will investigate the impact and importance of knowledge in the production of sustainable urban environments in Bahrain.

Throughout the history of western cities, there appears to be continued discourse between "order, as an expression of reason, and disorder, representing the diversity and differences caused by the spontaneity of daily life"[224]. Madanipour (2007) examined the relationship between reason and urban space. The author argued that beliefs and understandings of societies have had direct

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[215] Phil Macnaghten and Michael Jacobs, 'Public Identification with Sustainable Development Investigating Cultural Barriers to Participation', *Global Environmental Change*, 7 (1997), 5–24.

[216] Elke Weber and Paul Stern, 'Public Understanding of Climate Change in the United States', *American Psychologist*, 66 (2011), 315–328.

[217] Tan Yigitcanlar, Scott Baum and Stephen Horton, 'Attracting and Retaining Knowledge Workers in Knowledge Cities', *Journal of Knowledge Management*, 11 (2007), 6–17.

[218] Gert-Jan Hospers, 'Creative Cities: Breeding Places in the Knowledge Economy', *Knowledge, Technology, & Policy*, 16 (2003), 143–162.

[219] Philip Cooke, *Knowledge Economies: Clusters, Learning and Cooperative Advantage* (London: Routledge, 2001).

[220] Fritz Machlup, *The Production and Distribution of Knowledge in the United States* (Princeton: Princeton University Press, 1973); Thierry J. Noyelle, ed., *Skills, Wages and Productivity in the Service Sector* (Boulder: Westview Press, 1990); Marc Uri Porat, *The Information Economy: Definition and Measurement* (Washington, D.C, D.C, 1977); Thomas Stanback, *Understanding the Service Economy: Employment, Productivity, Location* (Baltimore: Johns Hopkins University Press, 1979).

[221] Daniel Bell, *The Coming of Post-Industrial Society* (New York: Basic Books, 1976).

[222] Walter Powell and Kaisa Snellman, 'The Knowledge Economy', *Annual Review of Sociology*, 30 (2004), 199–220.

[223] See for example; Tan Yigitcanlar, Koray Velibeyoglu and Cristina Martinez-Fernandez, 'Rising Knowledge Cities: The Role of Urban Knowledge Precincts', *Journal of Knowledge Management*, 12 (2008), 8–20; Ron Dvir and Edna Pasher, 'Innovation Engines for Knowledge Cities: An Innovation Ecology Perspective', *Journal of Knowledge Management*, 8 (2004), 16–27; Francisco Carrillo, 'Capital Cities: A Taxonomy of Capital Accounts for Knowledge Cities', *Journal of Knowledge Management*, 8 (2004), 28–46; Francisco Carrillo, ed., *Knowledge Cities: Approaches, Experiences and Perspectives* (Oxford: Routledge, 2006); Nicos Komninos, *Intelligent Cities: Innovation, Knowledge Systems, and Digital Spaces* (Oxford: Taylor & Francis, 2002); Hospers.

[224] Ali Madanipour, 'Reading the City', in *Managing Cities: The New Urban Context*, ed. by Patsy Healey and others (Chichester: John Wiley & Sons, 1995).

implications on the structure and shape of cities throughout history[225]. Elsewhere, Madanipour (2013) investigated the connection between the "spatial expressions of knowledge economy" and how those contribute to further developing the knowledge-driven economy[226]. Madanipour defined the knowledge economy as "the economic application of knowledge, whereby highly skilled workers use information and communication technologies to produce marketable innovations"[227]. The author explained that although the "knowledge", "digital" and "information" economies have promoted the development of the digital infrastructure, expansion of various technologies and science, preparation of a creative and skilled workforce, and the establishment of new culturally rich and creative industries, as pursuing states, such economies could also result in the decline of many cities and regions through encouraging unsustainable modes of consumption, transferring industries and environmental problems, loss of important skills, unfair dissemination of resources and subdual of different types of information and lifestyles[228]. Knowledge, however, is still viewed as an economic asset that should lead to the prosperity of cities in the near future[229] and has become increasingly popular in the policies of cities that aspire to increase their competitiveness[230]. Goodspeed (2014) argued that local municipal innovation and the incorporation of information technology into collaborative urban planning are two areas that hold potentials in future "smart cities"[231].

Within the context of the Arabian Gulf, knowledge economy takes another shape that follows the recent local trends of developing mega, entirely new towns and cities as part of the Gulf States economic development strategies[232]. Building such massive–scale, new, planned developments is a strategy used by the relatively wealthy Gulf States to stimulate economic growth[233]. King Abdulla Economic City in Saudi Arabia, Masdar City in Abu Dhabi and Silk City in Kuwait, are examples of such projects[234]. Hvidt (2014) argued that western societies arrived at the present "knowledge economy" concept following a consecutive progress of development (from agriculture to industry, and later to information) before knowledge was considered as a viable foundation for the economy. Conversely, Hvidt claimed that the Arabian Gulf states are struggling to leap from their traditional economies that were based on pearling, trading and fishing directly into the new knowledge economy[235]. This research will challenge this notion through investigating urban sustainability in the Arabian Gulf, and more about this argument will be presented in the coming chapters. Hvidt further argued that The Gulf States have based their developments merely on learning and imitating, through the import of knowledge, technology and skills from other developed countries that can generate knowledge and innovation[236]. The literature reveals that the change needed in the current culture of the Arabian Gulf States to become more active and engaged in deep professional knowledge is a challenge facing the development of the "Knowledge Economy" in the region[237]. The consequences of this change in culture will be outlined in the coming chapter.

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[225] Ali Madanipour, *Designing the City of Reason: Foundations and Frameworks* (Oxon: Routledge, 2007).

[226] Madanipour, *Knowledge Economy and the City: Spaces of Knowledge*.

[227] Madanipour, *Knowledge Economy and the City: Spaces of Knowledge*.

[228] Madanipour, *Knowledge Economy and the City: Spaces of Knowledge*.

[229] Charlie Karlsson, Urban Gråsjö and Sofia Wixe, eds., *Innovation and Entrepreneurship in the Global Economy: Knowledge, Technology and Internationalization* (Glos: Edward Elgar Publishing Limited, 2015).

[230] Robert Huggins, 'Regional Competitive Intelligence: Benchmarking and Policy-Making', *Regional Studies*, 44 (2010), 639–658.

[231] Robert Goodspeed, 'Smart Cities: Moving beyond Urban Cybernetics to Tackle Wicked Problems', *Cambridge Journal of Regions, Economy and Society*, 8 (2015), 79–92.

[232] Sarah Moser, Marian Swain and Mohammed H. Alkhabbaz, 'King Abdullah Economic City: Engineering Saudi Arabia's Post-Oil Future', *Cities*, 45 (2014), 71–80.

[233] Rachel Keeton, *Rising in the East - Contemporary New Towns in Asia* (Amsterdam: SUN Architecture, 2011).

[234] For more about these projects see; Moser, Swain and Alkhabbaz.

[235] Martin Hvidt, 'The State and the Knowledge Economy in the Gulf: Structural and Motivational Challenges', *The Muslim World*, 105 (2014), 24–45.

[236] Hvidt.

[237] Alan Weber, 'Education, Development and Sustainability in Qatar: A Case Study of Economic and Knowledge Transformation in the Arabian Gulf', in *Education for a knowledge Society in Arabian Countries* (Emerald Group Publishing Limited, 2014), pp. 59–82; Alexander Wiseman, Naif Alromi and Saleh Alshumrani, 'Challenges to Creating an Arabian Gulf Knowledge Economy', in *Education for a knowledge Society in Arabian Countries* (Emerald Group Publishing Limited, 2014), XXIV, 1–33; Hvidt.

2.8 Conclusion

The environmental, social and economic drawbacks we are facing today are all linked to our urbanised life and the fast growth of the world's cities. Although urbanity has been blamed for most of the world's shortcomings, it has, however, been recently viewed as a solution to all of these problems, if planned in a sustainable manner. Urban Sustainability is a relatively recent concept that emerged in the 21st century, but which has its roots in previous movements that started in the 1990s because of the ongoing degradation of the condition of our planet. "Sustainable Development", "Eco/Sustainable Cities", "Sustainable Urban Forms", "Sustainable Urbanism", and "Green Urbanism" are all models targeting mostly western urban developments, with little reference to the countries of the Arabian Gulf in general and Bahrain in particular. Although some of the principles can be adapted to regenerate and develop cities around the world, it nevertheless cannot and should not be copied to other regions as a whole.

Some the most recent urban sustainability theories were explained in this chapter; those are density, sustainable corridors, sustainable neighbourhoods, and high-performance buildings and infrastructures. The most recent literature is moving towards assessing the models created in the late 20th and early 21st century and discussing the quality of sustainability. Those advise new researchers to focus on the relationship between the government and the public. Furthermore, the models of urban sustainability explained in this chapter identify three pillars of sustainability: the environmental, economic and the social. Very little attention has been given to the political or cultural aspects of sustainability. This will be investigated in relation to cultural change and the overall urban sustainability in the coming chapter. For the purpose of this research, urban sustainability can be initially defined as sustainable urban areas created by implementing sustainable strategies via the planning system. It could also mean that the way inhabitants of a particular city interact with their built environment is sustainable and will, therefore, enable the sustaining of that environment for future generations. Nevertheless, the particular definition of urban sustainability used in this study will be outlined in the coming chapter, following a discussion of the two most recent pillars of sustainability.

This chapter discussed the importance of urban governance and knowledge in the development of urban sustainability. The study of urban areas and the change in urbanism is important today not only to academics but also to policy makers and governments. The limited empirical evidence discussed this matter within the Arabian Gulf, a context that has been identified as lacking the ability to compete internationally on the platform of creativity, innovation, and knowledge.

CHAPTER 3   CULTURAL CHANGE IN RELATION TO URBAN SUSTAINABILITY

"We never change things by fighting the existing reality. To change something; build a new model that makes the existing model obsolete." R. Buckminster Fuller[238]

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[238] Farr.

3.1 Introduction

After having presented the literature discussing urban sustainability and its associated concepts in the previous chapter, this chapter will discuss the transformation of cultures and their relationship to urban sustainability. The Arabian Gulf in general and Bahrain in particular witnessed dramatic cultural changes during the last century. This was influenced by the British presence in the region and the discovery of oil[239]. The details of this transformation in the Arabian Gulf region will be discussed in the coming chapters. However, to understand cultural transformation at the local level, the global understanding of cultural change must first be understood. One of the most significant current discussions in sustainable planning is its consideration of culture. This chapter reviews the literature concerning the transformation of culture, its background, definition, dynamics, and sources. It then presents the literature discussing the relationship between cultural change and urban sustainability by first examining the relationship between cultural change and urbanisation, then its relationship to climate change, and finally its relationship to sustainable urban planning.

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[239] Fay Al Khalifa, "An Urban Healing Agenda for Reform in Bahrain: Where the Dweller Falls into the Urban Gap and the Sailing Boat Hits the Skyscraper." (University of Sheffield, 2012).

3.2 Transformation of Culture

3.2.1 Background and Definition

The transformation of culture is defined as **the alteration of cultures around the world due to either external or internal forces or sometimes a combination of both**. This process has been articulated by many scholars and researchers, resulting in an existing, rich sum of literature[240]. In most cases, people around the world are proud of their culture, for it distinguishes them from others, and people are usually concerned about any changes that might threaten their distinctiveness. This phenomenon is evident in the sum of literature tackling the subject of cultural change/transformation in many regions around the world; see for example the study of cultural change in Norway by Munch (1956)[241], in Southeast Asia by Mulder (2000)[242], in Europe by Hudson (1992)[243], the Muslim nation of Pakistan by Qadeer (2006)[244], in the Red Sea citizens of Massawa by Miran (2009)[245], and the perspectives from East Asia on cultural transformation presented by Hirano (1993)[246]. Perceptions about cultural change in the Arabian Gulf will be discussed later. Bate (1994) argued that defining cultural change is not an easy task. The author explained that "the concept of culture itself surrounded by a myriad of problems relating to meaning and definition. Therefore, put 'culture' and 'change' together and the chance of anything coherent emerging becomes all the more unlikely"[247]. To understand the mechanism of cultural change/transformation, culture must first be understood on its own.

"Culture" was first introduced in the second half of the 19th century by the British anthropologist Edward Taylor. He defined culture in 1871 as "that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society"[248]. It is a mature term in the literature, which has been increasingly deliberated over at least since the beginning of the 20th century. Nevertheless, earlier understandings of the concepts were mostly, but not exclusively, narrow, especially in the study of cities by urban sociologists and geographers[249]. Those understandings of culture were limited to the religious, educational and artistic activities of society, which were divorced, almost entirely, from the military, economic and functional activities. Authors of the same period who were more involved in the cultural production of cities acknowledged those narrow interpretations. For instance, Redfield and Singer (1951) argued that this constricted understanding of the term couldn't, and shouldn't, be used for the purpose of implementing a comparative analysis of the role cities perform in the change of the integrated traditional life of a community[250]. Nystrom (1999) explained that "culture is the integrated pattern of human knowledge, belief, and behavior… [It] consists of language, ideas, beliefs, customs, taboos, codes, institutions, tools, techniques, and works of art, rituals, ceremonies and other related components. All human societies have their particular cultures, or socio-cultural

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[240] See for example: Thomas R. Rochon, *Culture Moves* (New Jersey: Princeton University Press, 2000); Yoshihisa Kashima, "A Social Psychology of Cultural Dynamics: Examining How Cultures Are Formed, Maintained, and Transformed," *Social and Personality Psychology Compass*, 2 (2008), 107–20 <http://dx.doi.org/10.1111/j.1751-9004.2007.00063.x>; Douglas A. Kysar, "Climate Change, Cultural Transformation, and Comprehensive Rationality," *Boston College Environmental Affairs Law Review*, Vol. 31 (2004), pp. 1–35.

[241] Peter Andreas Munch, *A Study of Cultural Change : Rural-urban Conflicts in Norway* (Oslo :: H. Aschehoug,, 1956), p. 103.

[242] Niels Mulder, *Inside Southeast Asia : Religion, Everyday Life, Cultural Change* (Chiang Mai, Thailand :: Silkworm Press,, 2000), p. 231.

[243] Ray Hudson, *Institutional Change, Cultural Transformation and Economic Regeneration : Myths and Realities from Europe's Old Industrial Areas* (Durham :: Department of Geography, University of Durham,, 1992), p. 17.

[244] Mohammad A Qadeer, *Pakistan : Social and Cultural Transformation in a Muslim Nation* (London :: Routledge,, 2006), p. 322.

[245] Jonathan Miran, *Red Sea Citizens : Cosmopolitan Society and Cultural Change in Massawa* (Bloomington :: Indiana University Press,, 2009), p. 380.

[246] Ken'ichirō Hirano, *The State and Cultural Transformation : Perspectives from East Asia* (Tokyo :: UnitedNations University,, 1993), p. 357.

[247] Paul Bate, *Strategies for Cultural Change* (Oxford: Butterworth-Heinemann Ltd, 1994).

[248] Edward Taylor, *Premitive Culture* (New York: J.P. Putnam's Sons, 1920); Zhang.

[249] See for example: Grace M. Kneedler, *Functional Types of Cities*, ed. by Paul K. Hatt and Jr. Reiss (Illinois: The free press, 1951); Chuncey Harris, *A Functional Classification of Cities in the United States* (New York: Geogr. Review, 1943); R. E. Dickinson, *The West European City* (London: Routledge & Paul, 1951), pp. pp.253–54.

[250] Robert Redfield and Milton B. Singer, "The Cultural Role of Cities," *Economic Development and Cultural Change*, Vol. 3 (1954), pp. 53–73.

systems, which overlap to some extent with other systems". The origins and evolution of culture have been presented by Boyd and Richerson (2005), who suggested some propositions[251]:

1. Culture is the information acquired from others through imitation, teaching and other means of social learning.
2. Cultural change should be shown as a Darwinian[252] evolutionary process.
3. Culture is part of human biology.
4. Culture differentiates human evolution from other organisms.
5. Culture and genes coevolve.

Culture has, therefore, been discussed for many years, but especially recently. However, despite the maturity of the item, similar to the many concepts explained in the previous chapter, there is still a dispute over what precisely culture means or incorporates. Nystrom (1999) demonstrated that while the concept of culture is widely recognised, nevertheless it is still vague and is used in very different contexts. The author called for a discussion of what urban culture means, and for an inquiry into the connection between urban development and the development of cultures[253]. Smith (1989) defined culture in relation to the future of the Chinese culture as "A system of interrelated perceptions, beliefs, values, and institutions that together shape the conscious and unconscious behaviour of that system's constituent members … the practice of politics, the observance of rules of social usage (law, ritual, music, drama and dance)"[254]. Ten years later, during the information revolution, Madu and Jacob (1999) updated Smith's definition and argued that culture should be viewed in a holistic way that includes all aspects of human life and goes beyond the tendency to limit our idea of culture to only social issues and behaviours. Culture, therefore, as per their definition, should also include science, technology, arts, literature, conduct, social behaviours, and even wars[255].

Zhang (2013) explained that culture is defined in two interrelated ways by "cultural critics, anthropologists, and sociologists"; one way is that culture is the "way of life" of a particular group of people: "their shared beliefs, values, ideology, language, knowledge, history, philosophy and religion, morals, norms, regulations of behaviour, codes of manners, faith, traditions, conventions, customs, rituals, the social production and transmission of identities, meanings, aspirations, memories, purposes, attitudes, and understandings[256]", and the other is that culture also includes the range of "human excellence" and "individual perfection", comprising societies' intellectual and artistic inheritance, such as their music, painting, gardening, landscaping, architecture, furniture, poetry, costume, opera, dance, food, sciences, technology and others[257]. In this research, the holistic definition of culture will be used, including the two explained above. Thereafter, **culture is defined as not only the beliefs, values, behaviours, art, and perceptions of the nation under study, but also its literature, political system, technology, and the physical environment it produces**. Bate (1994) explained "change" by saying that it "is a highly complex business, difficult to understand, and because of its non-linear nature almost impossible to deal with systematically, or to write about it convincingly … certainly if one's ambition is to tell it 'how it is'-or was- the result is almost certain to be a story"[258]. Chapter 5 will draw the narrative of change in the Arabian Gulf States, and Chapter 6 will then focus on telling the story of change in Bahrain. Now that initial

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[251] Robert Boyd and Peter J. Richerson, *The Origin and Evolution of Cultures (Evolution and Cognition)* (USA: Oxford University Press, 2005).
[252] Charles Darwin developed the Darwinism theory which contributed to later understandings of the origin of life and cosmic evolution. The theory suggests that all organisms and species in the world are developed and raised by a process of natural selection of small and inherited variables that controls the person's ability to produce, survive and compete with others. See Charles Darwin, *The Origin of Species* (London: John Murray, 1859).
[253] Nystrom.
[254] Richard J. Smith, "The Future of Chinese Culture," *Futures*, 21 (1989), 431–46 <http://dx.doi.org/10.1016/0016-3287(89)90084-0>.
[255] Christian N. Madu and Rudolph A. Jacob, "The Internet and Global Cultural Transformation," *Foresight*, 1 (1999), 63–71 <http://dx.doi.org/10.1108/14636689910802034>.
[256] Zhang.
[257] Zhang.
[258] Bate.

definitions of culture have been outlined; the next section will discuss how cultures transform, the different theories of the change in cultural systems, and different types of cultural change will be outlined.

3.2.2 The Dynamics of Culture

The change in the indigenous cultures of nations has been proved in the literature. Evidence of massive cultural change has been found in the research of Inglehart and Baker (2000), which used data from the three waves of the World Values Surveys, including 65 societies and 75% of the world's population, to test the hypothesis that economic development is related to systematic changes [259]. Their research, however, only included a small portion of the Islamic world: Bangladesh, Azerbaijan, Nigeria, Pakistan and Turkey, excluding the entire Middle East region. Thus, this research will focus on the Arabian Gulf, a context, which, as we shall also see later, has had very little attention.

The association between cultures of the world and change has been also discussed by Madu and Jacob (1999) and Kashima (2008). Both argued that the different cultures of the world are always undergoing change[260]. Nystrom (1999) also explained that culture incorporates all human activities and develops with time[261]. However, it is the speed of that change that makes the difference. Madu and Jacob (1999) explained "… Although change is a continuous phenomenon in all cultures and all the elements of a cultural system, culture may be resistant to 'quantum leap' types of change. At the same time, cultures appear to be resilient to gradual changes that often may be difficult to detect when the actual process is taking place"[262]. The cultural dynamics, or, in other words, how cultures change, is a critical programme of inquiry in psychology and culture[263], which emerged at the beginning of the 21st century. It questions how cultural information is being transmitted and under what circumstances it would occur. In addition, it inquires about the short- and long-term implications of the change and stability of culture over time[264]. This programme of inquiry has its roots in the "Neo-Diffusionist Meta theory" of culture that emerged in the 1970s and 1980s[265] and the work of the best-known Neo-Diffusionist theories of Dawkins (1976, 2011)[266], who discussed the "theory of meme". Dawkins suggested that a "meme" is a selfish replicator similar to genes that replicate within the social system and is transmitted from one brain to another in a society. He argued that this is the way that culture is transmitted from one place to another and, therefore, causes the gradual transformation of cultures in different nations. Nystrom (1999) also explained that culture develops according to humans' willingness to learn and transmit information to their descendants[267]. The first part of this research will focus on Bahrain as a case study and will investigate how and why the Bahraini culture changed during the last century, in an attempt to increase our understanding of the dynamics of cultural change in the general global sense and the region of the Arabian Gulf.

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[259] Ronald Inglehart and Wayne E. Baker, "Modernization, Cultural Change, and the Persistence of Traditional Values," *American Sociological Review*, Vol. 65 (2000), pp. 19–51.
[260] Madu and Jacob; Kashima.
[261] Nystrom.
[262] Madu and Jacob.
[263] See Chi-Yue Chiu and Hong; Ivy Y-M. Lau, Chi-yue Chiu and Sau-lai Lee, "Communication and Shared Reality: Implications for the Psychological Foundations of Culture," *Social Cognition*, 19 (2001), 350–71
<http://dx.doi.org/10.1521/soco.19.3.350.21467>.
[264] Kashima.
[265] See for example; L. Luigi Luca Cavalli-Sforza and Marcus W. Feldman, *Cultural Transmission and Evolution: A Quantitative Approach. (Mpb-16)* (New Jersey: Princeton University Press, 1981), p. 388; Boyd and Richerson.
[266] Richard Dawkins, *The Selfish Gene*, 30th anniv (London :: Folio Society,, 2011), p. 367; R. Dawkins, *The Selfish Gene* (Oxford: Oxford University Press, 1976).
[267] Nystrom.

3.2.3   Sources of Cultural Change

The above section indicated that cultural change is caused by the integration of foreign cultures with traditional cultures, and in most cases this has resulted in changing the values and beliefs of the indigenous culture of nations[268]. This research attempts to investigate sudden cultural changes rather than changes that emerge over a long time. Impulsive cultural changes could happen for a number of reasons, which are discussed briefly here.

3.2.3.1   Globalisation and Modernisation

The first is globalisation and modernisation. The globalisation of technologies, architectural styles and urban spaces has influenced the design of cities worldwide[269]. Inglehart and Baker (2000) argued that the relationship between cultural change and modernisation emerged in the late 20th century, and that the modernisation theories, especially those by Karl Marx (1973), anticipated the decline of religion and spiritual beliefs in the wake of modernisation[270]. However, the beginnings of the 21st century came with stronger social and political debates about religious issues[271], which indicates that cultures are still distinguished from one another and that although modernisation accelerated the process of cultural change, it did not cause the unification of the entire cultures of the world[272]. Modernisation was mostly associated with western cultures by the mid-20th century, and non-western societies had to give up their traditional cultures to follow the lead of the superior western civilisations[273]. However, the second half of the 20th century showed an unexpected rise in the modernisation of non-western societies that outdid the western role models. An example of this is the world's highest rate of economic growth in East Asia and the highest per capita income, leadership in automobile manufacturing and electronics, and the life expectancy in Japan. Western civilisations are therefore no longer role models for other cultures[274]. In the light of this discussion, it is noticeable that since the beginning of the 21st century, the world cultures that were once influenced by western civilisation seem today to be undergoing a cultural renaissance, where the local culture is being advertised and celebrated instead of being suppressed by the westernized models. This research is an example of this renaissance in the Arabian Gulf region.

3.2.3.2   Industrialisation

Another cause of cultural transformation is industrialisation. It is a concept that originates from the modernisation theory discussed above. The social and cultural consequences for the engineered life that we have been living since the Industrial Revolution are acknowledged today, for instance, in the change in gender roles and the rising levels of education[275]. Cleveland is one of the leading authors studying energy, the primary cause of industrialisation. He focused on its transition, quality and connection to the economic developments of nations[276]. In an encyclopaedia article, he discussed the unparalleled transformations of society that were produced by the advances in our understanding of energy. He argued that the study of energy has played a significant role in our

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[268] Madu and Jacob.

[269] Roger Zetter and Georgia Butina Watson, *Designing Sustainable Cities in the Developing World* (Aldershot: Ashgate Publishing, Ltd., 2006).

[270] Karl Marx, *Foundation of the Critique of Political Economy* (New York: Vintage Books, 1973).

[271] Inglehart and Baker.

[272] Ronald Inglehart and Christian Welzel, *Modernization, Cultural Change, and Democracy: The Human Development Sequence* (Cambridge: Cambridge University Press, 2005).

[273] Kuniyuki Tomooka, Sachiko Kanni and Mari Kobayashi, 'Building National Prestige: Japanese Cultural Policy and the Influence of Western Institutions', in *Global Culture: Media, Arts, Policy, and Globalization*, ed. by Diana Crane, Nobuko Kawashima, and Kenichi Kawasaki (New York: Routledge, 2002).

[274] Inglehart and Baker.

[275] Inglehart and Baker.

[276] See for example; Cutler J. Cleveland and Robert K. Kaufmann, "Fundamental Principles of Energy1," *Encyclopedia of Earth* (Enviromental Information Coalition, National Coucil for Science and the Enviroment, 2008); Cutler Cleveland and Peter Saundry, "Energy Transitions Past and Future.," *Encyclopedia of Earth* (National Council for Science and the Environment, 2008); David I. Stern and Cutler J. Cleveland, "Energy and Economic Growth", 2004; Cutler J. Cleveland and Dagmar Budikova, "Energy Quality," *Encyclopedia of Earth* (Enviromental Information Coalition, National Coucil for Science and the Enviroment, 2007); Cutler J. Cleveland, Stern I. David and Robert K. Kaufmann, "Aggregation and the Role of Energy in the Economy Ecological Economics," 32 (2000), 301–17.

lives; it has helped us to understand the origin of life, the creation of the universe, and the development of human cultures and civilisations. He also argued that the study of energy has resulted in the rise of living standards and led to the economic growth of nations. On the other hand, Cleveland also presented an argument concerning the significant environmental changes caused by industrialisation at the local, regional and global scales, and furthermore he also focused on the growth in wars and geopolitics[277]. Cleveland's argument was also supported by Brevad (2010), who concentrated on one particular form of energy: oil, and how that form of energy changed the world. Brevard explained that the world today runs on oil and that oil is used in our daily life from the "plastic in our pens to our mobile phones and the fleece jackets we wear". He admits that although oil has created enormous wealth and positive economic development, it has also caused political conflicts and great suffering to many nations. Examples of those conflicts are World War II, which began in Europe in 1939 and arose in Hawaii in 1941 when Japan attacked Pearl Harbour. Moreover, the Gulf War, which arose in 1990 in the Arabian Gulf when the former Iraqi president Saddam Hussein and his army invaded Kuwait, Iraq's oil-rich neighbour, because of a dispute over oil reservoirs[278].

Industrialisation in general and oil in particular is, therefore, one of the main causes for the transformation of the world's cultures, and much literature has been written in this regard[279]. The arguments in these works indicate that oil is not only used to run our machinery but also to run the world's economies and politics; the authors explained that oil is one of the main contributors to the transformation of cultures around the world. This relationship between oil and the transformation of cultures is particularly relevant to this study and will be discussed in detail in relation to the context of the Arabian Gulf in Chapter 5. This research will, therefore, enrich our understanding of the impact of oil on the indigenous cultures of the world by focusing on the oil-rich region of the Arabian Gulf.

3.2.3.3 Colonisation and Military Expansion

Another cause of the cultural transformation is colonisation and military expansion[280]. Colonisation can be linked directly to the Industrial Revolution and the wealth that is found in the raw materials used to generate energy, and it is also sometimes indirectly linked to it[281]. Colonisation causes the direct interaction of indigenous cultures with foreign ones, thus accelerating the transformation of the traditional culture[282]. Postcolonial studies which focus on the various effects of colonisation on cultures date back to the mid-20th century, with the works of Frantz Fanon and Edward Said, both of which stimulated over the last two decades discussions in humanities and social sciences[283]. The particularities of the effects of colonisation on the indigenous cultures is outside the scope of this research, because none of the Arabian Gulf countries concerned in this study was directly colonised in its modern history, with the exception of Kuwait, which was invaded by its neighbouring Iraq for eight months at the end of 1990. Nevertheless, the general understanding of the relationship between colonisation and cultural change is essential because of the strong British presence in the region from the 19th to the 20th century following the many treaties signed with Britain at that time. The effects of this relationship with Britain will be discussed in the coming chapters.

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[277] Cutler J. Cleveland and Kaufmann.

[278] Katherine McLean Brevard, *The Story of Oil*, ed. by Warren Hildebrandt and Alexa L. Sandmann (Compass Point Books , 2010), p. 64.

[279] See for example; Al Gore, *An Inconvenient Truth: The Crisis of Global Warming* (New York: Viking Juvenile, 2007), p. 192; Heidi Moore, *The Story Behind Oil* (London: Heinemann Library, 2010); Don Nardo, *Climate Crisis: The Science of Global Warming* (Minneapolis: Compass Point Books, 2008); Ronald Oligney, Armando Izquierdo and Micheal Economides, *The Color of Oil : The History, the Money and the Politics of the World's Biggest Business* (Katy Texas: Round Oak Pub, 2000), p. 220; Sonia Shah, *Crude: The Story of Oil* (New York: Seven Stories Press, 2004), p. 192; Daniel Yergin, *The Prize: The Epic Quest for Oil, Money & Power* (New York: Free Press, 2008).

[280] Robert Bartlett, *The Making of Europe: Conquest, Colonization and Cultural Change 950-1350* (London: Penguin UK, 1994).

[281] Joseph Inikori, *Africans and the Industrial Revolution in England: A Study in International Trade and Economic Development* (Cambridge: Cambridge University Press, 2002).

[282] Inikori.

[283] Alison Blunt, 'Colonialism/Postcolonialism', in *Cultural Geography: A Critical Dictionary of Key Ideas*, ed. by David Atkinson and others (London: L.B.Tauris & Co Ltd, 2007).

3.2.3.4   Communication and Transport Improvements

One more cause for cultural transformation is the improvements in communication and transport; this is also directly linked to the Industrial Revolution, for all the advanced means of communication and transportation were not possible before the Industrial Revolution. In an article published in the late 20th century, Madu and Jacob (1999) projected that the impact of the technological revolution, and, in particular, the internet, would be very vast in the 20th century and that it could cause a "unification of cultures" in the world. Their paper claimed that the internet would cause a global cultural transformation that would remove all cultural barriers[284]. Madu and Jacob's argument is a continuation of the modernisation theories that arose in the late 20th century and which have been facing rejection and dismissal ever since[285]. In Madu and Jacob's article, the internet was viewed as the tool that could "re-engineer cultures". They argued that in historical times, cultures were particular to specific regions because of the barrier of communication. People did not move smoothly from one place to another, and neither did information. However, after the technological and transport revolution people became more educated about other cultures[286]. Furthermore, Gillespie (1995) looked at the role of television in constructing ethnic identities and concluded that young people criticise, contrast and compare the inherited culture presented to them by their close relatives to the foreign cultures they view on the television, which informs the construction of their identities[287]. Travel[288], intermarriage[289] and business connections[290] are all reasons behind the immigration of people and their ideas, offering opportunities to borrow from other cultures and causing changes in the traditional cultures of different nations around the world. The immigrant's way of behaving, understanding race and interacting with every day changes in their new country, along with their language, dress and traditions[291]. Moreover, immigrants, over time, also play a role in changing the local cultures of their new homes and the attitudes and behaviours of the indigenous people[292]. One cannot disagree with the fact that the revolution in communication and transportation sped up the transfer of people and information, and therefore helped in raising awareness about other cultures[293]. However, despite the ease of the transmission of knowledge today, there seems, as we shall also see later, to be a parallel increase in the cultural agendas and plans of different nations[294]. In most cases, as discussed before, people are anxious about change, especially the kind which could diminish their individuality and uniqueness or threaten their distinctiveness from others[295]. Therefore, the "unification of cultures" in the world is a phenomenon that is unlikely to occur anytime in the near future[296]. While this section outlines the general causes of cultural change, chapters 5 and 6 will demonstrate the processes of cultural change within the context of the Arabian Gulf in general and Bahrain in particular. All of the abovementioned causes, as will be discussed later, inform the transformation of culture in the Arabian Gulf.

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[284] Madu and Jacob.

[285] See for example; Dean Tipps, 'Modernization Theory and the Comparative Study of Societies: A Critical Perspective', *Comparative Studies in Society and History*, 15 (1973), 199–226.

[286] Madu and Jacob.

[287] Marie Gillespie, *Television, Ethnicity and Cultural Change* (London: Routledge, 1995).

[288] John Urry and Chris Rojek, eds., *Touring Cultures: Transformations of Travel and Theory* (London: Routledge, 1997).

[289] Paul Spickard, *Mixed Blood: Intermarriage and Ethnic Identity in Twentieth-Century America* (Wisconsin: The University of Wisconsin Press, 1989).

[290] Ferrie Pot, *Employment Relations and National Culture: Continuity and Change in the Age of Globalization* (Glos: Edward Elgar Publishing Limited, 2000).

[291] Wendy Roth, *Race Migrations: Latinos and the Cultural Transformation of Race* (California: Stanford University Press, 2012).

[292] John Berry, 'Immigration, Acculturation, and Adaptation', *Applied Psychology: An International Review*, 46 (1997), 5–68.

[293] John Urry, *Mobilities* (Cambridge: polity Press, 2007).

[294] Steven Miles and Ronan Paddison, 'Introduction: The Rise and Rise of Culture-Led Urban Regeneration', *Urban Studies*, 42 (2005), 833–839.

[295] Michael Diamond, 'Resistance to Change: A Psychoanalytic Critique of Argyris and Schon's Contributions to Organization Theory and Intervention', *Journal of Management Studies*, 23 (1986), 553–562.

[296] John Bird and others, eds., *Mapping the Futures: Local Cultures, Global Change* (London: Routledge, 1993).

3.3   Cultural Change and Climate Change

Current cultural practices have caused climate change through the reliance on fossil fuels, private transportation, consumerism, and low-density living[297]. Furthermore, this change in the world's climate has economic, social, cultural and political consequences for the nations of the world[298]. Kysar (2004) warned that there is an urgent need to move towards a decarbonised energy infrastructure before civilisations consume the last remaining oil and coal reservoirs in the world. Kysar further argued that climate change challenges our contemporary way of living, moving, eating, and even our consumption pattern[299]. Hulme (2015) argued that climate change should be addressed culturally. He stressed that climate change "takes shape in cultures and can, therefore, be changed by cultures"[300]. This literature indicates that to minimise the danger of climate change, our culture, should be modified to achieve sustainability. Bate (1994) argued that stimulating cultural change to "serve a useful function or purpose, or offer anything of value or interest"[301] is a viable conquest. This is particularly relevant to the context of this research. The Arabian Gulf states today are still very much dependent on oil, and the urgent need to diversify the economy cannot be overlooked. This also embraces a need to change the lifestyle of the people in the Gulf; for instance, the fuel subsidy which, as we shall see later, affects to a great extent the culture of the Arabian Gulf states, will have to be substituted with other sustainable forms of eco-politics, which will, therefore, result in the change of the current cultures. More of this will be discussed in the coming chapters.

3.4   Culture as the Fourth Pillar of Sustainability

Nystrom (1999) explained culture in relation to sustainable development, arguing that some sides of culture should be dispensed with: "wars, urban sprawl, pollution and the spoiling of natural resources", while others, such as "democracy, cultural heritage, the arts, public life, family values etc.", should be passed on to future generations."[302] He stressed that the safeguarding of those aspects should then be the aim of "sustainable cultural development". Duxbury and Jeannotte (2010) discussed the relationship between culture and sustainability under the focus of planning. They aimed to examine the existing literature that shows the weak connection between the conceptual foundations of culture, sustainability, and planning. The authors examined three topics that relate to culture and sustainability. 1. The history of the integration of the two concepts; 2. The importance of these two concepts in advanced developed economies and societies; and 3. The practical incorporation of culture and sustainability into urban planning frameworks. Duxbury and Jeannotte showed that there was evidence of an emerging shift from building creative cities to building sustainable cities, which relates to the argument put forward in chapter 2. The authors claimed that this was evident in the work, policies, and plans of governments around the world by means of adopting sustainability goals into their planning systems. This, as we shall see later, is also the case in Bahrain. The government today is trying to set policies and future strategies that govern the production of more sustainable urban environments. The effectiveness of such policies will be challenged in this research.

Nystrom stressed in his work the strong connection between working on the protection of the environment and enhancing the culture of the city. For instance, the protection of cultural heritage and encouraging the reuse of existing facilities not only improves public spaces and strengthens social interaction but also improves the everyday life of families and protects the environment[303]. Thus, issues that are vital to the production of environmentally, socially and economically sustainable environments are also important in the production of culturally sustainable urban

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[297] Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis* (Geneva, 2007).
[298] Mike Hulme, *Why We Disagree about Climate Change: Understanding Controversy, Inaction and Opportunity* (Cambridge: Cambridge University Press, 2009).
[299] Kysar.
[300] Mike Hulme, *Climate and Its Changes: A Cultural Appraisal, Geography and Environment* (New York: John Wiley & Sons Ltd, 2015).
[301] Bate.
[302] Nystrom.
[303] Nystrom.

environments, for instance, density, which was discussed in Chapter 2. Nystrom further illustrated that when density is preferred over low-density suburbs for the cultural richness and diversity it provides, the environment is protected[304]. Furthermore, Duxbury and Jeannotte reasoned that the conceptual development of culture and sustainability goes back to the first few years of the 21st century (2000–02), with the differentiation between the terms "culture" and "social"[305]. Then, they explained, a focus emerged on local development (2004–06), followed by the rearticulating of culture within sustainability at national and international levels (2008–09)[306]. The authors referred to many regions of the world including Asia, the Pacific Islands, the Caribbean States, Africa, Australia, New Zealand, Canada, and America. However, they completely disregarded the Middle East region and the Arabian Gulf in particular, although there are two sustainability programmes in the Arabian Gulf related to urban planning: the first is Estidama in Abu Dhabi, established in 2007, and the second is the Qatar Sustainability Assessment System (QSAS), which was established in 2009. Both of these will be explained in detail in Chapter 5. This research will, therefore, add to the inquiry of the relationship between cultural change, sustainability and planning in the context of the Arabian Gulf by focusing on Bahrain as a case study.

European literature from the late 20th century advised on integrating culture with all its meanings into the urban sustainability agenda. Fudge (1999) discussed this need for integration. He argued that this should be achieved through improving urban management, setting holistic objectives for life in cities, and by developing urban design and planning principles that are contextual and sensitive to the different local settings[307]. Bianchini (1999) also explained that the understanding of local resources of cities as "cultural entities" is necessary for policy makers to understand the local cultural needs and to form a proper cultural planning perspective[308]. He stated that innovation in sustainable urban planning is most likely to be achieved when policy makers and cultural systems can "contribute to revitalising an inclusive, local sphere of democratic debate by opening up the local media, encouraging innovation through intercultural dialogue, and exploring the potential of cultural projects to visualise the sustainable city of the future"[309]. An increasing awareness of the role of culture in sustainability is found in the literature of the beginning of the 21st century, indicating that the United Nations definition and the three pillars discussed in chapter 2 are no longer universally accepted. In 2005, the world summit acknowledged the need to reconcile the three pillars of sustainability which were introduced by the United Nations earlier: "environmental responsibility, economic viability and social equity"[310]. Culture was therefore introduced as a fourth pillar for sustainability (see Figure 3-2), a notion which was discussed at the beginning of the 20th century by Hawkes (2001) in his book "The Fourth Pillar of Sustainability: Culture's Essential Role in Public Planning"[311].

Cultural sustainability is, therefore, a relatively new concept that is less well established in the literature. Traditionally, aspects of cultural sustainability were part of the social dimension until the literature shed light on its importance at the beginning of the 21st century. Earlier definitions of cultural sustainability include that of the Sustainable Development Research Institute (1998): "the ability to retain cultural identity, and to allow change to be guided in ways that are consistent with

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[304] Nystrom.

[305] The definition of culture was illustrated in section 3.2.1

[306] Nancy Duxbury and M. Sharon Jeannotte, "Culture, Sustainability and Communities: Exploring the Myths," *Esitelmä Pidetty: 6th International Conference on Cultural Policy Research*, Vol. 24 (2010).

[307] Colin Fudge, 'Linking Cultural Development and Sustainability in Cities', in *City and Culture: Cultural Proccesses and Urban Sustainability*, ed. by Louise Nystrom (Kalmar: Lenanders Tryckeri AB, 1999).

[308] Franco Bianchini, 'Cultural Planning for Urban Sustainability', in *City and Culture: Cultural Proccesses and Urban Sustainability*, ed. by Louise Nystrom (Kalmar: Lenanders Tryckeri AB, 1999).

[309] Nystrom.

[310] United Nations General Assembly, *2005 World Summit Outcome, Resolution A/60/1. Adopted by the General Assembly on 15 September 2005*, 2005.

[311] Jon Hawkes, *The Fourth Pillar of Sustainability: Culture's Essential Role in Public Planning* (Australia: Common Ground Publishing Pty Ltd, 2001); Zhang.

the cultural values of people"[312] and later definitions include that of the Laroche (2005): "the highest attainable level of creative expression and participation in cultural life, measured against the lowest impact/disruption to the environment, to social aspects of society, and to the economy"[313] and Al-Hagla (2005) "the continuity of cultural values linking all of the past, the present and the future"[314]. Also more recently cultural sustainability was defined by Zhang (2013) as "the adaptation and transmission of the beneficial parts of nations' material (tangible) and immaterial/spiritual (intangible) culture that are conductive to the development of their' present and future generations"[315]. This research does not only attempt to investigate the physical urban environment or setting, but also aims to examine the processes that produced such a setting, and the ideologies, beliefs, circumstances and other tangible and intangible productions of society that contributed to the development of the urban environment. Therefore, this research recognises cultural vitality as an important fourth pillar for sustainability.

3.5   Political Support: the Fifth Pillar of Sustainability

Emerging models of sustainability uses the three pillars of sustainable development, explained earlier, as fundamental concepts which are then updated and rationalised; for instance, James (2015) uses the "circles of sustainability" (Figure 3-1) to provide a simple view of the sustainability of a particular city, urban settlement or region[316]. James introduces in his model "culture" and "politics" and excludes the original "social" pillar. Nevertheless, all those aspects of the "social" in the sustainable development models are included as subdomains in his model. For instance, labour and welfare, a feature of "social" sustainability in the sustainable development model, is relocated under "economic". James' model includes four "domains" of sustainability, and each of the domains contains seven subdomains. Sustainability in his model is measured through a nine-point scale, as seen from Figure 3-1. Also Zhang (2013) argued that, along with the cultural dimension, the political should also be considered as a fifth pillar for sustainability: "cultural vitality is the fourth pillar of sustainable development alongside the other three: environmental responsibility, economic viability, and social equity … political support should be regarded as an independent, fifth pillar because the government as the superstructure makes vital decisions; without political support, cultural sustainability is simply impossible to achieve"[317]. As chapter 2 outlined, in Bahrain, as in many other places in the world, very little consideration has been given to the relationship between cultural aspects and sustainability. The policy is in most cases linked with the three pillars of sustainable development and is focused on the social, environmental and the economic. Moreover, in Bahrain, the implementation of such policies is still, as we shall see later, challenged by the lack of implementation tools. This research will take into account the original three pillars, but will focus on the latest and less articulated two pillars of "cultural vitality" and "political support" (Figure 3-3), by investigating the impact of cultural change on the sustainability of the urban environment in Bahrain. The effect of "political support" on urban sustainability will be examined by focusing on the decision making process and the perceptions of policy makers in Bahrain.

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[312] Sustainable Developmeny Research Institute, 'Social Capital Formation and Institutions for Sustainability', in *Workshop Proceedings (November 16-17, 1998) prepared by Asoka Mendis* (Vancouver: Sustainable Development Research Institute, 1998); Zhang.

[313] Yazmine Laroche, 'The Fourth Pillar in Three Countries: Canada: Adapted from the Keynote Address to the Creative City Network, Canada', in *The Fourth Pillar of Sustainability: culture, engagement and sustainable communities (pp.42-45). Report from the Fourth Pillar Conference, Melbourne, November 2004* (Melbourne: Cultural Development Network, 2005); Zhang.

[314] Khalid Al-Hagla, *Cultural Sustainability: An Asset of Cultural Tourism Industry* (Torino, 2005); Zhang.

[315] Zhang.

[316] James.

[317] Zhang.
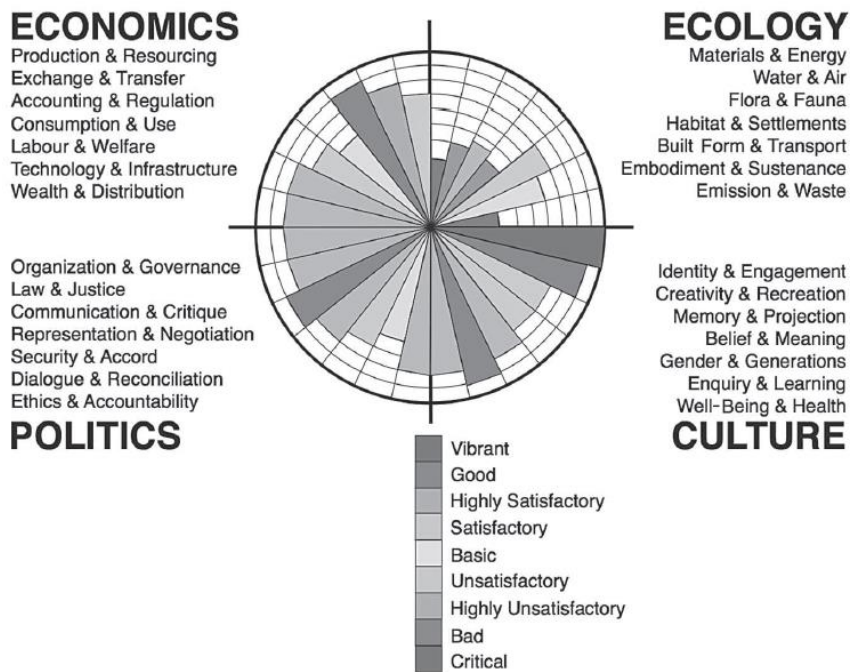
Figure 3-1 The Circle of sustainability[318]
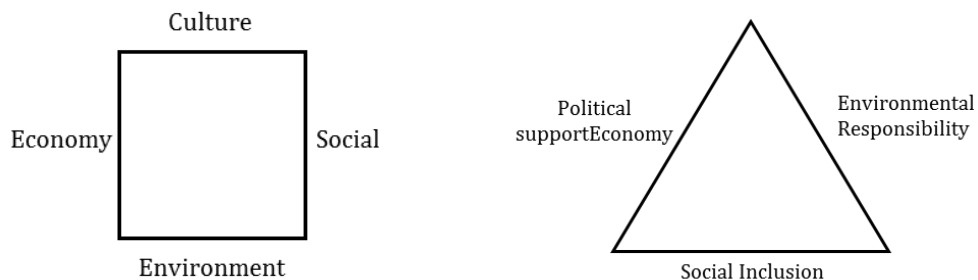
Figure 3-2 The accepted four pillars sustainable development framework (Left), the earlier three pillar sustainable development framework (Right)[319]
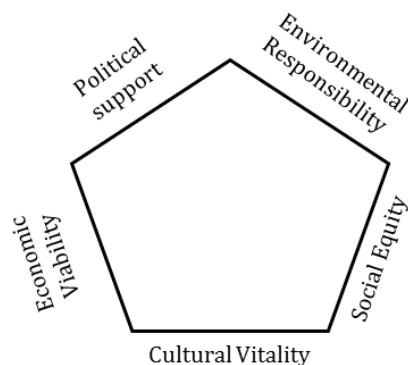
Figure 3-3 Urban sustainability model used in this study, adopted from Zhang (2013) conceptual sustainability framework.

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[318] James.

[319] UNESCO, *Local Policies for Cultural Diversity* (Paris, 2006); Zhang.

3.6   Conclusion

To sum up, there seems to be a tendency in the literature to include the religious, educational and artistic activities of a society when defining culture and to exclude the military, economic and functional activities. However, in this research, culture will be interpreted as **the whole sum of activities, tangible and intangible, which represent the nation in question and the environment in which those events take place.** The transformation of culture occurs mostly due to the interaction between foreign cultures and indigenous ones, by external or internal forces, or a mixture of both. In most cases, people are proud of their origins and are happy to have a culture that makes them distinguishable from others. Consequently, people are alarmed when any change that threatens their uniqueness and individuality occurs. This has become evident precisely since the beginning of the 21st century in cities around the world, where culture is being celebrated progressively. It has been proven throughout the literature in this chapter that culture is always undergoing change, and that cultural change is a natural process which all nations must undergo to survive. However, it is the pace and degree of that transformation which is being questioned. Culture gradually and naturally changes for many reasons, but it dramatically transforms due to one of the following reasons: 1) Globalisation and modernisation 2) Colonisation and military expansion 3) Industrialisation 4) Communication and transport improvements.

The causes mentioned above accelerate the speed and magnitude of cultural transformation, and all are related, as shall be seen in chapter 5, to the cultural transformation of the Arab Gulf states. Moreover, the next phase of drastic cultural transformation around the world is more likely to be connected to climate change. It is clear from the literature in this chapter that to minimise the danger of climate change, our lifestyles will have to be modified to adopt more sustainable routines. This will affect the way in which we live our daily lives, and our built environment, consequently changing our culture. This research will focus on the relationship between urban sustainability and cultural change, in an attempt to find solutions for climate change at a local level, in a way that will minimise the potentials of drastic changes in cultures. The process of cultural transformation has been proven and noted in the literature, and the connection between urban sustainability and changing cultures has been debated. However, most westernised writings exclude the Middle East region and make no reference to the Arabian Gulf. This study will fill this gap in the literature by focusing on the relationship between cultural change and urban sustainability in the Gulf, using Bahrain as a case study. A first step in doing that will be to investigate cultural change and urban sustainability in the regional context. This will be presented chapter 5.

"Urban Sustainability" for the purpose of this study will be defined as the process of creating sustainable urban areas, supported by governance through implementing sustainable strategies to the planning mechanism, which are culturally vital, socially equitable, economically viable, and sensitive to the environment. Most recent literature showed that there are now five pillars of sustainable development: the original three pillars which were introduced in the 20th century:

- Environmental Responsibility
- Social Equity
- Economic Viability

– in addition to the two emerging pillars –

- Cultural Vitality and
- Political Support.

In this study, the first three pillars of sustainable development will be respected and touched upon, however a focus will be given to the latest two pillars and in particular attention will be paid to aspects of organization, governance, identity, belief, meaning, enquiry and learning.

CHAPTER 4   RESEARCH METHODOLOGY

> **"A research design is the logic that links the data to be collected and the conclusions to be drawn to the initial questions of the study."**[320]
> Yin, 2003

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[320] Robert K. Yin, *Case Study Research: Design and Methods*, 3rd edn. (London: SAGE Publications Ltd, 2003).

4.1 Introduction

The previous three chapters explained the literature behind the concepts used in this research. The use of those notions in the investigation of the relationship between cultural change and urban sustainability in Bahrain will be outlined here. This chapter attempts to explain the methodology used in conducting this research, which set out to investigate the effects of cultural change on the development of urban sustainability in the Arabian Gulf, and the role of current practices in preventing or stimulating this change in Bahrain. Chapter four starts with a demonstration of the methodological standpoint taken in this research and explains the adaptation of a qualitative approach that depends principally on the case study strategy. Later, the chapter explains the selection of Bahrain as the main case study of this research, and chapters 5 and 6 will present the context of the conducted investigation in detail. A thorough explanation of the methods used will then be discussed, including the data collection process and the tools used for retrieving the required data. It will then illustrate the strategies undertaken by analysing the data and the schemes used for writing up. Finally, it presents an assessment of the methodological approach to drawing conclusions and giving recommendations for future research.

4.2 Methodological Perspective

4.2.1 Qualitative Approach

This study is concerned with the urban environment of Bahrain and the socio-cultural[321], environmental and eco-political[322] processes that produced it, within the frontier of sustainability. It is concerned with the following questions: **Why** did cultural transformation start in the Arabian Gulf countries? **How** did the urban fabric of the Arabian Gulf cities in general and Bahrain in particular transform? **Why** did cultural transformation affect the urban form of those countries? **How** sustainable is the urban environment in Bahrain today? Moreover, **how** sustainable is it in comparison to its situation before the British presence and the discovery of the oil? **How** do the ideologies of officials in Bahrain today contribute to the stimulation or prevention of the development of urban sustainability in the country? Moreover, **how** sustainable are the new governmental mega projects in Bahrain? These questions, which this study tries to answer primarily, focus on "**how**" and "**why**", and to answer them requires the implementation of multiple methods to retrieve data from various sources. The recent literature encourages the use of qualitative methods to study issues related to planning systems, and to move from "site-specific" approaches to ones that are contextual[323]. Moreover, as explained in chapters 2 and 3, many of the terminologies used in this research are subject to interpretation and perceptions and are in most cases context-specific. This research is, therefore, best explored through a qualitative approach, which will enable the understanding of the context-specific concepts.

This study does not attempt to quantify or apply measurements or answer questions that focus on "**how much**" or "**how many**". Rather, it tries to analyse the society and the urban fabric it produces. Therefore, a quantitative approach is not preferred here. A qualitative approach, on the other hand, seems to be more suitable and is thus adopted in this study. Bryman (2012) supported this: "Quantitative researchers are often portrayed as preoccupied with applying measurement procedures to social life while qualitative researchers are seen as using words in the presentation of analyses of society"[324]. Another reason for the unsuitability of using a quantitative approach is the context in which this research takes place. People in the Arabian Gulf, as will be further explained in the coming chapter, are verbal. They believe in the essence of things and in word of mouth and do not pay much attention to measurements or numbers. Thus, a qualitative approach is more suitable for the context and should be fruitful in terms of data collection.

To answer the above research questions, some methods, including semi-structured interviews and document analysis, were implemented. This is another reason for the need to use an overall qualitative approach that allows the integration of a wide range of methods for a better understanding of the studied subject[325]. Moreover, this study depends on the contextual understanding of cultural change and urban sustainability and attempts to assess how this understanding is influencing the sustainability of the urban environment in Bahrain. Bryman (2012) argued "the qualitative researcher seeks an understanding of behaviour, values, beliefs, and so on in terms of the context in which the research is conducted"[326]. This was also supported by others[327]. The above clarifies that using a qualitative approach is essential to achieving the objectives set out for this research. Another feature of qualitative research which made it particularly suitable for this study is its flexibility. Mason (2002) argued "qualitative research

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[321] Sociocultural "*combining social and cultural factors",* Oxford Dictionaries, 'Definition of Sociocultural' (Oxford University Press, 2013) <http://oxforddictionaries.com/definition/english/sociocultural> [accessed 14 March 2013].

[322] Eco-political "The study of politics as influenced by economic power", Dictionary.com, 'Definition of "Ecopolitics"' (Random House, Inc, 2013) <http://dictionary.reference.com/browse/ecopolitics> [accessed 22 March 2014].

[323] Briggs.

[324] Alan Bryman, *Social Research Methods*, 4th edn. (Oxford: Oxford University Press, 2012).

[325] Norman Denzin and Yvonna Lincoln, *Handbook of Qualitative Research* (London: Thousand Oaks, 2000); Catherine Marshall and Gretchen Rossman, *Designing Qualitative Research*, 5th edn (London: SAGE Publications Ltd, 2011).

[326] Bryman.

[327] Denzin and Lincoln; Jennifer Mason, *Qualitative Researching*, 2nd edn (London: SAGE Publications Ltd, 2002); John Creswell, *Qualitative Inquiry & Research Design: Choosing Among Five Approaches* (London: SAGE Publications Ltd, 2007).

should be strategically conducted, yet flexible and contextual"[328]. This research attempts to study the changing phenomenon of cultural transformation in the context of the Gulf, which makes flexibility an essential feature of the adopted approach. Also, this study spans different geographical scales: the broad region of the Arabian Gulf, the narrower case of Bahrain and the particular case of the newly planned governmental projects; therefore, the flexibility of the approach used was of high importance. Other smaller scales like the neighbourhood, the street and the buildings are outside the scope of this research; however, reference to them was occasionally made to explain the change in the larger city scale.

4.2.2   The Case Study as a Qualitative Strategy of Investigation

The method of investigation chosen for this research is a case study method. This was chosen for many reasons. The first is the type of questions that this study attempts to answer. As is explained by Yin (2003), the explanatory nature of "how" and why" questions is likely to encourage the use of case studies, while "what", "who" and "where" questions are likely to lead to the use of survey strategies[329]. Another reason is that this research tries to examine a current phenomenon: cultural transformation, the occurrence of which the investigator has a very limited control over[330]. Also, the case study method is used here because this research is context-dependent and requires the author's familiarity with and close observation of the context being investigated[331]. Cultural transformation is a process that affects the daily life of Bahrainis and for this to be studied, a profound investigation needed to be carried out within the context. Marshall and Rossman (2011) explained that case study as a strategy is more likely to be used in studies that focus on the society or the culture of a "group, program or an organization[332].

Piekkari et al. (2009) defined the case study as "A strategy that examines, through the use of a variety of data sources, a phenomenon in its naturalistic context, with the purpose of "confronting" theory with the empirical world"[333]. Although some researchers question the validity of the case study strategy in descriptive and/or explanatory research, others, however, have argued that some of the best examples of case study research are both of an explanatory and descriptive nature. Yin (1981, 2003) explained that "There may be exploratory case studies, descriptive case studies or explanatory case studies"[334]. The study undertaken in this research attempts to explore the relationship between cultural change and urban sustainability in the Arabian Gulf. Therefore, it is of an exploratory nature. However, it is also explanatory and descriptive for it will attempt to explain and describe the process of cultural transformation before attempting to study its relationship with urban sustainability. One other reason that necessitated the use of the case study method in this research is the complexity of the studied topic and the need to use multiple methods[335]. The use of a case study in this situation is also supported by Yin (2003): "The distinctive need for case studies arises out of the desire to understand complex social phenomena"[336].

As mentioned above, this research focuses on Bahrain as its main case study. The reasons for focusing on a single case study have been explained by Yin (2003), who argued that there are five rationales for using an individual case, which is when the chosen case represents a "Critical case, extreme or unique case, representative or typical case, revelatory case, or longitudinal case"[337]. Three of these rationales are applicable to the selected case study in this research; first, this

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[328]Mason.

[329] Robert Yin, *Case Study Research: Design and Methods*.

[330] Robert Yin, *Case Study Research: Design and Methods*.

[331] Robert Yin, *Case Study Research: Design and Methods*.

[332] Marshall and Rossman.

[333] Rebecca Piekkari, Catherine Welch and Eriikka Paavilainen, 'The Case Study as Disciplinary Convention: Evidence from International Business Journals', *Organizational Research Methods*, 12 (2009), 89–567.

[334] Robert K. Yin, 'The Case Study as a Serious Research Strategy', *Knowledge: Creation, Diffusion, Utilization*, 3 (1981), 97–114; Robert K. Yin, 'The Case Study Crisis: Some Answers', *Administrative Science Quarterly*, 26 (1981), 58–65; Yin.

[335] Creswell.

[336] Robert Yin, *Case Study Research: Design and Methods*.

[337] Robert Yin, *Case Study Research: Design and Methods*.

research focuses on Bahrain as its case study because it is the most critical area in the Arabian Gulf region in terms of the very limited resources it possesses, its high density due to the limitation of available land, and the critical situation of its threatened environment. Yin (2003) explained "One rationale for selecting a single-case rather than a multiple-case design is that the single case can represent the critical test of a significant theory". Second, Bahrain is also a representative case because all of the Gulf countries went through a similar process of cultural transformation which, as shall be seen later, affected the sustainability of the urban environment. Third, the study of the relationship between cultural transformation and urban sustainability in Bahrain also represents the longitudinal case, which is described by Yin (2003) as "Studying the same single case at two or more different points in time. The theory of interest would likely specify how certain conditions change over time, and the desired time intervals to be selected would reflect the presumed stages at which the changes should reveal themselves"[338]. In this research, five points in time are being considered:

Stage	Period		Characteristics
First Stage	Pre 1820	Before the British presence	Very limited external influence; people were dependent on their knowledge, skills and abilities. Also, the resources of the economy were very limited but the society had access to sufficient natural resources.
Second Stage	1820–1931	Before the discovery of oil	External influence developed in the region due to the different treaties with Britain. Natural resources started decreasing, and the economy was not in good shape.
Third Stage	1931–1971	After the unearthing of oil	Increased external influence in the region and increased resources of the economy due to the discovery of oil. However, traditional natural resources began to deplete.
Fourth Stage	1971–2000	Following the independence	Decrease in political external influences due to the state's independence and increase of local skills and massive foreign migrations. The economy is at its best, because of the increase in oil revenues and the creation of the public welfare system.
Fifth Stage	2000–present	Contemporary condition	The decline of economic resources, due to the fall in oil prices and its potential depletion. The fall of the public welfare system, and the high dependency on high-level foreign consultancy.

Table 4-1 Stages of history considered in this study

4.3 Research Setting

The selection of the Arabian Gulf for conducting this study was made for a number of reasons. First, it is an area that has witnessed vivid cultural transformation since the British presence that was followed by more dramatic transformations after the discovery of oil in the 1930s. Second, as will be discussed in Chapter 5, the Arabian Gulf is currently under environmental, economic and cultural threats. Four countries/five cities were considered in this research: Kuwait, Qatar, and the United Arab Emirates, with a focus on Bahrain. Two of the Arabian Gulf countries were excluded from this study: the Kingdom of Saudi Arabia and Oman. This is because:

1. The Kingdom of Saudi Arabia was never directly a protectorate of the British Empire, so it did not go through the same circumstances as the rest of the Gulf.
2. The Kingdom of Saudi Arabia is not comparable to the rest of the Arabian Gulf countries in terms of its size, population and resources and is usually studied in isolation.

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[338] Robert Yin, *Case Study Research: Design and Methods.*

3. Oman does not directly overlook the Arabian Gulf and is distant from the rest of the Arabian Gulf's coastal countries.

4. Both the Kingdom of Saudi Arabia and Oman are not as transformed as the rest of the Arabian Gulf Countries. Their indigenous cultures are still intact and their traditions are still very resistant to cultural change. Although some forms of modernisation have taken place in their major cities, people's ideologies, beliefs, and norms of conduct are not similar to or not as transformed as the rest of the Gulf States.

As mentioned in the previous section, this research focuses mainly on Bahrain, one of the four selected countries considered in this research, and which will be presented separately in chapter 6. The selection of Bahrain as the primary case study was based on the following:

1. Bahrain is the first country in the Arabian Gulf where oil was discovered in 1931; thus, the cultural transformation started to spread from Bahrain to the rest of the Gulf States.

2. Bahrain is the most vulnerable country in the Arabian Gulf region because of its limited resources including water, food and oil (depleted in 2008), the various environmental problems, its small size and its high population density.

3. Bahrain is one of the countries in the Arabian Gulf region with a relatively slower pace of development, which allows for this study to focus on the different phases of change and focus particularly on the current condition.

4. Bahrain is the only urban archipelago in the region. Its special urban character and the small size of the country makes it ideal for conducting this research due to time and resource constraints.

5. The familiarity of the author with the context and the rich network of people promised relatively easy access to data.

4.4 Data Sources, Methods and Tools

This study implements a qualitative approach with a case study strategy of investigation to explore the relationship between cultural transformation and urban sustainability in the Arabian Gulf. As mentioned above, both the approach and the strategy used in conducting this research depend on a wide range of methods and tools. Thus, the study is divided into three stages; each contains a number of methods that attempts to achieve one of the three main research objectives (See Appendix 4.1).

1. Stage I

The first stage attempts to trace the roots of the current problem and identify gaps in the literature. It also aims to record the development of cultural transformation and urban sustainability in Bahrain, to compare Bahrain's situation in terms of urban sustainability to other countries of the Arabian Gulf where cultural transformation has also taken place. This addresses the first aim of this study, which is to explore the socio-cultural, environmental and eco-political mechanisms behind the formation of Bahrain's urbanism and to investigate the forces that contributed to the development of cultural transformation in Bahrain:

▪ The first method is a **comprehensive literature review**, with the aim of formulating a redefined definition/concept of urban sustainability that suits the studied context in relation to areas of cultural change, in addition to providing a theoretical review of academic studies on urban sustainability and cultural change to identify the gap in the literature filled by this study. In this research, **culture** is defined as the whole sum of activities, tangible and intangible, which represent the nation in question and the environment in which those events take place. **Cultural change** is the alteration of cultures around the world due to either external or internal forces, or sometimes a combination of both; and **Urban Sustainability** for the purpose

of this study is defined as the process of creating sustainable urban areas, supported by governance through implementing sustainable strategies to the planning mechanism, which are culturally vital, socially equitable, economically viable, and sensitive to the environment. Urban sustainability in this research respects five pillars: the **environmental, economic, social, cultural and the political.**

- The second method is **archival research**; this is aimed at tracing back the process of cultural transformation in Bahrain. Throughout this phase, national documents were reviewed along with diaries of Englishmen who were resident in the Arabian Gulf; political diaries and reports of the American missionaries in the Gulf States were looked at, in addition to the political reports and intelligence summaries prepared by British political officers stationed in the Arabian Gulf. The first and the second methods explained here are particularly important for this research because of the oral culture in Bahrain and the tendency of locals not to record events, write down or publish research.

- The third method is a **comparative analysis** between the four countries included in this study; this merely depended on semi-structured interviews based on networking with researchers and officials in the four selected Arabian Gulf countries. Initial networking is essential for any project in the Arabian Gulf context, because people mostly depend on their network of people to carry out any investigation and to be able to retrieve data, which is in most cases not organised, especially in governmental institutions. Networking was carried out in three stages: first, a trip to Bahrain and Kuwait in January 2013, followed by another trip to Bahrain and Doha in April 2013, and a third trip to Bahrain and the United Arab Emirates in December 2014 (see example, Appendix 4.1). The networking helped in identifying and making connections with the potential sample and investigating sustainable projects and sustainability assessment programmes in the Arabian Gulf.

- **A pilot study** carried out in December 2013 to evaluate the feasibility, time efficiency and compatibility of the selected methods and to test the research methodology within the considered context.

2. Stage II

This stage of methods attempted to examine the transforming culture of Bahrain and assessed the role of the existing culture in stimulating or preventing the development of urban sustainability. This was achieved by:

- Investigating the sustainability of the practices that lead to the development of the urban environment in Bahrain and comparing them with those of the other stages of development explained in (Table 4-1); those comprise the findings from the first stage. This was achieved through first conducting semi-structured interviews with key officials, planners and researchers from the UoB, MoH, MoC, MoW, MoM, SEC, and the ARCWH, to assess the ideologies and understandings of those who are working with the current planning system and to comprehend their perception of the sustainability of the urban environment in Bahrain today. Then governmental strategies, policies and laws that govern the production of the built environment were analysed and their role in encouraging sustainable solutions was investigated.

- Investigating the sustainability of the newly planned developments with a focus on new governmental mega projects. This was achieved by first conducting semi-structured interviews with governmental officials who are working particularly with those projects, and with overseas consultants who are overseeing the planning of those three mega projects. Also, the latest documents and master plans of the selected projects were reviewed. Those will be highlighted later.

3. **Stage III**

This stage was implemented to put forward a sustainable urban regeneration strategy for Bahrain, which focuses on all aspects of sustainability. This was mainly achieved by publishing an academic piece of work (thesis and subsequent publications) that offers evidence-based suggestions for governmental agencies to improve the sustainability and quality of the urban environment in Bahrain. This does not indicate that the effects of cultural transformation are reversible or that this study attempts to bring back the lost indigenous, sustainable form. However, the suggestions are designed to assist the overall improvement of the sustainability level of the urban environment in Bahrain. To achieve this, the third set of methods consisted of:

▪ A synthesis of the empirical evidence collected for this research with the theoretical perspective formed at the beginning of the study and the archival material retrieved at earlier stages to develop an agenda for sustainable urban reform in Bahrain, which includes a set of recommendations for sustainable urban regeneration in Bahrain to ensure the sustainability of the country's future urban and planning practices.

▪ An evaluation of the methodology used in the research, which includes a reflection on the data collection and analysis processes. This was implemented in order to develop a redefined methodology based on a qualitative strategy and a case study approach that suits the context and to give methodological guidelines and recommendations for further research to be carried out in the Arabian Gulf context in the future.

4.5 Data collection process

Data for this study was collected through a number of stages which required travelling back and forth to the Arabian Gulf a number of times. The first stage consisted of a group of trips during January, April, August, and December 2013. The trips were short, an average of 2 weeks each. Networking was achieved during those trips in the four countries of Bahrain, Kuwait, Qatar, and the United Arab Emirates. Particular attention was given to researchers from those countries, in order to acquire as much information as possible to add to the existing body of knowledge. The culture of the Arabian Gulf, unlike most western countries, does not encourage the publishing of research, thus most academic studies, notably higher degree theses, would set themselves up in disorganised libraries, making the task of finding literature harder and lengthier. Therefore, networking was chosen as a method to find more related studies and researchers who are interested in the various fields relating to this research, such as landscape, urban planning and design, social and cultural geographies, in addition to urban and architectural sustainability. Convenience sampling was used at this stage for the selection of participants. Morse (2007) explained how "participants are selected on the basis of accessibility. This method of sampling is used at the beginning of a project to identify the scope, major components and trajectory of the overall process … to locate persons who are available, who have already gone through, or have observed the process, for example, experts who have experienced most of the phenomenon"[339]

The second stage entailed a short trip for the pilot study: two weeks at the beginning of December 2013. This stage aimed to test and validate the selected methods. It also helped to focus further, sharpen and develop a better understanding of the scope of this research. Three semi-structured interviews were conducted, two with governmental officials from the MoH and MoC, and another with a researcher from the UoB. The author also examined some residential, commercial and public spaces in Bahrain. Furthermore, two informal interviews were conducted with the general public and visual methods were used and tested within the research context. It is important to note here

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[339] Janice Morse, 'Sampling in Grounded Theory', in *The SAGE Handbook of Grounded Theory* (London: SAGE Publications Ltd, 2007).

that originally, part of the scope of this research was to investigate the general public's understanding of sustainability and their perception of the sustainability of the urban environment in Bahrain, but the results of the pilot study suggested that this research is better directed to focus on the influence of overseas consultants in the development of governmental strategies and mega projects, an issue that was emerging predominantly from the pilot study. The inclusion of all three perceptions of the officials, overseas consultants and the general public was not possible due to time constraints, and a danger of losing focus. Nevertheless, the latter forms a good forefront to start further research in the future.

The third stage consisted of a longer trip for the first stage of the data collection that took place in January to March 2014. This focused on semi-structured, in-depth interviews with governmental officials: 28 interviews were conducted with 29 officials in governmental organisations concerned with the built environment and researchers from the UoB. This was done to develop an understanding of the officials' ideologies and understandings of cultural change and urban sustainability and their perception of the sustainability of the urban environment in Bahrain today. Some of the Questions were similar in nature; others differed slightly from one organisation to another to capture the scope of work of that particular organisation; for example, interviewees of the MoC were asked whether there were programmes that deliberately broadcast the meaning of culture and its value to the general public (see Appendix 4.2). Interviewees in the second and third stages were selected using purposeful sampling; as explained by Morse (2007): "Participants are selected as indicated by the initial analysis of interviews. These interviews reveal how participants themselves partition the emerging phenomenon. Participants may be speaking for themselves 'we' or speaking for others 'they'"[340].

All interviews started with some questions to understand the interviewee's exact role in the organisation and to interpret the degree to which he/she can contribute to changing the policies and influencing outputs. This was followed by a set of questions targeted at capturing the interviewee's understanding of cultural change in general and within the context of the Gulf and Bahrain in particular. Then, the interviewee's opinion about whether this process of cultural change is recognised among other employees in the organisation was investigated. Also, this set of questions targeted the interviewee's perception of the impact of cultural change on the urban environments and their perception of the influence of cultural change on the work of the organisation, its policies, projects and events.

Then, similar to cultural change, another set of questions were asked to capture the interviewee's understanding of sustainability in general and urban sustainability in particular. Questions asked were related to what sustainability and urban sustainability mean to the interviewee. To capture the knowledge of governmental officials of those concepts, the interviewee was then asked about how much they think such concepts are understood in their organisations. This set of questions also targeted the interviewee's perception of the sustainability of the urban environment in Bahrain today and in the past and whether they think the level of sustainability has changed over time; the interviewees were asked to elaborate on what they think changed and why. The interviewees were also asked about their opinion of the sustainability of the working environment of their organisation and whether it encourages sustainable thinking.

The interviewee was then asked about their perception of the socio-cultural, environmental and eco-political mechanisms behind the formation of the urban environment in Bahrain. This was followed by a set of questions that targeted the work of their organisation and whether cultural change or urban sustainability is being tackled in any of its activities, programmes or events. The interviewee's perception of the degree of public understanding of the role and importance of their organisation was also captured. Following that, the connection between different governmental organisations was targeted by a set of questions aimed at understanding the relationship between

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[340] Morse.

first academia and practice, then the relationship between various governmental organisations concerned with the built environment.

Finally to wrap up, every interview ended with three questions that are directly related to the main research questions of this study. Interviewees were first asked whether they think their organisation plays a role in stimulating or preventing cultural change and urban sustainability in Bahrain today, and how. Then, they were asked whether they think their organisation plays a role in understanding the relationship between cultural change and urban sustainability.

After the first stage of data collection, the author was assured that the scope of this research should be diverted from the general public's perceptions to those of overseas consultants, for the following reasons:

- Firstly because of the unexpectedly large amount of data retrieved from the first stage, including lengthy in-depth interviews with officials and a sufficient number of governmental policies and strategies. Most of those policies had strictly constrained access in the past, due to the sensitivity of information they acquire; however, luckily, for the purpose of this research, and after several failed attempts, the authorities in Bahrain were willing to share relevant policies, aerial photographs and maps for the sole purpose of research. The analysis of such large amount of data required time which resulted in modifying the initial scope of the second stage of data collection, and pushing it forward by six months.

- The influence of foreign consultants was a very predominant theme that emerged throughout the first phase, and a choice had to be made between whether the perception of those consultants or that of the general public were more important in understanding the relationship between cultural change and urban sustainability in Bahrain.

- Because the public's contribution to the decision making process, unlike most western societies, was proven to be very minimal after the first phase of data collection. Their input in planning and design of new urban areas is very limited, and since this research is focused on the governmental decision making process, the input of their perceptions in this study will also be limited. This, however, does not regard the role of the inhabitants in substantially affecting the sustainability of the urban environment.

- After the first stage of data collection, a need emerged to study the mega governmental housing projects in Bahrain, because of their potential environmental, social, cultural and economic impact on the urban environment. Bahrain has a history of housing, which will be explained in chapter 6. However, it is the first time that Bahrain has developed a number of projects of this magnitude all at once. All of those mega projects are being developed by the government in cooperation with overseas consultants, who are solely responsible for the planning, development of master plans and construction. Those projects are still in their first stages of development and are not yet fully inhabited by the public; thus, it was decided that the perception of the foreign consultants were of greater relevance here, given the new urban forms that could be examined as part of the project.

The fourth and last stage consisted of another relatively long visit to Bahrain that took place from September to October 2014, for the second stage of data collection. This was designed to develop an understanding of the sustainability of the most recent governmental mega projects and the role of the government and overseas consultants in assessing or preventing the development of more sustainable urban environments in Bahrain today. Five interviews were conducted with officials from the MoH and SCE, in addition to interviews with overseas consultants PCF and WSP, and were focused on the three selected projects NGNT, SGNT and EHNT; these will be explained in detail in chapter 9. The interviewees were selected using theoretical sampling for this phase; Morse (2007) demonstrated that "participants are selected according to the descriptive needs of the emerging

concepts and theory. These needs dictate the sampling strategies and goals"[341]. Moreover, the interviews were revised in relation to the most recent documents of those projects, which are the draft detailed master plan report for EHNT, the detailed master plan report for NGNT, and the scoping report of SGNT. The selection of the three projects was based on the following:

- The three projects are the largest being planned by the government, in terms of capacity and land cover, which increases their cultural, social, economic and environmental impact on the urban environment.

- The projects are located in different governorates in Bahrain, and dealing with a variety of environmental, social, physical and cultural circumstances, those will be explained in chapter 6.

- The three projects are in different phases of development varying from the very initial conceptual stage of SGNT to the implementation phase NGNT and the handling in the stage of EHNT. Nevertheless, none of the projects is yet completed.

- Interviewees in the first stage of data collection referred to these developments as being the most sustainable developments planned by the government, which initiated a need to investigate their sustainability.

- Like many governmental projects, those are being planned by foreign consultants, a theme that kept emerging throughout the interviews. Worked examples were needed to illustrate the arguments made by the interviewees in the first phase of data collection.

Similar to the first stage of data collection, some of the questions asked in the second stage were alike in nature while a few questions differed. This was of particular importance to understanding the specific role of the interviewee in those projects, and his/her perception of the sustainability of those projects and the processes that lead to their development. Interviews with the MoH in this phase started with a set of questions aimed at understanding their insight into the change in the government's approach to urban planning. This was followed by other questions relating to the rationale behind the development of the three mega projects. More questions addressed the current society's needs, local mandates, and how these are being considered in the three projects. Moreover, the degree to which the projects in hand answer to the bigger national strategies was investigated.

More questions related to the communication between different governmental organisations in the development of those projects, and the interviewee's perspective of whether this cooperation was fruitful. This aimed at understanding the sustainability of the processes behind the development of the three projects. Then, the social and physical connectivity of those new remote towns with other areas in Bahrain was investigated. Interviewees were also asked about their perception of the environmental, social, cultural and economic sustainability of those mega new developments.

Questions to overseas consultants aimed at understanding their role in the development of urban sustainability in Bahrain today. First, they were asked about the aim of the projects they are working on and the rationale for their contribution to their development. Then, similar to governmental officials, foreign consultants were asked about their perception of the environmental, social, cultural and economic sustainability of those projects and how contextual issues are being addressed. Also, another set of questions was asked, aimed at understanding how those foreign consultants benefit from the development of such projects in this context and the lessons learnt in the process. Finally, consultants were asked about their perception of the work of governmental organisations in Bahrain and whether they think locals are ready to build projects of such calibre without external resources (see interview questions, Appendix 4.3B).

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[341] Morse.

The interviewees in the first and second stages were selected as a representative sample, and different levels of the work hierarchy were targeted; however, because of the difficulty of getting decision makers to participate more attention was given to mid-position employees including heads of directorate, heads of section and heads of department, in addition to projects managers as representatives of the foreign advisors and consultants (see list of interviewees, Appendix 4.4).

4.6 Data Analysis and Writing Strategy

Before the primary data collection phase, as mentioned earlier, a comparative analysis was needed to understand the similarities and differences in patterns of cultural change among the countries considered in this study: Bahrain, Kuwait, Qatar and the United Arab Emirates. This helped focus the research objectives and redefine the scope of this study to select Bahrain as the main case to be investigated; the comparative analysis will be presented in chapter 5. The comparisons were essential in drawing the research conclusions outlined in Chapter 10. Comparative analysis was used to analyse the different cases; as Glaser and Strauss (2006) explained, "...comparative analysis as a strategic method for generating theory assigns the method its fullest generality for use on social units of any size, large or small, ranging from men or their roles to nations or world regions"[342]. Comparative analysis was used to determine if and how cultural change occurred in the four selected countries of the Arabian Gulf. This was supported by Glaser and Strauss (2006) "evidence collected from comparative groups ... is used to check out whether the initial evidence was correct. Is the fact a fact? Thus, facts are replicated with comparative evidence ... sociologists generally agree that replications are the best means for validating facts"[343]. Then, after focusing on Bahrain and the three mega governmental projects, comparative analysis was also used to generalise that impact of cultural change on the urban sustainability of the selected countries; as Glaser and Strauss (2006) further explained: "another standard use of comparative studies is to establish the generality of a fact"[344]. This will be further outlined in Chapter 10.

The central data collection and analysis phase spanned from January to November 2014. The first group of data was first collected and analysed, then, as explained earlier, the scope of the second phase was modified before collecting and analysing the second group. This is a feature of qualitative research: as Bryman (2012) explained, "there is a repetitive interplay between the collection and analysis of data"[345]. This need to repeatedly refer to one another was one of the reasons to adapt the principles of grounded theory to the methods of analysis. It is important to note here that the analysis method used can also be interpreted as a strategy for data collection. Bryman (2012) explained: "... while grounded theory and analytic inductions are described as strategies of analysis, they can also be viewed as strategies for the collection of data"[346]. This method of analysis is used in the retrieving of data; its analysis and the production of the theory are closely related to one another[347].

All the interviews collected in the first and second phases were transcribed in full (see sample transcription, Appendix 4.5). This was essential for the data analysis stage. Interviews were all conducted in English, for all interviewees were fluent in English, which is a feature of most officials in Bahrain, so there was no need for translation. Nevertheless, some interviewees used Arabic terminologies on a few occasions to express certain matters related to the culture and context. Thus, language editing was carried out for some interviews while transcribing, to prepare them for an English reader. Although the process of transcribing took a long time, an average of two days per

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[342] Barney Glaser and Anselm Strauss, *The Discovery of Grounded Theory: Strategies for Qualitative Research* (London: Aldine Transaction, 2006).
[343] Glaser and Strauss.
[344] Glaser and Strauss.
[345] Bryman.
[346] Bryman.
[347] Anselm Strauss and Juliet Corbin, *Sics of Qualitative Research: Grounded Theory Procedures and Techniques.* (California: SAGE Publications, Inc, 1990).

interview, many of the codes and themes began to emerge at that stage, if not earlier, which was essential to the analysis process. Bryman (2012) explained that "coding in quantitative research is more or less solely a way of managing data, whereas … in approaches to qualitative data analysis … it is an important first step in the generation of theory"[348]. Gibson and Hartman (2014) also explained that "coding appears to have two purposes: the first is to capture the substantive content of the area under study, the second is to articulate relationships that can be observed in the data"[349].

Also, it is important to note here that after each interview and for confidentiality purposes all interviewees were given a unique identifier code, directly after transferring the data from the recorder. Each organisation was given a number, and then each interviewee in that organisation was also given a number so, for example, interviewee number one from the UoB was given the code 1.1, and the second interviewee from the same organisation was given the code 1.2 and so on. Later, transcriptions were read several times, and more themes emerged (see initial analysis sample, Appendix 4.6). Themes were then subdivided into three types: cultural change, urban sustainability and the relationship between the two. Throughout this process, codes were constantly revised. Bryman (2012) explained: "coding in qualitative data analysis tends to be in a constant state of potential revision and fluidity. The data are treated as potential indicators of concepts and the indicators are constantly compared"[350]. Data for each organisation was then organised in one MS Excel sheet, for a better cross-comparison between the answers of each interviewee in the organisation, and then the findings of all organisations were also examined together (see sample analysis of three questions for one interviewee, Appendix 4.7). This helped in determining theoretical saturation. As Holton (2007) explained, "theoretical saturation is achieved through constant comparison of incidents (indicators) in the data to elicit the properties and dimensions of each category (code) this continues until … no new properties or dimensions are emerging from continued coding and compensation"[351]. Three types of coding were used in the analysis of the interviews; the first was open coding, which was used initially to break down the lengthy transcriptions, and resulted in a large amount of themes, what Strauss and Corbin (1990) stated was "the process of breaking down, examining, comparing, conceptualising and categorising data"[352], while Bryman (2012) claimed that "this process of coding yields concepts, which are later to be grouped and turned into categories". Then, Axial coding was used to put the different emergent themes together into new categories, and link them in relation to the context and pattern under investigation. For this, Strauss and Corbin (1990) explained that "[axial coding is] a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories"[353]. Finally, selective coding was used to determine the main categories that should be used in narrating the story of the relationship between cultural change and urban sustainability in Bahrain. Strauss and Corbin (1990) stated that "[selective coding is] the procedure of selecting the core category, systematically relating it to other categories, validating those relationships and filling in categories that need further refinement and development"[354]. This was synthesised with the findings of document analysis: maps, aerial photographs, personal documents and governmental policies, which were analysed using both an inductive and deductive approach.

The data analysis was followed by writing up strategy that was based mainly on the three main subunits of analysis mentioned earlier. The impact of foreign consultants and lack of local skills and expertise was a very dominant subtheme that emerged throughout the interviews. The initial plan was to explain the main challenges to urban sustainability in the relevant section; however, it was

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[348] Bryman.
[349] Barry Gibson and Jan Hartman, *Rediscovering Grounded Theory* (London: SAGE Publications Ltd, 2014).
[350] Bryman.
[351] Judith A. Holton, 'The Coding Process and Its Challenges', in *The SAGE Handbook of Grounded Theory* (London: SAGE Publications Ltd, 2007).
[352] Strauss and Corbin.
[353] Strauss and Corbin.
[354] Strauss and Corbin.

found after the preliminary analysis of data that it is essential first to set out the lack of local experts and the consequent dependency on overseas consultancy and foreign knowledge because of its importance in understanding other matters relating to cultural change and urban sustainability in Bahrain. This is shown in the outlining of the educational and training difficulties in chapter 7. Another consequence of this dominant emerging theme was the coding to include whether the interviewee was a local or expatriate. The initial analysis showed that the job titles of the interviewees were also of importance, thereafter, for example, the first interviewee from the UoB was an expatriate Assistant Professor and was given a code E/AP/1.1, while the fourth in the same organisation was a local teaching and research assistant so was given a code L/TA/1.4 and so on (see list of interviewees, Appendix 4.4). The perceptions of cultural change were then outlined in Chapter 8, followed by a narrative of this change in the Gulf in general and Bahrain in particular. Then the perceptions of urban sustainability were discussed, followed by an examination of the sustainability of the most recent governmental mega projects in chapter 9. Later, a synergy of all findings and literature was outlined in Chapter 10.

4.7 Methodological Assessment and Research Limitations

Within the financial constraints and limited time for the development of this research, the research strategy, data collection methods and analysis tools were found useful. Nevertheless, like every research project, a number of challenges were faced:

- Finding literature that relates to the topic under investigation in this study was not an easy task, due to the cultural constraints mentioned earlier. Research in the Gulf context is not published to the same extent as most western countries. However, this challenge was overcome by a number of networking visits to the four countries concerned in this study. Thus, the process of acquiring knowledge about other studies conducted in the region but unpublished was very time- and resource-intensive.

- Defining sustainability/ urban sustainability/ culture and cultural change was difficult, in terms of maintaining objectivity in the study of the relationship between cultural change and urban sustainability. This was overcome by allowing interviewees first to define those terms on their own before the discussion was directed to the definitions adopted in this study. It was recognized that defining those terms in such a subjective way questions the validity of different answers because officials may answer questions with different agendas in mind. It cannot and should not be assumed that all officials have the same attitudes and understandings towards sustainability of the built environment. This variation is important to understand the decision making process in different organisations. It was therefore not an aim of this research to remove subjectivity from the concept of sustainability, change or culture but rather to acknowledge the importance of it.

- The continuous introduction of new authorities, directorates, interministerial committees and the change in governmental bodies by replacement, shuffling, splitting and rejoining during the last few years made it particularly difficult for the author to know who is responsible for what. This was also a challenge for other researchers in the past. For example, AL Ansari (2009) noted that this caused difficulties in locating the original designers of the parks under his study. Although acquiring accurate information was very time-consuming, this obstacle was partially overcome by arranging networking visits prior to the data collection phase. Nevertheless, after the writing-up stage was completed, a number of other changes occurred:

    1. The five governorates in Bahrain were redefined in September 2014 and reduced to four governorates, by cancelling the Central Governorate and dividing it into two parts, of which one was joined with the Northern Governorate and the other with the Southern Governorate. The division was done for political reasons that

are outside the scope of this research; the former five governorates will be explained in Chapter 6.

2. The Ministry of Works was joined with the Ministry of Municipalities Affairs and Urban Planning to become the Ministry of Works, Municipalities Affairs and Urban Planning.

3. The Ministry of Culture, which was only established in 2008, was renamed Bahrain's Authority for Culture and Antiquities, in response to Royal Decree No. (10) for the year 2015 regarding appointing the government. For the purpose of consistency, the former names of the organisations were used in this study because changing them proved to be time-consuming and might result in loss of clarity and confusing the reader. The impacts of those changes are beyond the scope of this research; however, they will be highlighted again in chapter 10.

- Governmental policies and up-to-date high-resolution aerial photographs and maps were particularly difficult to obtain for many security and bureaucratic reasons. This, in addition to the continued change in governmental bodies explained above, consumed a lot of the author's time in finding out where that information was held and who is authorised to share it, and in explaining the sole purpose of this research and why that information was of importance in achieving the research aims.

- Signing formal consent for conducting the interview was alarming to some of the interviewees, particularly expatriates who had to be assured a number of times of the wholly academic intent of this research. Future research in the context should consider taking a verbally recorded consent rather than a written one from the interviewee, which should help ease any tension between the researcher and the interviewee at the beginning of the interview.

- Some interviewees were cautious to criticise the work of their organisation and were critical when expressing views about other governmental organisations. To understand the balance between the interviewees' different perspectives was challenging during the data analysis and writing up. Nevertheless, because this research depended on interviews with officials from a number of organisations concerned with the built environment, the field within which the author works in Bahrain, the extreme and contradicting perspectives were readily recognised.

- The inclusion of all governmental bodies was not possible because of time constraints; therefore, institutions which are not directly linked to the production of the built environment, such as the Ministry of Social Affairs, the Ministry of Education, the Ministry of Works, and the Ministry of Finance, were excluded from this study.

4.9 Conclusion

This chapter explained the rationale behind selecting an overall qualitative approach with a case study strategy to investigate the relationship between cultural change and urban sustainability in the context of the Arabian Gulf. It also outlined the setting in which this research takes place, the different sources of data and the methods used to retrieve them. Later the chapter outlined the process of data collection and explained the various stages needed in the acquiring of the appropriate information to answer the research questions. The analysis strategy used to deal with the large amount of collected data was then set out, and the writing strategy was explained to outline the rationale behind the structure of the thesis. Finally, the chapter concluded with an assessment of the methodology used and outlined the challenges faced during the process of data collection, analysis and the writing up. The next two chapters will carry out the explanation of the cultural, social, political, environmental and economic setting in which this research takes place.

CHAPTER 5   SUSTAINABILITY IN THE GULF: POTENTIALS AND CONSTRAINTS

"The Gulf is not just reconfiguring itself; it is reconfiguring the world" Rem Koolhaas[355]

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[355] Rem Koolhaas, 'Last Chance?', in *Al Manakh*, ed. by Rem Koolhaas, Ole Bouman, and Mark Wigley (Canada: Columbia University GSAPP, 2007).

5.1 Introduction

The universal meaning of cultural transformations is a broad subject: its background, dynamics and foundations were outlined in chapter three. This chapter will take a step further and zoom in to focus on the local context of the Arabian Gulf in an attempt to contextualise the relationship between cultural change and urban sustainability. The Arabian Gulf States witnessed dramatic cultural changes during the last century as a consequence of the discovery of oil and the British presence in the region[356]. Some of the Gulf States, especially those small states on the east coast of the Gulf, were more affected by this change. This chapter will start by introducing the Arabian Gulf, its location and its culture. Later, it will present a literature review of the urbanisation of the Gulf, its history, its transformation and its current status, in addition to the challenges and environmental threats it is facing today. Finally, the chapter will focus on the higher education of sustainability in the Arabian Gulf states, the different projects concerned with urban sustainability and the emergence of sustainability rating systems in the Gulf.

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[356] Fay Al Khalifa, 'An Urban Healing Agenda for Reform in Bahrain: Where the Dweller Falls into the Urban Gap and the Sailing Boat Hits the Skyscraper' (University of Sheffield, 2012).

5.2 The Arabian Gulf

5.2.1   Naming Dispute of the Arabian/Persian Gulf

The Arabian Gulf is often referred to as the "Persian Gulf". There is an evident dispute in the region regarding this naming. While researchers from Persia refer to the body of water separating the Arabian Peninsula from Iran (Figure 5-1) as the "Persian Gulf", increasingly, others, mainly Arabs, refer to it as the "Arabian Gulf". Freitag (2014) explained that when the cities of the Gulf suddenly flourished in tourism, business and academia on an unprecedented level, the Gulf's name started to change and academics followed suite to observe, describe, and analyse the development of the region[357]. Choosing "Arabian" instead of "Persian" in this research does attempt to discount the importance of the term "Persian Gulf" in the literature; in fact "Persian Gulf" was used along with "Arabian Gulf" as a keyword in finding literature in the digital databases. Nevertheless, this study is tackling issues on the Arabian shore of the Gulf, in particular, the GCC countries (Bahrain, Kuwait, Qatar and the United Arab Emirates), and does not tackle areas from the Persian shore of the Gulf. Thus, the name "Arabian Gulf" was selected because it is the Arabian perspective that will be presented in this research. Using the prefix "Persian", or just "the Gulf", would be irrelevant and might cause confusion. This does not indicate that the term "Arabian Gulf" is more accurate or significant, and it does not attempt to undervalue other used words. It merely reflects the cultural background from which this research is being presented, and the nature of arguments and perceptions in this study.

Figure 5-1 Map of the Arab Gulf States[358]

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[357] Steffen Wippel and others, eds., *Under Construction: Logics of Urbanism in the Gulf Region* (Surrey: Ashgate Publishing, Ltd., 2014).

[358] SpLoT, 'Arab Gulf States. Arab States of the Persian Gulf' (en.wikipedia, 2008)
<http://en.wikipedia.org/wiki/File:Persian_Gulf_Arab_States_english.PNG> [accessed 13 March 2013].

5.2.2   Location and General Characteristics

The Arabian Gulf States – Kingdom of Saudi Arabia (KSA), United Arab Emirates (UAE), State of Kuwait, State of Qatar, Sultanate of Oman, and Kingdom of Bahrain – are countries overlooking the Gulf from the Arabian Peninsula and spread over an area of 2,423,300km². They are all located in the Middle East, in Asia. The biggest of these countries is the KSA with a population of around 28 million and the smallest is Bahrain with a population of a little more than a million[359]. The total population of all the Arabian Gulf States was estimated at 46 million in 2011[360]. The six countries of the Arabian Gulf are all members of the Gulf Cooperation Council (GCC), which is also referred to as the Cooperation Council for the Arab States of the Gulf (CCASG)[361]. Iraq, located in the north of the Gulf, used to be a seventh member of the Council but was excluded since its invasion of neighbouring Kuwait[362]. The attack was carried out by the former president of Iraq, Saddam Hussein, during the Gulf War in 1990, and resulted in the permanent suspension of Iraq's membership of the Council. Since the invasion of Iraqi forces to Kuwait and until the present, its borders with Iraq have always been a zone of stress[363] while its other border with Saudi Arabia is very calm and diplomatic. The Council is a union of the Arab States located around the Arabian Gulf and represents political, economic, and military cooperation.

The six countries[364] today jointly own the "Peninsula Shield Force", a military force established in 1984 to protect the Arab State countries[365]. The formation of the GCC aimed to bring together those member states that share many common ties, special relations, common characteristics and similar systems[366]. Many projects have been planned to link those countries together since its establishment, and further efforts are taking place now because of the regional tension that has accelerated since the Arab Spring events. The six member states are now in the process of ensuring closer economic, defence and political integration and unity, in terms of integrated economies, a joint foreign policy and a common defence system [367]. All members of the GCC are dependent on oil and gas to some extent. (Table 5-1) shows that Manama has the most diverse economy; oil and gas has a share of only 13.1% of GDP while other cities in the Gulf are still heavily dependent on oil and gas. Cities of the Gulf States developed their urban development regulations, which consist of both historic building codes and modern urban development regulations. New strategies and plans for development are now seen across the different cities of the Gulf estate, for example the Abu Dhabi plan 2030, the third Kuwait master plan (3KMP), Dubai strategic plan, Qatar national vision 2030 and Bahrain 2030 NPDS[368], which will be explained in detail in chapter 6.

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[359] The World Bank, 'Population Total 2011', 2013 <http://data.worldbank.org/indicator/SP.POP.TOTL> [accessed 18 February 2014].

[360] Secretariat General, 'The Cooperation Council for the Arab States of the Gulf', 2012 <http://www.gcc-sg.org/eng/> [accessed 23 March 2013].

[361] Secretariat General.

[362] Michigan State University, 'GCC History', *globalEDGE*, 2013 <http://globaledge.msu.edu/trade-blocs/gcc/history> [accessed 18 June 2014].

[363] Sami Aboudi, 'Kuwait Expresses Dismay to U.N. over Iraqis' Border Protest', *News Daily* (Dubai, 12 March 2013).

[364] Recently, and after the political uprising that has arisen in the area in 2011, the six counties have invited Jordan and Morocco to join the Council but this is still under consideration by the six members. For more about this see; Sara Hamdan, 'Gulf Council Reaches Out to Morocco and Jordan', *The New York Times* (Dubai, 25 May 2011).

[365] Global Security, 'Gulf Cooperation Council GCC', 2013 <http://www.globalsecurity.org/military/world/gulf/gcc.htm> [accessed 15 February 2011].

[366] The Cooperation Council, 'The Charter', 2012 <http://www.gcc-sg.org/eng/indexfc7a.html?action=Sec-Show&ID=1> [accessed 26 May 2013].

[367] Agencies, 'GCC Calls for Unity', *Khaleej Times*, 2012 <http://www.khaleejtimes.com/kt-article-display-1.asp?xfile=data/government/2012/December/government_December57.xml&section=government> [accessed 3 February 2015].

[368] Rem Koolhaas and others, *Al Manakh II*, ed. by Ole Bouman, Mitra Khoubrou, and Rem Koolhaas (Netherlands: Stichting Archis, 2010).

Figure 5-2 The location of the Arabian Gulf on the world map

Figure 5-3 The Arabian Gulf States (Saudi Arabia, Oman, United Arab Emirates, Qatar, Kuwait and Bahrain) and their surrounding countries[369]

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[369] Rosemarie Said Zahlan, *The Making of the Modern Gulf States: Kuwait, Bahrain, Qatar, the United Arab Emirates and Oman* (Garnet Publishing Limited, 2002).
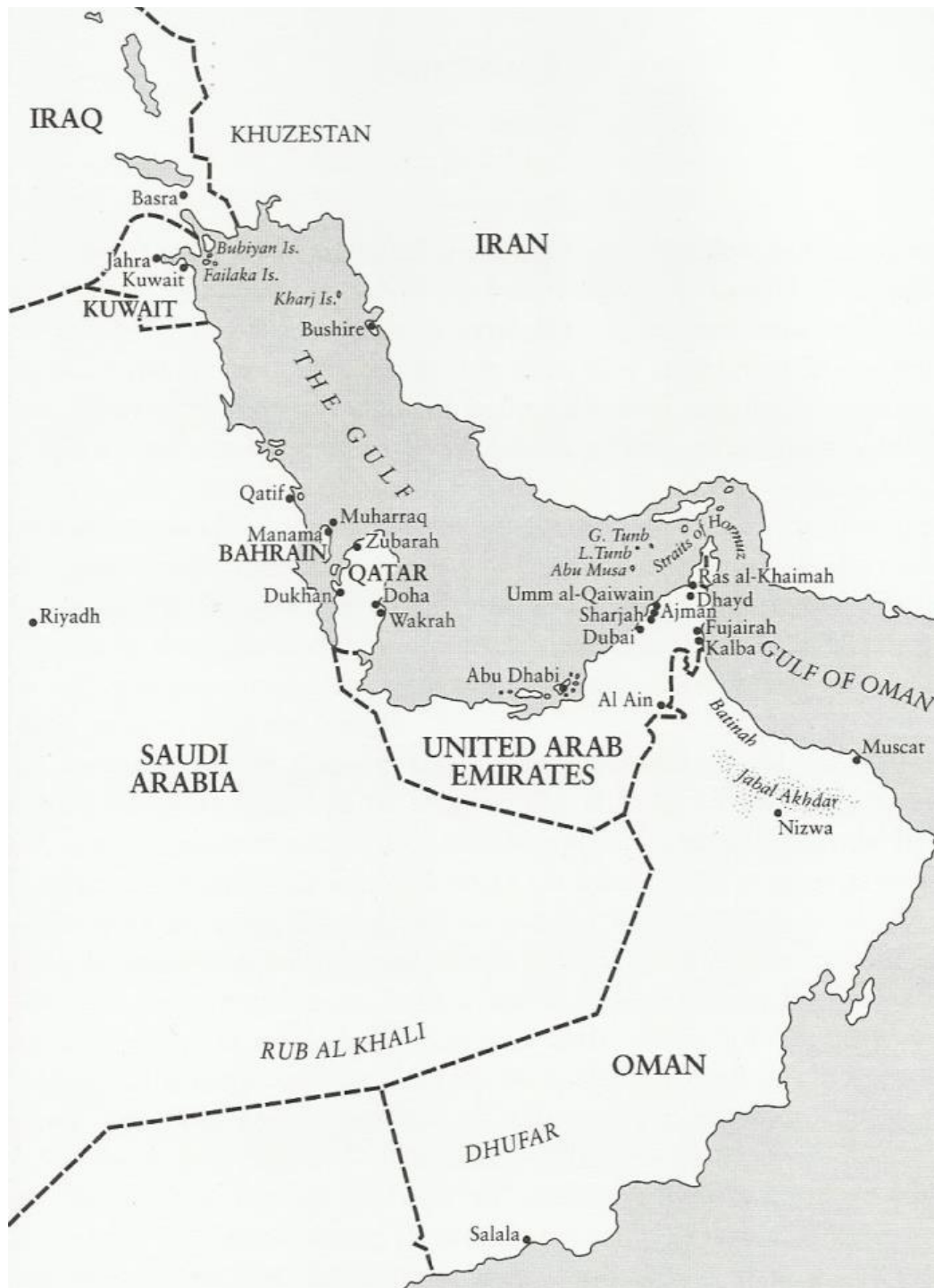
Figure 5-4 The Arabian Gulf States (Saudi Arabia, Oman, United Arab Emirates, Qatar, Kuwait and Bahrain) and their surrounding countries[370]

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[370] Rosemarie Said Zahlan, *The Making of the Modern Gulf States: Kuwait, Bahrain, Qatar, the United Arab Emirates and Oman* (Garnet Publishing Limited, 2002).

City	Oil and Gas %*	Others %*
Abu Dhabi	55	45
Dubai	58	41.80
Manama	13.10	87
Kuwait	52.20	47.80
Doha	58.2	41.8

*percentage of GDP

Table 5-1 Dependency on Oil and Gas in GCC cities[371]

5.2.3   Culture in the Arabian Gulf: the Khaleeji Culture

Khaleeji or Khaliji (Arabic: خليجي) is the Arabic term for "of the Gulf". It is the terminology used by people in the world and specifically by Arabs to describe anything related to the Arabian Gulf States. Examples include the Khaleeji accent, the Khaleeji clothes, and the Khaleeji food. The Arabian Gulf States enjoy a lot of diverse ties in all aspects of daily life due to similarities in climatic circumstances, religion, and geographic location. Most of the traditional customs and conduct in the Arabian Gulf States are derived from Islam, the leading religion in the area. However, some of the norms and codes of conduct have their roots in the era before Islam, especially those concerned with marriage and social interaction. Only minor variations can be spotted to differentiate between the different Gulf States. Usually, the GCC nationals can differentiate between the populations and ethnic groups of the six states while it is often hard for people from other parts of the world to spot these differences. For example, Figure 5-5, shows the different styles of the traditional male dress in the Gulf: "Thobe", as it is called in Bahrain, Qatar and KSA, and "Dishdasha", as it is named in Kuwait and Oman.

The culture of Kuwait is the closest within the states of the Arabian Gulf to the culture of Bahrain, the main case study of this research. This is evident in the close association of accents, food, and clothes, in addition to the similar degrees of freedom, openness and democratic systems. The only two countries with a parliament in the Gulf are the state of Kuwait and the Kingdom of Bahrain. Both countries enjoy more freedom for women and more tolerance for other religions than other countries around the Gulf. One of the main reasons for this overlapping of cultures is the close relationship between their ruling families. Al Khalifa, the ruling family of Bahrain, and Al-Sabah, the ruling family of Kuwait, both belong to the Utub tribe that migrated from Najd in Saudi Arabia to the coasts of the Arabian Gulf in the early 18th century[372]. Both families founded the city of Kuwait around 1708. Later, in 1766, the Al-Khalifa family parted from their cousins, the Al-Sabah, and moved to Zubara on the north-west coast of Qatar before they moved again to Bahrain in 1783 and settled there until this day[373]. Despite this journey, the Al Khalifa family has always kept their traditions and tribal affiliation with their cousins in Kuwait. Thus, there is a connection between the two countries' backgrounds, cultures, accents, and even the political systems.

After the migration of the Al Khalifa family from Kuwait and during the rest of the 18th and 19th centuries, urbanisation in Kuwait was mostly traditional and sustainable as the economy of the country was dependent, like the rest of the Arabian Gulf coastal states, on local resources of pearls and agriculture. Things started to change with the collapse of the pearl fishery due to the invention of the artificial cultivation of pearls in the 1920s and 1930s in all of the coastal states of the Gulf. There was a general shortage of resources and materials which was reflected in the built environment. People did not have enough money to buy food and clothes, let alone build houses. Luckily, the discovery of oil in Kuwait in 1938 following the discovery of oil in Bahrain in 1931

[371] Koolhaas and others.

[372] Helen Metz, *Persian Gulf States: Country Studies* (Washington, D.C, D.C: Library of Congress, 1994).

[373] The Royal Arabian Studs of Bahrain, 'History of the Ruling Family of Bahrain', *The Al-Khalifa Family*, 2013
<http://www.bahrainroyalstud.com/alkhalifa.htm> [accessed 19 August 2014].

rescued their economy and restored the state's economic situation[374]. However, although the unearthing of oil was a perfect solution to rescue the failing economies of the coastal states in the Arabian Gulf, it had other associated costs of its own which the people of the Gulf continue to pay until this day. This research will attempt to highlight some of those consequences by focusing on the urban sustainability of the Arabian Gulf countries in general and Bahrain in particular.
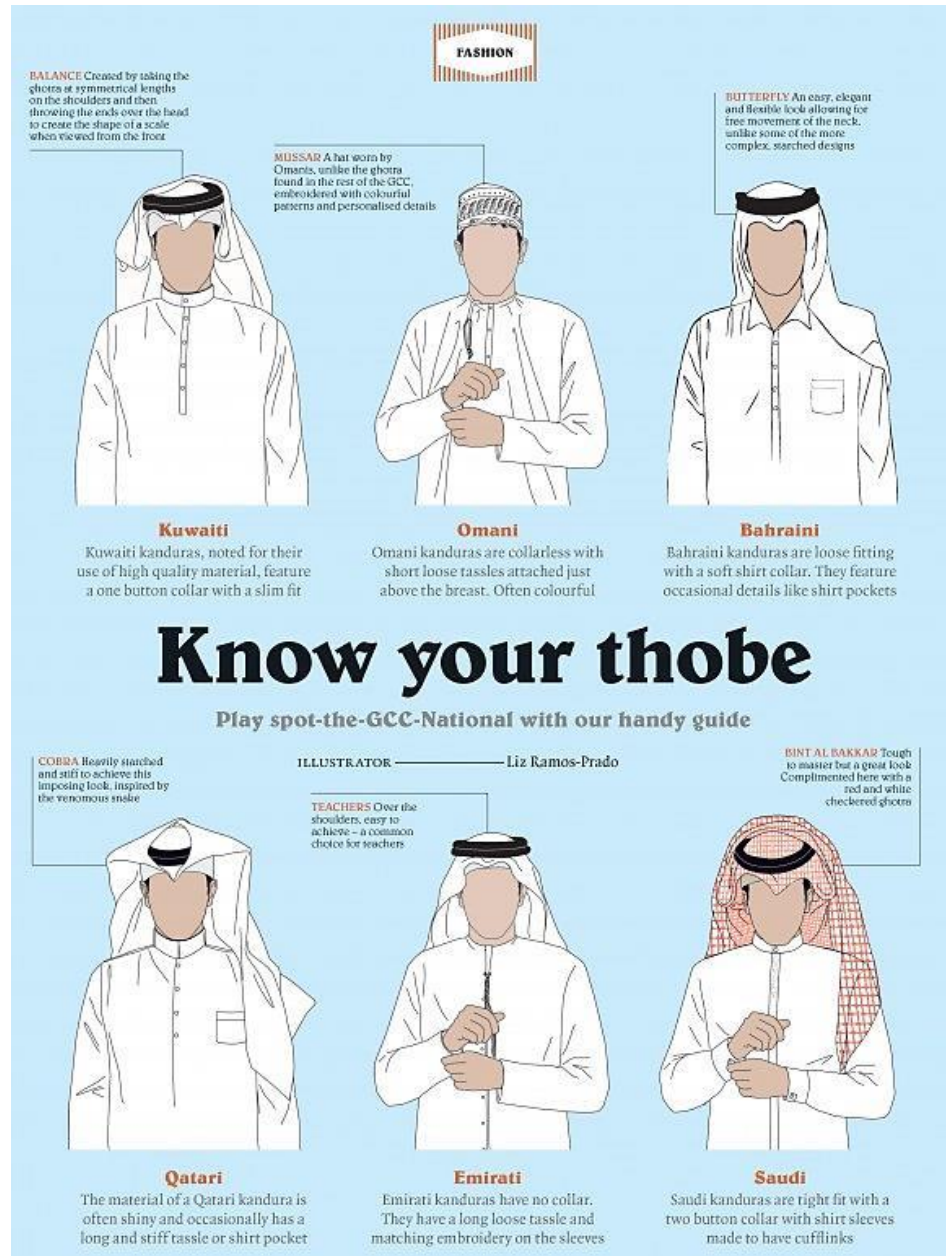
Figure 5-5 Guide to the Arabian Gulf States' national dress for men[375]

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[374] Kuwait Petroleum Corporation, 'Discovery of Oil', *Kuwait Oil History*, 2009
<http://www.kpc.com.kw/AboutKPC/KuwaitOilHistory/default.aspx> [accessed 16 May 2012].
[375] Noofnotnouf, 'Know Your Thobe! A Guide to Khaleeji Men Fashion' (Doha News, 2011)
<http://noofnotnouf.tumblr.com/post/6327224845> [accessed 15 March 2012].

5.3 Transformation of the Arabian Gulf

The Gulf region is one of the oldest continuously inhabited places in the world. This is evident in the traces of the great civilisation of the idyllic land of Dilmun, which covered most of eastern Arabia and the Islands of Bahrain[376]. Throughout the 19th century, Britain had a direct connection with the Arabian Gulf States. At first, the primary interest of Britain in the Gulf was its strategic position on the route to India. Later, and after 1912, the Royal Navy changed its fuel from coal to oil, which made the supply of oil increasingly important[377]. By the end of the First World War, the Arabian Gulf became a "British lake" as it secured access for the British vessels sailing to and from India[378]. The Arabian Gulf States got their independence in 1960s–70s and jumped into the globalisation race in the middle of the 20th century with the development of the oil industry. Since then, the desert towns and seaports of the Arabian Gulf have transformed within a short period of two generations into urbanised states[379]. This transformation is marked as being the fastest in the global market[380]. Ehteshami (2013) explained that the discovery oil has not only formed the Arabian Gulf states' socio-economics but has also changed their relationships with other countries[381].

In an interview by two Americans who were interested in the Gulf in 1985, Kawkab, a Bahraini woman, clarified that oil brought enormous enhancements to the lifestyles of people in Bahrain: "We can buy more varied and better goods in the stores … Housing has improved too. This year alone over a thousand new homes have been built … there are more educational opportunities, particularly for women."[382] The change and material abundance in the Arabian Gulf States were based on the rapid and planned development in the economy of the Gulf. Thus, the region provides an excellent laboratory to assess the theories of globalisation[383] which resulted in a large sum of literature about globalisation that relates to the Arabian Gulf States[384]. John Elliot, who worked on the town plans of Abu Dhabi in 1967, recalled "I personally never saw Sheikh Zayed put pen to paper … he always used a camel stick and drew in the sand. He has a unique ability to be able to transpose something from his head into the sand. And he instinctively understood scale and adjacency"[385]. Almost all governments of the Arabian Gulf states invited foreign consultants and engineers in the 1960s to develop master plans and large-scale projects, because of the pressure put on rulers to develop their states following the excessive wealth from oil revenues in the second half of the 20th century[386].

Al-Arifi (1986) argued that the relative rates of city growth in the Arabian Gulf are among the highest in the world; he stated that this high rate of growth was due to the massive foreign migration into the Gulf region. He further argued that all indications suggest that this pattern of urban development will continue in the future as well[387]. Today and almost three decades later, his hypothesis proves to be accurate, as this pattern of development still continues in the region.

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[376] Anthony Morris, *History of Urban Form: Before the Industrial Revolutions* (Essex: longman Scientific & Technical, 1994).
[377] Murray Fraser and Nasser Glozari, eds., *Architecture and Globalisation in the Persian Gulf Region* (Surrey: Ashgate Publishing, Ltd., 2013).
[378] John Kelly, *Britain and The Persian Gulf 1795-1880* (Oxford: The Clarendon Press, 1968); Zahlan.
[379] Shafeeq Ghabra, 'Modern Gulf Cities', in *Al Manakh II*, ed. by Rem Koolhaas and others (Netherlands: Stichting Archis, 2010).
[380] Koolhaas, 'Last Chance?'
[381] Anoushiravan Ehteshami, *Dynamics of Change in the Persian Gulf* (Oxon: Routledge, 2013).
[382] Petter Jacobsen and Preben Kristensen, *A Family in the Persian Gulf* (New York: The Bookwright Press, 1985).
[383] Fox, Sabbah and Al-Mutawa.
[384] See for example; Yasser Mahgoub, 'Globalization and the Built Environment in Kuwait', *Habitat International*, 28 (2004), 505–519; Robert Looney, 'The Arab World's Uncomfortable Experience with Globalization', *Middle East Journal*, 61 (2007), 341–345; Sulayman Khalaf, 'Globalization and Heritage Revival in the Gulf: An Anthropological Look at the Dubai Heritage Village', *Journal of Social Affairs*, 19 (2002), 13–42; Frauk Heard-Bey, 'An Insider's View of Globalization in the Gulf', *Journal of Social Affairs*, 21 (2004), 53–67; Fox, Sabbah and Al-Mutawa.
[385] Ann Wimsatt, 'The Houses That John Built', *TheNational* (Abu Dhabi, November 2010); Steven Velegrinis and George Katodrytis, 'Drawing on Sand: Cities in the Making', in *Uae and The Gulf: Architecture and Urbanism Now*, ed. by George Katodrytis and Kevin Mitchell (United States: John Wiley & Sons, 2015).
[386] Velegrinis and Katodrytis.
[387] Salih El-Arifi, 'The Nature of Urbanization in the Gulf Countries', *GeoJournal*, 13 (1986), 223–235.

Others have also agreed with this position[388]. The high standards of living after the discovery of oil and the mix of contemporary and traditional lifestyles have attracted people to move into the region[389]. In the UAE, Kuwait and Qatar expatriates constitute the majority of the population. For instance, the local population of Kuwait, as described by Al-Nafisi (2012), comprises the "Big Minority", which is a proportion of 28% of the total population[390], while the rest – 72% – are migrants, expatriates or Bedouns[391]. In the UAE, expatriates comprise 87% of the total population while in Bahrain, the most moderate case, 51% of the population are expatriates[392]. Despite this huge number of expatriates, Fox, Sabbah and Al-Mutawa (2006) argue that the traditional social structure in these countries directs the change and transformation by filtering what is acceptable[393]. Gardner (2010), on the other hand, in his work on Gulf migration and the Indian community in Bahrain, explained that this excessive immigration of a large number of workers into the Gulf region has led to many social and cultural complications[394]. Katdorytis and Mitchell (2015) argued that there are central debates within the Gulf relating to the influence of "belongings, rights and responsibilities" and socio-cultural factors in general on the built environment. Moreover, there are questions relating to the effect of new sprawling suburbs on the definition of public and private spaces, and social cohesion[395]. More about this will be explained later. Some questioned what the future of urbanism in the Arabian Gulf country should be given this vast migration pattern. Mitchell (2009) questioned if the new urbanism in Dubai should reflect the international majority living in it or the "shrinking minority" of national citizens.[396] This research will investigate the impact of foreign workers on the urban sustainability of Bahrain in an attempt to aid our understanding of this phenomenon in the Gulf.

The effects of the transformation of the Arabian Gulf States have been also seen in consumerism patterns in the Gulf. Assad (2007) argued that the emergence of consumer-oriented societies is now evident in the region. He argued that Saudi society has turned into a consumer society, showing that the spread of consumerism in Saudi Arabia is a result of complex global and local factors. He also stated that one of the main causes of consumerism is the increase in the national income after the discovery of oil. His results indicate that the excessive consumption in Saudi Arabia is threatening the social order and has economic, environmental, social, cultural, psychological and health consequences. Assad stated that there was a need to address the problematic aspects of consumption in Saudi Arabia for the country to achieve sustainable development[397]. Asaad, among others, agreed that, in general, the Arabian Gulf countries are consumer societies[398]. It appears from the existing literature in economic sciences, commerce and management that societies in the Gulf States transformed from the mid-20th century, and that the effect of this transformation has been seen in the consumerism patterns of the residents of the states[399]. The hypothesis here is that the

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[388] See for example; Kasim Randeree, *Workforce Nationalization in the Gulf Cooperation Council States* (Doha, 2012); Asma Ali Abahussain and others, 'Desertification in the Arab Region: Analysis of Current Status and Trends', *Journal of Arid Environments*, 51 (2002), 521–545.

[389] Andrew Gardner, 'Gulf Migration and the Family', *Journal of Arabian Studies: Arabia, the Gulf, and the Red Sea*, 1 (2011), 3–25.

[390] Abdulla Al Nafisi, *Kuwait: The Other Opinion* (Kuwait: Aafaq, 2012).

[391] (Arabic: بدون bidūn, also transliterated bedoon, bidoun) are stateless persons, from the Arabic bidūn jinsīyah (Arabic: بدون جنسية, without nationality).

[392] Kevin Mitchell and George Katodrytis, 'UAE and The Gulf: Architecture and Urbanism Now', *Architectural Design* (United States, 2015).

[393] Fox, Sabbah and Al-Mutawa.

[394] Andrew M. Gardner, *City of Strangers: Gulf Migration and the Indian Community in Bahrain* (Cornell University Press, 2010).

[395] Mitchell and Katodrytis.

[396] Kevin Mitchell, 'In What Style Should Dubai Build?', in *Dubai: City from nothing*, ed. by Elisabeth Blum and Peter Neitzke (Dubai: Basel, 2009); Mitchell and Katodrytis.

[397] Soraya W. Assad, 'The Rise of Consumerism in Saudi Arabian Society', *International Journal of Commerce and Management*, 17 (2007), 73–104.

[398] See also; S. Al-Saif, *Globalization and Consumerism* (Riyadh: Al-Yamama Publisher, 2002); M. Al-Motwa, 'Consumerism in the United Arab Emirates', *Journal of the Gulf and Arabian Peninsula Studies*, 80 (1996), 193–238; A. Zaid and F. Abu-Elenin, 'Children's Consumption Behaviour in the Arab Gulf Countries', *Social Affairs*, 47 (1995), 5–36; S. Abdu, 'Consumerism in the Arab Society', *Al-Wahda*, 8 (1992), 57–65; M. Al-Qudsi, 'Values in Consumer Arab Society', *Al-Wahda*, 92 (1992), 66–74; A. Al-Abadi, 'Development Issues in Gulf Countries', *Arab Future*, 140 (1990), 103–117; Q. Al-Nouri, 'Urbanization in the Gulf States', *Social Affairs*, 28 (1990), 97–122; H. Al-Shouki, 'Emigration to Gulf Countries', *Al-Tawan*, 13 (1989), 62–85; Assad, 73–104.

[399] Al-Saif; Al-Motwa; Zaid and Abu-Elenin; Abdu; Al-Qudsi; Assad.

Arabian Gulf States transformed because of the discovery of oil, their sudden wealth, and the dependency on foreign consultants and workmanship from being active producing societies – societies that depend on their own people to produce goods and services, societies that have their own crafts and skills and expertise especially in agriculture, fishing and pearling – to consuming societies that depend almost wholly on imported goods, services, craftsmanship and consultants. This will be discussed in this research through the study of the relationship between this newly established consumerism pattern and urban sustainability.

5.4 Urbanism in the Arabian Gulf

In research within the Arabian Gulf context, many authors have decided to focus more on the states of the United Arab Emirates, Qatar, Bahrain and Kuwait because they are at the forefront of change. Oman is the most traditional state in the Gulf and only began to transform in the 1980s[400]. Saudi Arabia is much larger in area and population compared to the other Gulf States, so it is often discussed separately. This research will also follow suit, although the main case study in this research is the Kingdom of Bahrain. The situation in Bahrain is, however, very much connected with the rest of the Gulf and especially to the three states of Kuwait, Qatar and the United Arab Emirates. In studying cultural change and its connection to urban sustainability in Bahrain, the situation in Kuwait, Qatar, and the United Arab Emirates must also be discussed and understood. The situation in Bahrain cannot be divorced from the rest of the Arabian Gulf, especially given that the sum of literature in the area regarding urban sustainability is very limited. All these countries share common features such as their relatively small size and population, their high speed of development since the discovery of oil, and the number of emigrants in their total population, in addition to similarities in culture, climate, environmental circumstances and the crossover in knowledge between organisations concerned with urbanisation and sustainability in the region.

One of the most famous sources of information about the history of urbanisation in Kuwait and its transformation is the one written in 1964 by Saba George Shiber. Shiber (1923–1968), an architect, was a consultant in urban planning; he was interested in the urbanism of the Arab world in general and had a prosperous career in many Arab countries before he settled in Kuwait during the 1960s[401]. His writings explain the transformation of the city during its boom years during the existence of the British Empire in the region, and when the production of oil was just speeding up after the Second World War had settled down. Shiber criticised in his publications, using very harsh words, the unsustainable patterns of urbanisation that emerged in the Arab region in general and in Kuwait in particular. He urged for control over urban patterns and the quality and design of the built environment[402]. His (1964) book, "The Kuwait Urbanisation", is a crucial source of information today. It is a documentation of the early stages of the urban transformation of Kuwait, and is being used today to teach the history of architecture at the University of Kuwait[403] and by researchers who are interested in studying the urban fabric of Kuwait, its history and transition[404]. The book includes text written by the author and also contains an assembly of pictures, drawings, records and official documents that were collected by the author during his years of residency in Kuwait. Shiber (1964) wrote: "What have they built? Collected in this virgin and the generous place is an encyclopaedia – in brick and concrete – of what is wrong in engineering and architecture. Never in the history of mankind has a more costly, more unwieldy, more anti-organic urban complex been created with such speed and cost"[405]. Shiber's writings were objective, neutral and were more truthful than any other documentation or diary written by Englishmen or colonial powers in the Arabian Gulf States during that period. This was mostly because of his experience in architecture

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[400] Fox, Sabbah and Al-Mutawa.
[401] Redab, 'Saba George Shiber', *What Have They Built?*, 2012 <http://eltibas.wordpress.com/tag/saba-george-shiber/> [accessed 15 February 2013].
[402] Redab.
[403] Fay Al-Khalifa, 'Interviews at the University of Kuwait' (Kuwait, 2013).The interviews in this section are part of the preliminary networking and are not from the main data collection stage. This was explained in the methodology chapter.
[404] Fay Al-Khalifa, 'Interviews with Researchers in Kuwait' (Kuwait, 2013).
[405] Saba George Shiber, *The Kuwait Urbanization* (Kuwait: Government Printing Press, 1964); Redab.

and planning and his awareness of the vast effects of modernisation and urbanisation in the area, which were largely led by foreign powers.

Mahgoub (2003) has studied the process of globalisation and its effects on the built environment in the Gulf since the 1950s. His research illustrates that globalisation has been active in the Gulf area since the mid-20th century when the area witnessed rapid change and development that allowed the processes of globalisation and localisation to become more evident than in any other place in the world. His research traced the transformation of the built environment in Kuwait during the second half of the 20th century. Mahgoub claimed that there has been a clash of architectural styles in the built environment of Kuwait, which is a result of the tension between globalisation and localisation processes. He argued that the built environment in Kuwait today lacks identity and a sense of place, and he encouraged the incorporation of an alternative understanding of global architecture that should be reflected in professional practice, education and building regulations that direct the production of the built environment[406]. Mahgoub's research highlighted the cultural change in Kuwait; although his study does not directly relate to urban sustainability in the Gulf, his findings, however, help in relating urban sustainability to the cultural change that occurred during the second half of the 20th century.

The transformation of the Kuwaiti culture has also taken shape in inter-parental conflicts and interpersonal disagreements that arose between those who maintain their indigenous Arab culture and others who accept and adapt more liberal attitudes from the western cultures imported at the end of the 20th century. This is also reflected in the urban fabric and has been discussed by El-Islam, Malasi and Abu-Dagga (1988). Their research showed that there is a conflict between indigenous and imported cultures in the Arabian Gulf, where westernisation followed the acquisition of petroleum wealth, causing a rapid change in the society[407]. This problem is not only in existence in Kuwait but could also be generalised as occurring in Bahrain, Qatar and the United Arab Emirates. All of these Gulf States witnessed dramatic changes in their demographics and population structure, causing conflicts and disagreements between those who are resistant to change and those who are more flexible and open to other cultures and religions. This issue will be discussed in this research with a focus on the social structure of Bahrain, its demographics, and the maintenance of social sustainability.

A cultural custom in the Gulf in general and in the Kuwaiti society in particular is people's love to gather together. This was advertised in Kuwait's first participation in the Venice Architecture Biennale. The idea of the project started from the hypothesis that the Kuwaiti society believes in intangible things more than the tangible, and that they had more faith in "word of mouth" than the physical environment because it was destroyed almost completely in the process of redeveloping the city and the introduction of the imposed architecture by foreign developers[408]. This could also be generalised to all other states of the Arabian Gulf; Bahrain, Qatar, and the UAE also enjoy an oral culture that is transferred from one generation to another[409]. Tetreault (1992) wrote an article that was published just one year after the Iraqi invasion about the civil society in Kuwait. She argued that the invasion of Kuwait resulted in a more unified society that loves to gather together[410]. Tetreault discussed in her article the protected space of "the house" and its attraction to political organisations during periods when public meetings are restricted or banned. In Kuwait, as in the Gulf region, concepts of privacy are highly important to ensure that women of the house are not exposed to foreign men. However, the Kuwaiti house includes a substitute space for civil society in

[406] Mahgoub.
[407] Fakhr El-Islam, Taha Malasi and Sanaa Abu-Dagga, 'Interparental Differences in Attitudes to Cultural Changes in Kuwait', *Social Psychiatry and Psychiatric Epidemiology*, 23 (1988), 109–113.
[408] Fay Al-Khalifa, 'Interview with Kuwait's Pavilion Curator at the Venice Architecture Biennale 2013 in Kuwait' (London, 2013).
[409] Rebecca Torstrick and Elizabeth Faier, *Culture and Customs of the Arab Gulf States* (Westport: Greenwood Press, 2009).
[410] Mary Ann Tetreault, 'Interview with Saleh al-Hashem, Lawyer and Candidate in the October 1992 National Assembly Elections. September 29, 1992' (Kuwait: Middle East Institute, 1993).

the public space; it is the Diwaniya[411], which overlaps the public-private divide[412] and highlights the societies' love to gather and talk. This oral culture, as explained in chapter 4, has informed the way in which this research took shape.

5.5 Climate Change in the Arabian Gulf

5.5.1 Environmental Threats

Relatively very few researchers in the Arabian Gulf have studied the effects, threats and challenges of global warming in the region. In a conference paper, Kumetat (2009) argues that the Arab countries and particularly the Gulf States are still underdeveloped in terms of policy and decision making concerning global warming, despite the substantial direct and indirect impacts of climate change they will face in the coming decades. He also adds that not only should governments prepare for the environmental change but they should also prepare to deal with an additional stress caused by this change on their "fragile" political systems. In his paper, Kumetat sketches the potential implications of climate change on the Gulf countries, and he further links this to the changing security dynamics in the region. Finally, he analyses the sustainability pathways that some Gulf States are currently exploring[413]. Despite some exaggerations in his paper, it is noteworthy that some of the challenges facing decision making discussed in his paper can today be seen in the different states of the Arabian Gulf, such as the immature decision making and limited policies in terms of environmental protection.

From the environmental perspective, researchers have predicted a noteworthy increase in the temperature and humidity in the Arabian Gulf States, in addition to a decrease in precipitation and an increase in underground water salinity. Richer (2008) predicted a rise of 3–5.9 degrees Celsius during the 21st century in the Gulf. She also warned of significant climate change related to losses of regional flora and fauna[414]. Her statement, "desertification in the desert", is one of the most frequently quoted by researchers studying the environmental change patterns in the Arabian Gulf. Further environmental challenges and threats in the Gulf region are discussed by Ulrichsen (2011) in his book, *Insecure Gulf: The End of Certainty and the Transition to the Post-Oil Era*. Ulrichsen states that the UK Meteorological Office Hadley Centre has predicted a progressive rise of 3.2 degrees Celsius in the long-term average temperatures in the Middle East for the period from 1990–2070. In addition, he states that the Centre also predicted the degradation of the quality of soil due to the increasing water stress and salinity of underground water, which will in turn affect crop yields and subsequently will increase the region's reliance on imported food[415]. The region is currently dependent on both imported food and food which is locally harvested; increasing the dependence on imported food will further decrease the sustainability and self-dependency of the region.

On the same line of argument presented earlier by Richer, Ulrichsen explained the environmental challenges in the Gulf. He debated that the hyper-arid region of the Arabian Gulf States with its limited natural resources comprised of mainly oil and natural gas presented challenges to human activities and urbanisation. Ninety per cent of the land in the Arabian Peninsula is suffering from land degradation and overgrazing. This leads to the further desertification of the already deserted region, and is evident mostly in the state of Kuwait, where it has been proved that an average of

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[411] A room attached to the house, usually with a separate entrance to maintain the privacy of the house. It is mostly a male gathering space where they play cards, eat, and talk about business and politics, among other activities. It is more common in Kuwait than any other Arabian Gulf state. In some other states it is called "Majles".

[412] Mary Ann Tetreault, 'Civil Society in Kuwait: Protected Spaces and Women's Rights', *Middle East Journal*, 47 (1993), 275–291.

[413] Dennis Kumetat, 'Climate Change in the Persian Gulf: Regional Security, Sustainability Strategies and Research Needs', in *Climate Change, Human Security and Violent Conflict: Challenges for Societal Stability*, ed. by J. Scheffran and others (Berlin: Springer Berlin Heidelberg, 2012), pp. 373–386.

[414] Renee Richer, *Conservation in Qatar: Impacts of Increasing Industrialization*, Occasional Paper, 2008; Kristian Coates Ulrichsen, *Insecure Gulf: The End of Certainty and the Transition to the Post-Oil Era* (London: Columbia University Press , 2011).

[415] Met Office Hadley Centre, *Climate Change: Middle East* (EXeter, March 2009).

285 square kilometres is being lost to desertification annually[416]. He continues his argument by discussing saltwater intrusion into groundwater, which is another problem that exists in the Gulf. He declares that studies have shown increases in the salinity of underground water in Qatar and that this has been directly related to the unsustainable over-exploitation of underground water[417]. This has also been noted by Brook et al. (2006), who found that fossil water resources in the Gulf are almost 10,000–30,000 years old and that the water usage in the Arabian Gulf States is about six times above the natural renewal rate. The authors argue that it is now a question of when, rather than if, natural underground water resources will deplete[418].

The Arabian Gulf States are almost entirely dependent on desalinated sea water, except for Saudi Arabia and Oman, being able to draw some of the locally used water from underground aquifers. Ulrichsen continues to stress that today desalinated water makes up 99% of the total water demand in Qatar, and 96.5% in Kuwait. This is an issue of continuous debate and concern in the region, for any contamination of the water of the Gulf would be catastrophic to the Arabian Gulf States. The fragile ecosystem of the peninsula is therefore under great stress, with a minor resilience to any external shock. This is especially the case in the low coastal areas of the Arabian Peninsula where climate change could affect the long-established patterns of human settlements and urbanisation[419]. Along the same line of discussion, Kumetat (2009) stated that in the Arabian Gulf countries alone, there are 15 desalination plants, which already have threatening environmental effects like hot brine, releasing gases into the atmosphere, treatment chemicals and other trace elements. This is in addition to their high production cost, carbon emissions and energy-intensive industry. Moreover, the impact of desalination plants on marine life has also been acknowledged by Abdurrahman and Husain (2006), who showed in their study that hot water release by power and desalination plants in Kuwait had devastating effects[420]. This issue is currently under investigation by Mohammed Ali, a PhD candidate at the University of Sheffield, who is studying the effect of salinity in the Arabian Gulf on the feeding, survival and growth rate of fish and their contribution to the food web[421]. The rise in the sea level is another environmental challenge related to the sea caused by global warming in the Gulf. The rise threatens up to 15 kilometres of Bahrain's coastline[422] along with artificial islands in the lower area of the Gulf, particularly in the United Arab Emirates[423].

The literature discussed above in general points to significant environmental problems in the Arabian Gulf region (see Figure 5-7). The rising temperature and humidity, the decrease in precipitation levels, the salinity of water, and consequently, the deterioration of flora and fauna in the Arabian Gulf, indicate that there is a need for an urgent recovery plan for the environmental systems of those countries and a long-term sustainability strategy to slow down the effects of industrialisation and urbanisation in the region. In the discussion of sustainable sources of energy, Hertog and Luciani (2012) argue that the per capita oil and gas consumption in the Gulf States, and consequently the CO_2 emissions, are relatively very high (Figure 5-6) and that given the situation of the global market condition today, the conservation of fossil fuels in the Gulf is a rational strategy for its monarchies.

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[416] Andy Spiess, 'Developing Adaptive Capacity for Responding to Environmental Change in the Arab Gulf States: Uncertainties to Linking Ecosystem Conservation, Sustainable Development and Society in Authoritarian Rentier Economies', *Global and Planetary Change*, 64 (2008), 244–252; Frederic Launay, *Enviromental Situational Awareness for the GCC Countries* (Dubai: Gulf Research Centre, 2006); Ulrichsen.

[417] Ulrichsen.

[418] Michael Brook, H. Al-Houqani and A. Al-Mugrin, 'The Current Status and Future Requirements of Water Resources Management in the Arabian Peninsula', in *Policy Prespectives for Ecosystem and Water Management in the Arabian Peninsula*, ed. by K.M. Amer and others (Hamilton: United Nations University International Network on Water and Enviroment, 2006); Kumetat.

[419] Ulrichsen.

[420] Walid Abderrahman and Taher Husain, 'Pollution Impacts of Desalination on Ecosystems in the Arabian Peninsula.', in *Policy Prespectives for Ecosystem and Water Management in the Arabian Peninsula*, ed. by K.M. Amer and others (Hamilton: United Nations University International Network on Water and Enviroment, 2006); Kumetat.

[421] Mohammed Ali, 'Arabian Gulf Food Web and the Effect of Salinity on Feeding, Survival and Growth Rate of Fish and Their Contribution to the Food Web', in *GCC Research Symposium* (Sheffield, 2013).

[422] Mohamed Raouf, *Climate Change Threats, Opportunities, and the GCC Countries*, Policy Brief (Doha, 2008).

[423] Met Office Hadley Centre; Kumetat.

The authors also focus on the importance of managing the consumption of electricity in the Gulf. They argue that there are great opportunities for the introduction of non-carbon energy sources in the Gulf and that the Gulf countries are facing their own "energy crises", which are a result of the fast-growing domestic demand for energy due to urbanisation and the large demand for electricity[424]. Hertog and Luciani (2012) further argue that renewable energy sources such as solar, wind and nuclear energy are valid options for the Gulf region. The authors discussed how a quick makeover to reduce carbon emissions in the Gulf is important because the GCC countries have the highest per capita emissions of carbon dioxide in the world. This is partly because of the small population in some of the GCC countries, especially Bahrain and Qatar. However, the intense economic industrialised life in the Gulf remains the primary cause of the massive emission of carbon dioxide[425]. Raouf (2008) presented evidence for the unsustainable pattern of growth in the Arabian Gulf countries through their ranking in the global carbon dioxide emissions per capita: Qatar's ranking seems to be the highest in the region, which is double the ranking of the United Arab Emirates and over three times higher than the ranking of the United States[426]. These high rankings are expected and match the fast degradation of the Gulf States' environmental systems discussed in the literature above.

5.5.2   Awareness of Climate Change in the Arabian Gulf

Regarding social awareness, there has been a dispute in the literature. Luomi (2009; 2010) and Ulrichsen (2011) argue that there has been a notable development in the level of social awareness in regard to climate change that they claim is evident in the adaptation of renewable and clean energy initiatives. However, they also admit that this adaptation has not really yet been beneficial because it has not yet been fully implemented, with the exception of Oman, which is the only country in the region with a high-level governmental institution concerned with the environment, the Ministry of Environment and Climatic Affairs (established in 2007). Although there appear to be few attempts for sustainable solutions in the region, the lack of awareness of the real dimensions of the problem leads to inappropriate planning, which is evident for example in the contrast between the Masdar clean energy initiative in Abu Dhabi[427] and its hosting of the headquarters of the International Renewable Energy Agency (IRENA), while also having one of the largest ecological footprints per capita in the world[428]. Ulrichsen (2011) claims that what seems to be missing in the Gulf region, in general, is the establishment of a sense of awareness of the emerging climate security threats[429].

Luomi (2010) continues this debate by stating that although some development has been noted, the level of awareness in the Arabian Gulf States about climate change and sustainability is still very limited. She explained that the interlocking power circles and interest networks continue to play a significant role in determining how the perception of climate change in the states of the Arabian Gulf is taken into consideration in policy formulation. Those policies are written by policy makers who are concerned with the stability and continuity of the revenues from the export of oil. For this reason, issues of environmental degradation are barely discussed in regional security discussions that are mainly focused on the short-term political threats to the security and stability of these countries[430]. Raouf (2008) also debated that the amount of existing information and policy awareness of issues of environmental degradation is very limited[431]. Furthermore, Luomi (2009) also stresses that the process of industrialisation in the Gulf seems to be still accelerating, as more mega projects are being planned to dominate the economic landscape of the GCC, and those

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[424] Steffen Hertog and Giacomo Luciani, 'Energy and Sustainability Policies In The Gulf States', in *The Transformation of the Gulf: Politics, Economics and the Global Order*, ed. by David Held and Kristian Ulrichsen (New York: Routledge, 2011).

[425] Hertog and Luciani.

[426] Raouf.

[427] Sustainable solutions in the Arabian Gulf including Masdar city will be outlined later.

[428] Mari Luomi, 'Abu Dhabi' s Alternative-energy Initiatives: Seizing Climate-change Opportunities', *Middle East Policy*, 16 (2009), 102–117; Kristian Coates Ulrichsen.

[429] Ulrichsen.

[430] Mari Luomi, 'Oil or Climate Politics?:Avoiding a Destablizing Resource Split in the Arab Middle East', 2010, p. 2.

[431] Raouf.

projects have the highest levels of per-capita energy consumption and carbon emissions in the world[432]. Hertog and Luciani (2011), on the other hand, claim that the Gulf regimes' commitment to sustainable energy policies is serious and that this reflects those governments' ambitions to be seriously considered as international actors in the areas of renewable energy and sustainability[433]. There is, however, very little evidence supporting this argument. Aside from the Omani Ministry of Environment and Climatic Affairs and Estidama initiative in Abu Dhabi, there seem to be very few governmental programmes in other states of the Gulf that support the adoption of a more environmentally sustainable lifestyle. As we shall also see later, social and economic matters are considered, more important than protecting the environment in those states.

Dr Talal Al-Kandari, a lecturer at the College of Architecture, is one of the few researchers in Kuwait interested in the sustainability of architecture. His Master's dissertation investigated the identity of Kuwaiti architecture, and his Ph.D. research explored the challenges and opportunities of practising green architecture in Kuwait. His research shows that there is a general lack of awareness about the importance of practising green urbanism in Kuwait, to the extent that some of the architectural offices which participated in the research did not even understand what green architecture meant[434]. The research also shows that the first challenge of implementing green designs in Kuwait is that clients are not asking for it. This, he argued, was because the public is not educated about the importance of building in a green way in Kuwait. The second challenge is that architecture consulting companies in Kuwait are not experts in sustainable design. Therefore, implementing additional sustainable features in the design will require the company to hire a specialist consultant, which will add to the total cost of the project. Therefore, companies do not encourage the client to want sustainable design solutions. The general finding of Dr Al-Kandari's research is that one of the main challenges facing sustainable urbanism in Kuwait is that it is not being practised by architectural offices in the country[435]. Although Dr Al-Kandari's research is very useful and rich in valuable information about sustainability in the region, a topic that is rarely discussed, similar to many other studies in the region, it has not yet been published, so all the information and findings are not easily accessible.

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[432] Luomi, 'Abu Dhabi' S Alternative-Energy Initiatives: Seizing Climate-Change Opportunities.'
[433] Hertog and Luciani.
[434] Fay Al-Khalifa, 'Interviews with Academics in the University of Kuwait' (Kuwait, 2013).
[435] Al-Khalifa, 'Interviews with Academics in the University of Kuwait.'
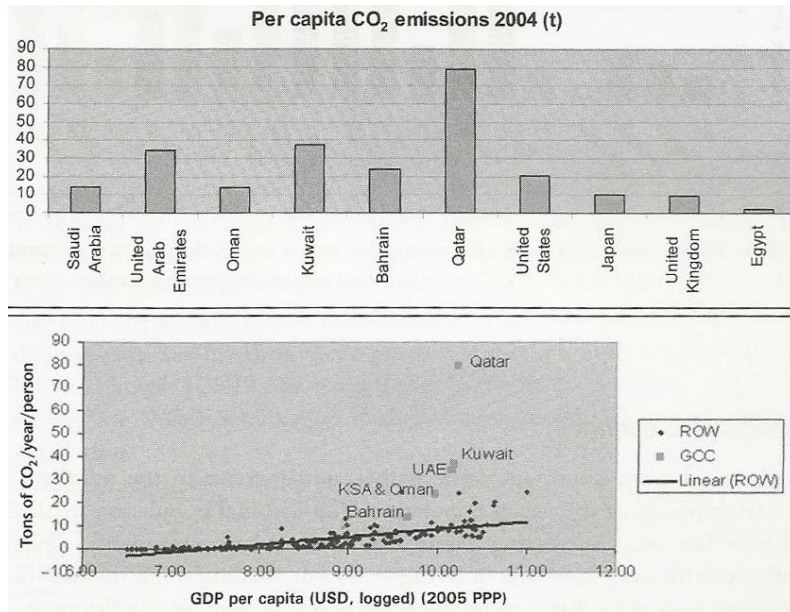
Figure 5-6 Graph illustrating the GCC CO2 emissions relative to GDP (2004) based on UNDP and World Bank Data[436]
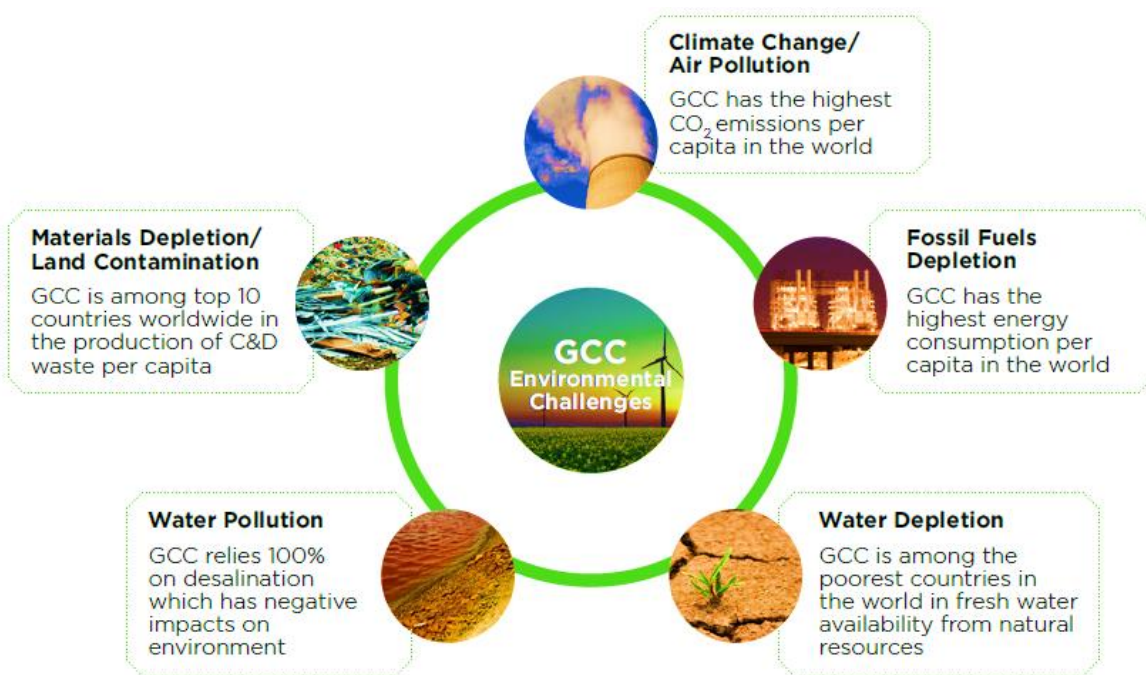
Figure 5-7 Environmental Challenges in the GCC[437]

[436] Hertog and Luciani.

[437] Gulf Organisation for Research & Development, 'Global Sustainability Assessment System (GSAS)', 2014.

5.6   Education of Sustainability in the Arabian Gulf

Educational institutions in the Arabian Gulf countries were, up until the 1970s, limited to those national universities built following the oil revolution in the region. Thus, most of those who are now managing the Gulf's higher education facilities, as we shall also see later, received all or part of their higher education abroad, mostly in western, Middle Eastern or North African countries[438]. In 2005, seven major universities were built in Saudi Arabia; today the number increased to about 28 universities, and forthcoming aspirations for the kingdom's educational future promises a further addition in the coming decades. Other countries in the Arabian Gulf witnessed an increased number of higher education institutions since the 1990s (Table 5-2), with the establishment of mega educational projects such as University City and Academic City in the UAE and Education City in Qatar[439]. There are some foreign-based universities, for instance, Georgetown, Carnegie Mellon and Texas A & M Universities in Qatar. There are also foreign long-established museums, including but not limited to the Guggenheim and the Louvre in Abu Dhabi[440].

Country	2001-02	2003-04	2007-08	2009-10
Bahrain	8	10	15	18
Kuwait	6	6	6	10
Qatar	3	5	7	9
UAE	8	8	15	69

Table 5-2 Number of Universities in four GCC countries[441]

Wakefield (2015) argued that the recent developments in the Middle East in general and the Arabian Gulf in particular have been criticised for their imitations of western styles; the author claims that different aspects of the indigenous architecture are "employed to develop distinctive identities using locally derived themes to address a global audience"[442]. Nevertheless, no empirical evidence was found in the literature to support such an argument. Since the beginning of the establishment of higher education institutions in the Arabian Gulf, their designs were appointed to foreign consultants. The Australian architect Karl Schwanzer, in the 1970s, developed King Saud University, the first higher education institution in the region, and the design was then modified by Hellmutah, Obtata & Kassabaum in 1975. King Fahad University of Petroleum and Minerals was found in the 1960s and was designed by the American Caudill Rowlett Scott. Qatar University founded in 1983 was designed by the Egyptian architect Kamal Al Kafrawi[443]. More recent educational developments also followed suit. For instance, the master plan of Education City in Qatar was developed by the Japanese architect Arata Isozaki in 2001 and other buildings in the campus where designed by Isozaki and a number of other foreign consultants[444], and Masdar Institute in the UAE was developed by Foster and Partners in 2010[445]. Thus, students in the Arabian Gulf states are mostly learning in non-indigenous surroundings.

Dr Hanan Taleb, a faculty member at the British University in Dubai (BUiD), urges more GCC academic institutions to offer courses in sustainable architecture. In an interview with Ephgrave, she declared that there are only five universities that offer courses on sustainable architecture in the region: King Saud University and King Abdulla University of Science and Technology in Saudi

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[438] Christopher Davidson and Peter Smith, eds., *Higher Education in the Gulf States: Shaping Economies, Politics and Culture* (London: SAQI, 2008).
[439] Kevin Mitchell, 'Design for the Future: Educational Institutions in the Gulf', in *UAE and The Gulf: Architecture and Urbanism Now*, ed. by George Katodrytis and Kevin Mitchell (United States: John Wiley & Sons, 2015).
[440] Mitchell and Katodrytis.
[441] N. Janardhan, *Boom Aimd Gloom: The Spirit of Possibility in the 21st Century Gulf* (Reading: Ithaca Press, 2011).
[442] Sarina Wakefield, 'Museum Development in the Gulf: Narrative and Architecture', in *UAE and The Gulf: Architecture and Urbanism Now*, ed. by George Katodrytis and Kevin Mitchell (United States: John Wiley & Sons, 2015).
[443] Mitchell, 'Design for the Future: Educational Institutions in the Gulf.'
[444] Ameena Ahmadi, 'A City for Education', in *Uae and The Gulf: Architecture and Urbanism Now*, ed. by George Katodrytis and Kevin Mitchell (United States: John Wiley & Sons, 2015).
[445] Mitchell, 'Design for the Future: Educational Institutions in the Gulf.'

Arabia, and the Masdar Institute of Science and Technology, the United Arab Emirates University, and the University of Sharjah in the UAE. Dr Taleb argues that we need to educate higher education graduates who will most likely hold management and leadership roles in the future with the skills and knowledge they need to make an informed decision on sustainable urbanism, and to consider the social, environmental and economic factors and their interrelation with each other[446]. Dr Taleb makes the hypothesis that the missing focus on sustainable architecture and urbanism is partially caused by the very immature educational programmes. Most Schools of Architecture in the Gulf were newly established in the late 20th century, and do not have postgraduate courses that specialise in or focus on sustainable architecture, design or planning. This will be investigated further in this research.

5.7   Projects Concerned with Urban Sustainability in the Arabian Gulf

The constraints and potentials of sustainability in the Arabian Gulf are summarised in (Table 5-4). The table shows that there are some initiatives that encourage sustainability in the region, few of which will be outlined below. Nevertheless, the table also shows that not enough is happening that is strategic or goes beyond the site scale in the region in general and in Bahrain in particular. This research will attempt to fill this gap by examining the situation of urban sustainability in Bahrain and focusing on the planning system as a whole.

5.7.1   Encyclopaedia for Sustainable Urbanism

Msheireb Properties, a real estate company and a subsidiary of Qatar Foundation, announced in 2011, in partnership with the Harvard University Graduate School of Design, that they were launching a multi-year research project for a study that focuses on sustainable urbanism in the Gulf region. The study attempts to create the Gulf Encyclopaedia for Sustainable Urbanism (GESU)[447]. The primary aim of the conducted research is the future of urbanity in the coastal states of the Gulf, on a sustainable basis, both environmentally and socio-economically. However, it will add to the existing gap between the local knowledge and the foreign exported experience, which accelerated in the 20th century with the discovery of oil and the British presence in the region. Some researchers from the Arabian Gulf States who were invited to take part in this project acknowledge this[448]. This research will attempt to investigate this further by focusing on the local knowledge and perceptions of officials working in fields related to the built environment and by critically reviewing the output of foreign consultancy in Bahrain.

5.7.2   Msheireb Downtown Doha

Msheireb Downtown Doha is another project; it was originally named Heart of Doha, and is planned for completion in 2016. The project is intended to be one of the world's largest collections of sustainable buildings, including residential, commercial, retail and mixed-use buildings[449]. The project is developed by the Doha-Based Msheireb Properties. It aspires to regenerate and revive the old commercial district in Doha using a new architectural language inspired by the indigenous architecture[450]. Other similar projects were planned in the UAE, such as the Heart of Sharjah, planned for completion in 2025, and Sharjah Lagoons, which aims to preserve and regenerate the city link with the lagoons which were the heart of the original city[451]. Nevertheless, none of these projects claimed strong attempts to incorporate sustainable solutions. Msheireb Downtown Doha is, like most projects in the region, designed by foreign consultants. The design team includes

[446] Ephgrave, 'Gulf Region Needs More Courses on Sustainable Architecture', *DesignMena* (Dubai, September 2011).
[447] Devina Divecha, 'Research Project to Create the World's First Gulf Encyclopedia for Sustainable Urbanism', *DesignMena* (Dubai, 2011) <www.designmena.com/thoughts/research-project-to-create-the-worlds-first-gulf-encyclopedia-for-sustainable-urbanism> [accessed 3 June 2011].
[448] Fay Al Khalifa, 'Interviews with Researcher's in Qatar' (Doha, 2013).
[449] Velegrinis and Katodrytis.
[450] Varkki Pallathucheril, 'New Hearts for Two Gulf Cities', in *Uae and The Gulf: Architecture and Urbanism Now*, ed. by George Katodrytis and Kevin Mitchell (United States: John Wiley & Sons, 2015).
[451] Velegrinis and Katodrytis.

around 10 mostly British firms, including Mangera Yvars, Adjaye Associates, Arup and Aecom[452]. Although Qatar, as will be explained later and as seen in (Table 5-4), has developed its own sustainability rating system, Msheireb Downtown Doha rather aspires to achieve LEED certification.

5.7.3   Masdar City, UAE

Masdar City is a high-density, low-rise urban settlement that spans over 7 square kilometres in area. The city was intended to be the most sustainable urban area in the world. Nevertheless, the financial crises in 2008 delayed the development from happening. Initially, the Masdar city plan was based on highly innovative sustainable solutions which were beyond the capacity of the region, such as zero-carbon, car-free, and efficient buildings with shaded areas in a self-generating city. The many original solutions were then redefined to 10 core key performance indicators, which were not fully delivered as intended[453]. Masdar Institute is the only built asset in the city now. It was completed in 2010 and is operated in collaboration with Massachusetts Institute of Technology (MIT), based on a renewable four-year contract[454]. Masdar Institute is believed to be the world's first graduate university focused on sustainability challenges and solutions[455]. The fourth batch of students will graduate in the academic year 2014/15, and the first Ph.D. student will graduate in 2015[456]. The outreach office explained that the institution is forced by law to have at least 50% national students, which means that for every international student to be enrolled the institute must enrol a national student; this was argued by the foreign representative to be endangering the quality of the institute because the level of domestic students graduating from UAE high schools were below the accepted standard, which necessitates enrolling those students in foundation programmes prior to their acceptance, to develop their English and mathematical skills. The representative explained that most of the enrolled national students were female, because male students are often offered scholarships to study abroad or join the military. In addition to the many international students, the representative explained that there are only four national staff who work in the Institute; the rest are all expatriates[457]. For more about Masdar City (see Appendix 5.1).

[452] Ellis Woodman, 'City Making', *Building Design* (Doha, 11 April 2012).
[453] Robert Cooke, 'Urban and Architectural Sustainability in the Gulf', in *Uae and The Gulf: Architecture and Urbanism Now*, ed. by George Katodrytis and Kevin Mitchell (United States: John Wiley & Sons, 2015).
[454] Fay Al Khalifa, 'Interview with Outreach Office, Masdar Institute' (Abu Dhabi, 2014).
[455] Mitchell, 'Design for the Future: Educational Institutions in the Gulf.'
[456] Alkhalifa.
[457] Alkhalifa.

5.8 Sustainability Rating Systems and Models in the Arabian Gulf

5.8.1   Estidama Pearl Rating System

While most of the Arabian Gulf countries adopt and use foreign sustainability rating systems, especially the LEED model, there has been a noticeable movement in Qatar and the UAE to develop and implement local sustainability rating systems. In the UAE, the Estidama – Arabic for sustainability – pearl rating system became mandatory in Abu Dhabi in 2010. It includes the Pearl Community rating system, the Pearl Building Rating System, the Pearl Villa Rating System and the temporary 1 Pearl Building and Villa Program. Unlike other systems that were explained in chapter 2, the Estidama Pearl Rating System considers four pillars for sustainability. Abu Dhabi Urban Planning Council (2010) stated that "The ultimate goal of Estidama is to preserve and enrich Abu Dhabi's physical and cultural identity, while creating an always improving quality of life for its residents on four equal pillars of sustainability: environmental, economic, social, and cultural"[458]. Thus, as we shall see later, other governmental organisations in the Arabian Gulf are interested in this system because it respects the cultural characteristics and values of the society.

In 2010, the Abu Dhabi Urban Planning Council announced that achieving at least one pearl out of the five pearls scale was mandatory for all new developments in Abu Dhabi, and that government-led projects should achieve a minimum of two pearls. Similar to other international systems such as the LEED, achieving the first pearl requires adopting all the required mandatory credits (for example: minimum interior water use reduction and minimum energy performance), and achieving another pearl would require all the mandatory credits plus extra credits (for example; renewable energy and recycled materials). This is shown in (Table 5-3). In addition to the rating system, the Estidama initiative also includes a professional qualification and development programme. A pearl-qualified professional can obtain his credentials through training and undergoing a qualification exam at the end of the training period. The qualified professional is necessary for any new development in Abu Dhabi, to facilitate the pearl rating process by submitting documents and communicating with Abu Dhabi's Urban Planning Council. Thus, obtaining the qualification is becoming increasingly important to many private consultants and developers in Abu Dhabi since 2010[459].

5.8.2   Global Sustainability Assessment System (GSAS)

In Qatar, the Global Sustainability Assessment System (GSAS), formerly known as the Qatar Sustainability Assessment system (QSAS), was developed in 2010[460] by The Gulf Organisation for Research and Development (GORD) based in Qatar, in collaboration with the TC Chan Centre at the University of Pennsylvania, and the School of Architecture at the Georgia Institute of Technology, USA and other expertise in the field of sustainability. The system was developed by comparing 40 international and regional sustainability rating systems and aims to "create a sustainable built environment that minimizes ecological impact while addressing the specific social and cultural needs and environment of the region"[461] by incorporating three pillars: improving human wellbeing, conserving natural resources and protecting the environment. The system is based on six certification levels; the highest is obtained by achieving six stars. Although the GSAS system is the local system developed in Qatar, many developments in Qatar still seek the LEED certification, such as Doha Metro, The National Museum of Qatar and Msheireb Downtown Doha Project which was explained above[462]. Thus, the GSAS system is less attractive than the Estidama initiative, at least in Bahrain, as shall be proven later.

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[458] Abu Dhabi Urban Planning Council, 'Estidama', 2010 <http://estidama.upc.gov.ae/> [accessed 10 February 2015].
[459] The information presented here was obtained by the author through attending an introductory lecture about the Pearl rating system by Estidama in Abu Dhabi, December 2014.
[460] Jeffrey Willis, '10 Years of Sustainable Initiatives in the Gulf Region', in *Uae and The Gulf: Architecture and Urbanism Now*, ed. by George Katodrytis and Kevin Mitchell (United States: John Wiley & Sons, 2015).
[461] Gulf Organisation for Research & Development.
[462] Robert Cooke.

Despite the programmes mentioned above in sustainability, mostly, new developments and projects in the Arabian Gulf still ignore the implementation of sustainability approaches in design, construction and operation. Cooke (2015) argued "the sustainability knowledge 'capacity' for new construction in the Gulf, still feels around 10 years behind more advanced countries like the UK and Germany and the industry is just coming to terms with what is required for designing sustainable new buildings as standard practice rather than special measure"[463]. The different sustainability rating systems in the region are recognised. Nevertheless, the details of their operational scheme and requirements are beyond the scope of this research. This study will not attempt to invent a new system or model to assess the sustainability of the built environment or new constructions. It will rather try to understand why such existing systems are not being employed more seriously in policy and formally enforced in the decision making process.

Requirements	Pearl Rating Achieved
All Mandatory Credits	1 Pearl
All Mandatory Credits + 55 Credit Points	2 Pearls
All Mandatory Credits + 75 Credit Points	3 Pearls
All Mandatory Credits + 100 Credit Points	4 Pearls
All Mandatory Credits + 125 Credit Points	5 Pearls

Table 5-3 The pearl rating system

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[463] Robert Cooke.

5.9 Conclusion

The Arabian Gulf States, especially the coastal states of Kuwait, Bahrain, Qatar and the UAE, share many common ties, relations, characteristics, systems and cultures due to similarities in climate, religion and geographic location. The states are now in the process of ensuring even closer economic, defence, and political integration. The economy of the Arabian Gulf states changed following the collapse of the pearl industry at the beginning of the 20th century and the discovery of oil. The presence of foreign forces in the region at that time aided the development of the coastal towns and villages that transformed in a short period into modernised states. The transformation was also accelerated by the immigration of many foreign workers into the oil and culturally rich countries, which resulted in material and local expertise abundance and dependency of foreign materials, knowledge and workforce. All members of the Arabian Gulf are still highly dependent on oil and gas, with the exception of Bahrain, which has the most diverse economy in the region due to the early depletion of Bahraini oil (Table 5-1). New plans for development and strategies for improvement are now seen around the Arabian Gulf, one of which is Bahrain 2030 NPDS, which will be discussed in the next chapter.

In addition to the social, cultural and economic challenges that developed following the discovery of oil, the Gulf is today facing vast environmental concerns, including but not limited to the rise in sea level, the increase in water salinity, the rise of temperature and humidity, the contamination and drying of underground water and the loss of flora and fauna. Thus, it is a question of how rather than if the catastrophic effects of environmental degradation in the Gulf should be minimised. The UAE and Qatar developed two models of sustainability; each uses different criteria for assessing the sustainability of the built environment and respects, different, yet interrelated pillars of sustainable development. Nevertheless, most of the new developments in the Gulf are still being made with little, to no consideration to the social, cultural, economic or environmental concerns. Few attempts were encouraged to develop a sustainable urban model. Nevertheless, all of those are still to a large extent experimental and do consider all aspects of sustainability in a holistic manner.

Now that the potentials and constraints of sustainability in the Gulf region were addressed in this chapter, the next chapter will outline the context of Bahrain, the main case study for this research, and its physical, social, cultural, economic and environmental circumstances.

UAE		Qatar	Bahrain and Kuwait
Abu Dhabi	Dubai		
High regime autonomy, large surpluses	High autonomous leadership, but not enough money for large projects	Enjoys both surpluses and significant regime autonomy. Ambition of new leadership to put Qatar on the map as technology leader	Not Much is happening
"Mubadala" as main promoter of sustainable-related projects	Could create the environment for smaller, private service sector companies serving the environmental technology sector at large	Creation of a Ministry of Environment in June 2008	Populist parliament in Kuwait stalls both regulatory reform and new state-financed projects
Still untested, but based on patterns that have been successful in the past	Some attempts at regulating private behaviour: LEED building standards and TECOM* free zones have announced their aim to become carbon neutral	Creation of QIA, a leader on sustainability projects, sponsored £250 million Qatari-British fun dedicated to clean energy technologies and research in 2008, along with an agreement on technology transfer for lowering carbon dioxide levels in the air.	Polarized political scene in Bahrain and pressure to disburse funds to population
Abu Dhabi Future Energy Company and Masdar under Mubadala	Not a leader as in other sectors	Qatar Petroleum as a leader on sustainability projects registered the first Gulf based Clean Development Mechanism (CDM) project	Fiscal constraints in Bahrain
Heavy use of expatriate expertise	On sustainability, a rich state has to lead due to issues of scale and insecurity	Limited importance of local consumers, carbon emissions mostly through local industry	Establishment of Kuwait-MIT Centre for Natural Resources and the Environment in 2005
Small national population makes projects much more important than the regulations of sustainability in local society	Aims to be one of the world's top 10 sustainable cities by 2020 by implementing green building regulations	Msheireb Downtown Doha and the Encyclopaedia for Sustainable Urbanism by Msheireb Properties	Few individual attempts in Bahrain to achieve LEED or Pearl certification
Estidama Pearl Rating System	No rating system	Qatar Sustainability Assessment System	No Rating System
Plan Abu Dhabi 2030	Dubai Strategic Plan 2015	Qatar National Vision 2030	Bahrain Vision 2030 and Third Kuwait Master Plan

* A real estate master developer and operator of Dubai's leading business parks

Table 5-4 Potentials and constraints of sustainability in the Arabian Gulf[464]

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[464] Steffen Hertog, *Sustainable Development and State Capacity in the Gulf* (Durham, 2015); Woodman; Koolhaas and others.

CHAPTER 6   BAHRAIN URBANISM AND PLANNING CONTEXT

"My father rode a camel. I ride a Cadillac. My son flies a jet. My grandson will have a supersonic plane. But my great-grandson … will be a camel driver"[465] Arab Gulf saying, 1980

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[465] Sean Foley, *The Arab Gulf States Beyond Oil and Islam* (London: Lynne Rienner Publishers, Inc., 2010).

6.1 Introduction

This chapter contributes to achieving the first research objective (section 1.2) by focusing on Bahrain, the main case study for this research. It gives an introduction to its context, location, physical character and climatic circumstances, in addition to an exploration of the country's demographic, social, economic and political landscapes. Bahrain has a relatively young and simple planning system, which will be discussed in this chapter, followed by a narrative of the existing planning laws and policies. The chapter will also present the latest planning strategies developed for Bahrain by the Urban Planning Department. As a small urban archipelago, Bahrain consists of a number of areas, each with a different character. Those will each be discussed with a description of the morphology of each part, its history and the circumstances leading to its development. Finally, each description will conclude with a presentation of the contemporary condition of each unique region in Bahrain, which is essential to the understanding of the arguments in the coming chapters.

6.2 Location, Physical characteristics and Weather

The Kingdom of Bahrain, formerly known as The State of Bahrain (or Bahrein[466], Pronounced: bɑːˈreɪn[467] Arabic: البحرين meaning two seas[468]) is an archipelago located in the middle of the western coast of the Arabian Gulf, (Figures 6.1 and 6.2). The archipelago consists of 33 original islands[469] in addition to an increasing number of artificial reclaimed islands. According to Al Ansari (2009), the number of man-made islands reached 90 in 2002[470]. Elsewhere, the number was said to be 36 in 2005[471] and 40 in 2009[472], and most of those recent large-scale artificial islands were reclaimed between 2004 and 2013[473], particularly in 2009 with the completion of Durrat Al Bahrain Islands to the south and Diyar Al Muharraq and NGNT in the north (Figure 6-3 and Figure 6-4) which will be explained later. Since then, the outline of the country has not changed much (Figure 6-5). The total land area of Bahrain in 2012 was 770 Sq. Km (Table 6-2), and the inland area of the islands has been growing rapidly since the 1950s because of the various reclamation projects[474] (Table 6-1). Bahrain is divided into five governorates: Muharraq, Capital, Northern, Central (or middle) and Southern (Figure 6-1). Bahrain's weather is extremely hot and humid in the summer (May to September). The average temperature is 36°C and sometimes exceeds 40°C. In the winter (December to February), Bahrain enjoys moderate weather with an average temperature of 18°C. Humidity is higher in the summer than in winter, with an average humidity of 77% that can go up to 90%[475]. The Kingdom is set on a shallow bay, 25 kilometres east of Saudi Arabia[476] (Figure 6-1), and is connected to it through King Fahad Causeway, built in 1986[477]. The highest point in Bahrain is located approximately in the middle of the mainland and is marked at 122 metres above the sea level (Figure 6-6). Most of the inhabited land in Bahrain lies between -17 and -5 metres below sea level (Figure 6-7). Because Bahrain is an urban archipelago, the kingdom faces many physical constraints. The major constraint is the obvious scarcity of land, which makes Bahrain one of the densest countries in the world with a population density of more than 1,000 persons per Sq. Km (Figure 6-8). Other constraints are the lack of fresh water resources, arable soils and the harsh climate[478].

Settlements in Bahrain occur mostly in the northern part (Figure 6-7), Mainland Bahrain is the biggest and most populated island in the archipelago, followed by the islands of Muharraq and Sitra. Muharraq is the second biggest and most populated island after Bahrain; it accommodates Bahrain International Airport and was connected to Manama, the mainland of Bahrain, only in 1941[479]. Today it is connected to the mainland via three bridges. The third most populated island is Sitra, which, like Muharraq, is connected to the mainland via three bridges; however, it is closer to Bahrain. Sitra today accommodates the majority of the industrial activities of Bahrain, including but not limited to petrochemical industries, building materials and car showrooms and spare parts. More about those will be explained later. Bahrain was historically very rich in fresh underground water resources; however, with the stress of modern human habitation and the increase in population, fresh water resources in Bahrain are threatening to deplete (Figure 6-10). The country

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[466] Collins English Dictionary.
[467] Oxford Dictionaries, 'Definition of Bahrain.'
[468] Houtsma.
[469] Robison and Greenway.
[470] Nayef Alkalali, *Coastal & Marine Development Strategy for the Kingdom of Bahrain* (Manama, 2002); Al Ansari.
[471] The public commission for the protection of marine resources environment and wildlife, *Bahrain's Initial Communications to the United Nations Framework Convention on Climate Change, Volume 1: Main Summary Report* (Manama, 2005).
[472] The public commission for the protection of marine resources environment and wildlife, *Bahrain National Assessment Report on Implementation of the Mauritius Strategy (MSI) of the Barbados Program of Action (BPOA)* (Manama, 2009).
[473] American Association for the Advancement of Science, 'Investigating Land Use and Land Cover Change in Bahrain: 1987-2013', 2015 <http://www.aaas.org/page/investigating-land-use-and-land-cover-change-bahrain-1987-2013> [accessed 25 March 2015].
[474] SOGREAH Consultants, *Reclamation Level Study: Land Reclamation Levels and Borrows Areas, Final Report* (Manama, 2001); Al Ansari.
[475] Robison and Greenway.
[476] Larsen.
[477] Al Ansari.
[478] Larsen.
[479] Zahlan.

today is 35.6% dependent on the desalination of seawater to provide drinking water to its inhabitants while groundwater contributes to 54.6%, and treated wastewater to 9.7%. Five desalination plants exist today in Bahrain[480]. The dependency on desalinated sea water in the Gulf region in general endangers the sustaining of human habitation in the case of any contamination of the water of the Gulf[481]. The northern part of the island was traditionally known for the concentration of agricultural activities, such as palm grove farms, because that is where most of the country's natural artesian aquifers were located[482]. Today, the agricultural belt in Bahrain that existed before the unearthing of oil has shrunk, and now only limited remaining land is suitable for agricultural activities (Figure 6-11). The north-western part of Bahrain is unique for its green cover; Muharraq is distinctive for its cultural heritage, and Sitra for its industrial facilities. The different characteristics of each area will be further discussed in the coming sections.
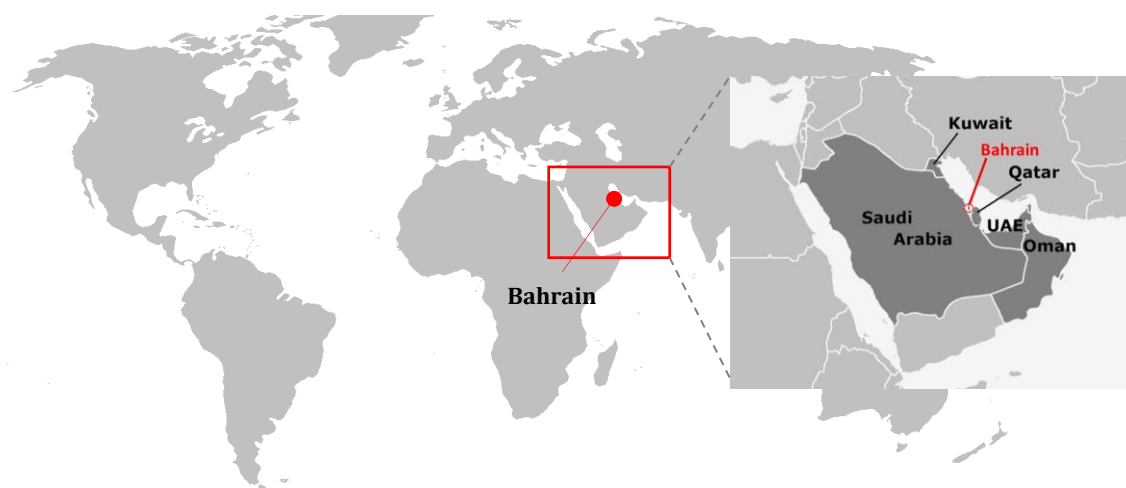
Figure 6-1 Location of Bahrain

Year	Area in Sq. Km	% of increase	Year	Area in Sq. Km	% of increase
1956	663.3	-	2005	741	11.70%
1968	665.3	0.30%	2008	758	14.30%
1976	673.98	1.60%	2009	760	14.60%
1986	691.24	4.20%	2010	762	14.90%
1996	703.62	0.60%	2011	767	15.60%
1998	709.49	7.00%	2012	770	16%

Table 6-1 Increase in the total area of Bahrain[483]

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[480] The public commission for the protection of marine resources environment and wildlife, *Bahrain National Assessment Report on Implementation of the Mauritius Strategy (MSI) of the Barbados Program of Action (BPOA)*.
[481] Abderrahman and Husain; Ulrichsen.
[482] Larsen.
[483] Data for 1968-1998 adopted from SOGREAH Consultants; Al Ansari. Area figures for 2005-2012 retrieved from central informatics and communication organisation
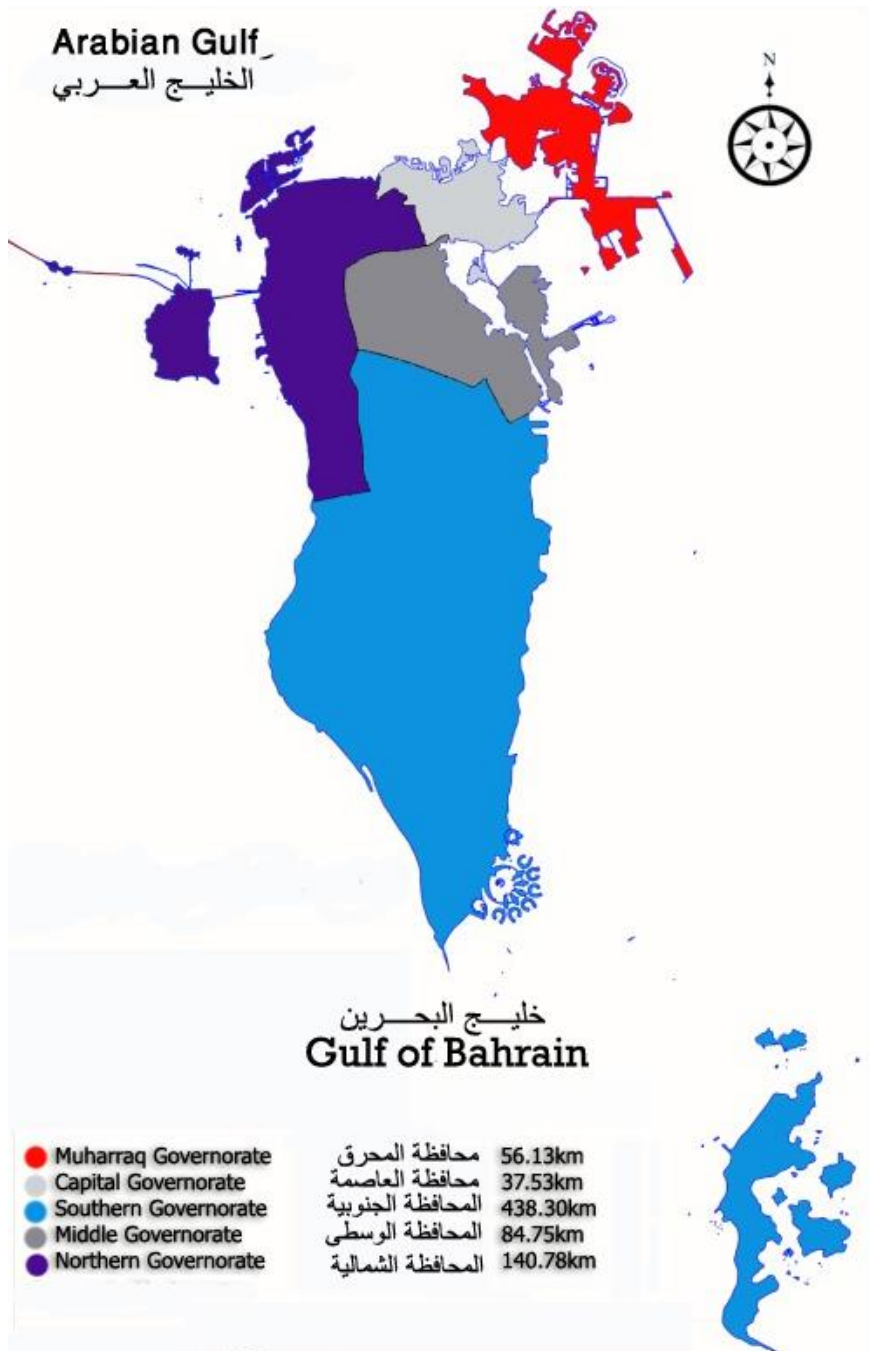
Figure 6-2 Bahrain Governorates[484]

[484] Survey and Land Registration Bureau, 'Bahrain Governorates', 2015 <http://www.slrb.gov.bh/Maps/Provinces.aspx> [accessed 16 April 2015].
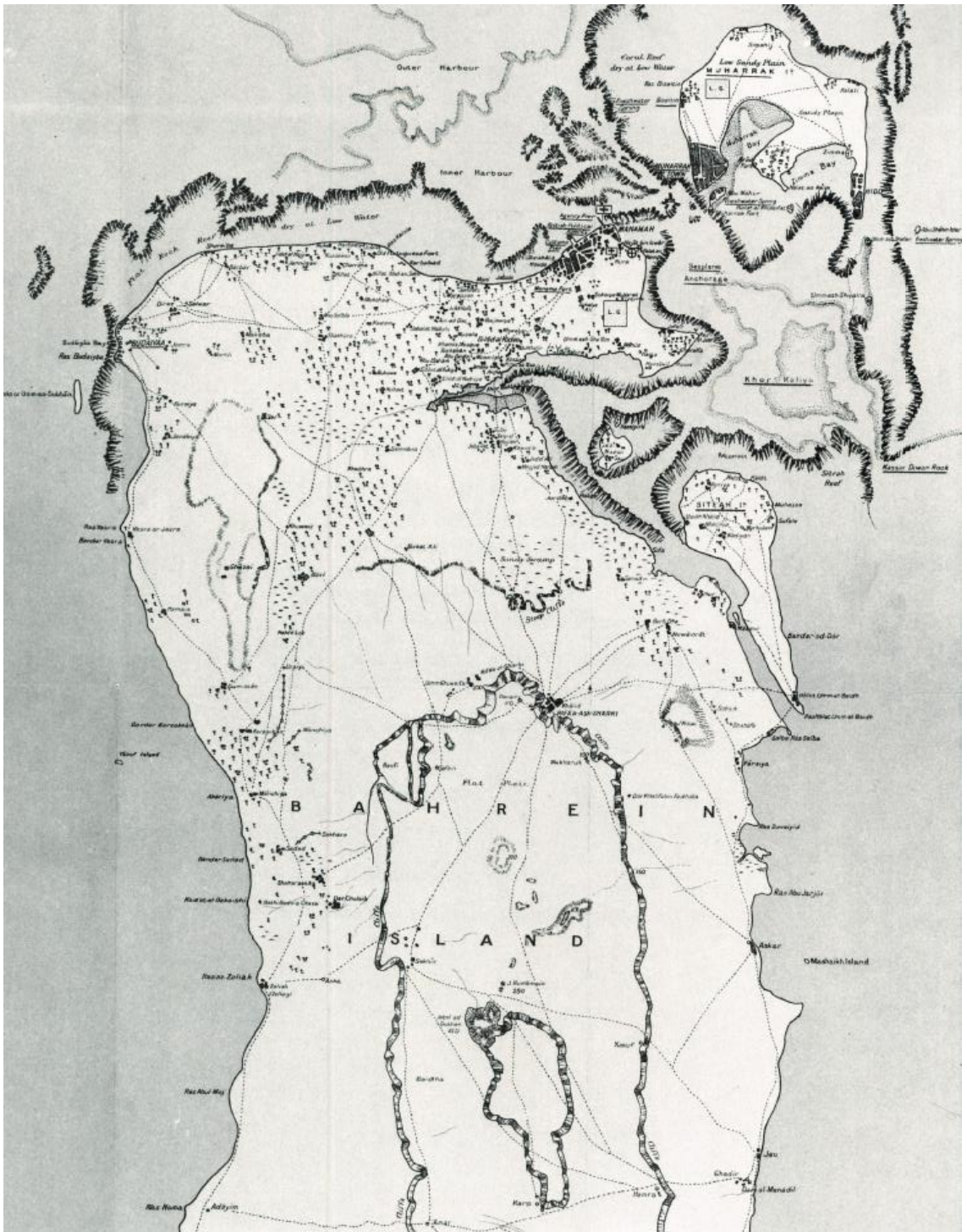
Figure 6-3 Map of Bahrain in 1933[485]

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[485] Michael Jenner, *Bahrain: Gulf Heritage in Transition* (London: Logman House, 1984).
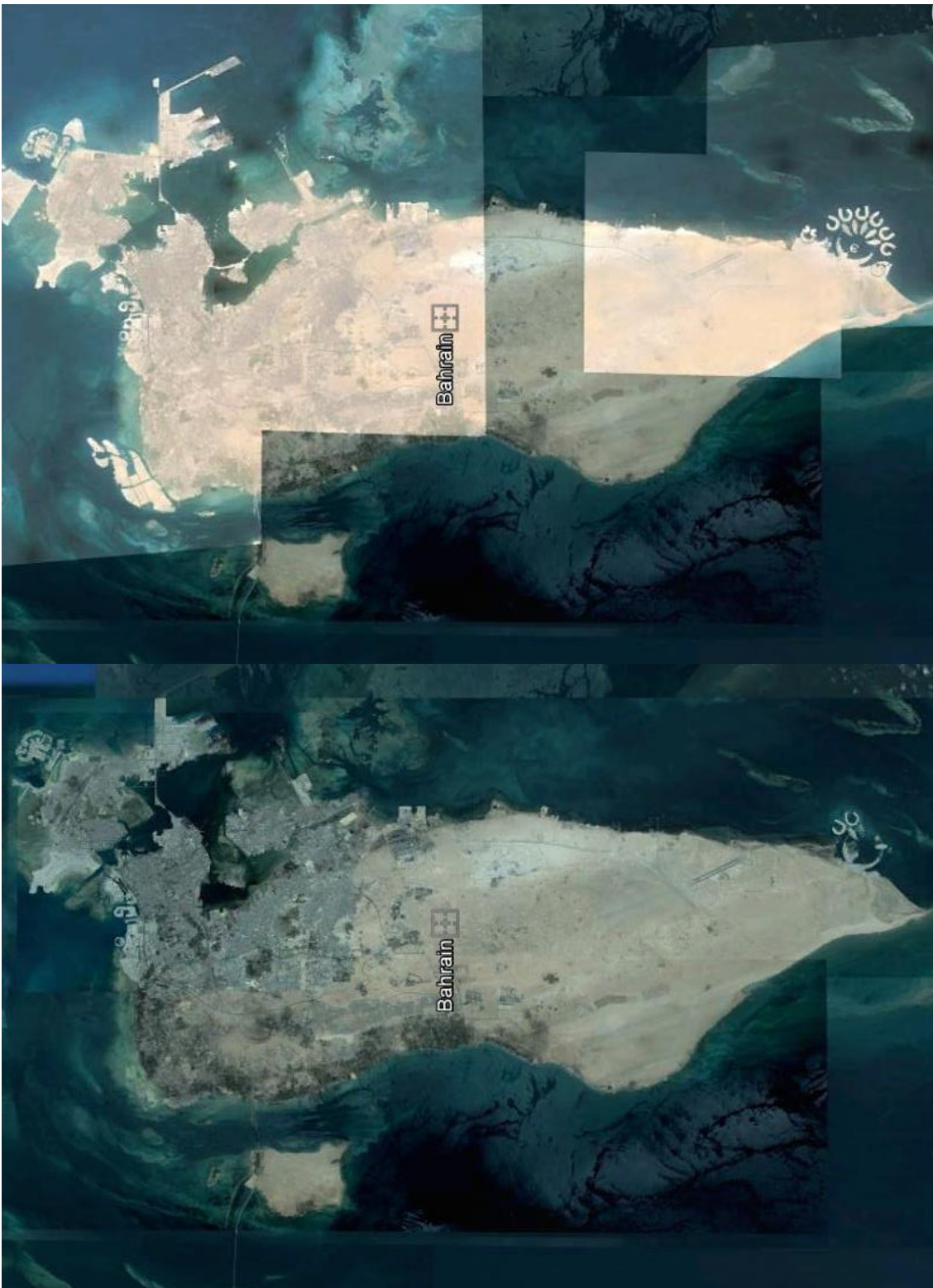
Figure 6-4 Satellite Images of Bahrain 24.04.2008 (left), 09.09.2009 (right), showing reclamation of islands in the north and south of Bahrain[486]

[486] Google Earth 6.0, 'Satellite Images of Bahrain' (26° 3'57.92'N, 50°33'28.08'E, elevation 21M) <http://www.google.com/earth/>.
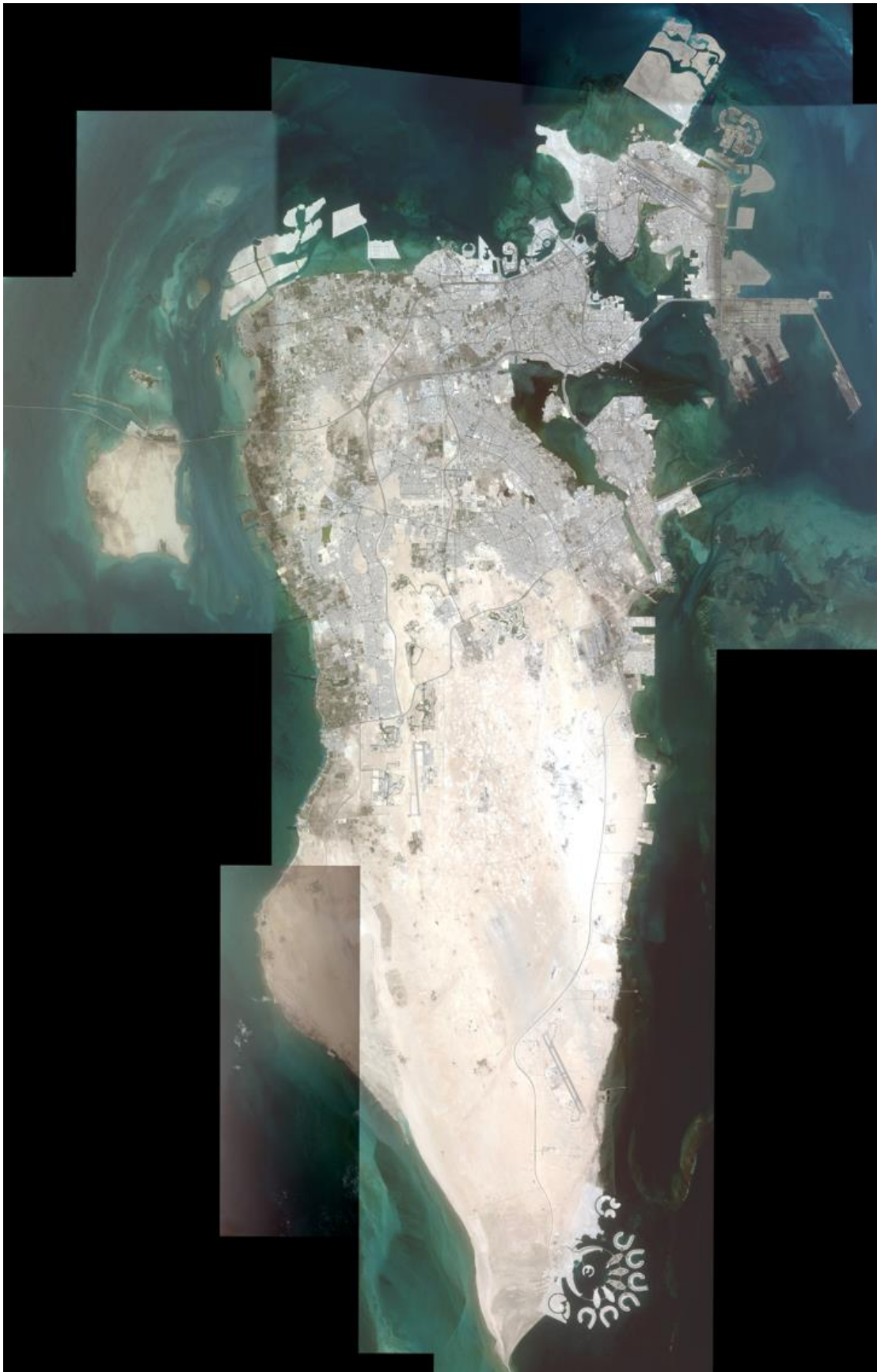
Figure 6-5 Satellite Image of Bahrain, 2013[487]

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[487] Survey and Land Registration Bureau, 'Satellite Image of Bahrain' (Manama, 2013).
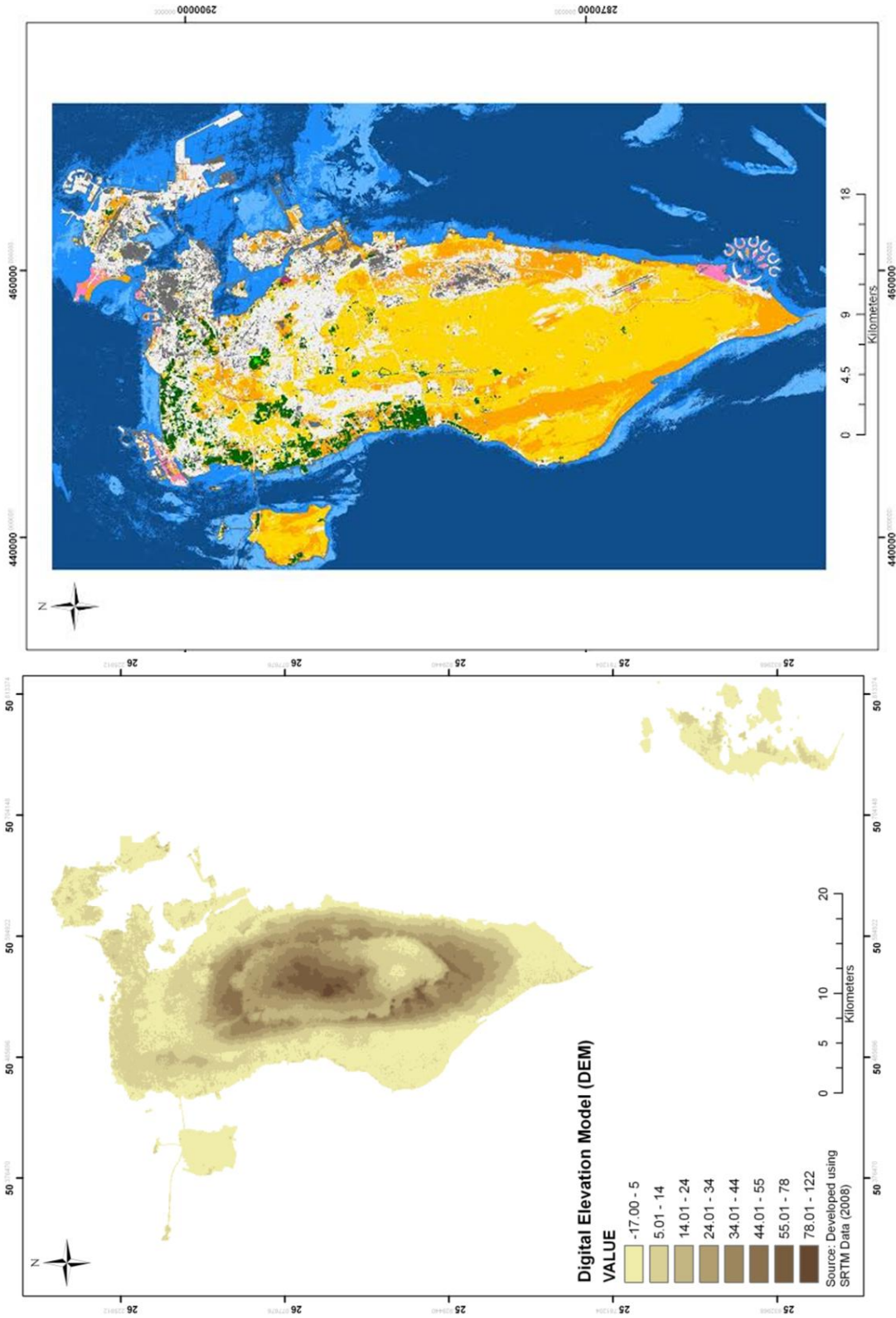
Figure 6-6 Digital Elevation Model (DEM) of Bahrain, using 2008 data[488]

Figure 6-7 Land cover of Bahrain, showing the populated northern part of the country[489]

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[488] Supreme Council Of The Enviroment, 'Digital Elevation Model (DEM) of Bahrain' (Manama, 2014).
[489] Supreme Council Of The Enviroment, 'Bahrain Landcover Map' (Manama, 2014).

Item	Year				
	2008	2009	2010	2011	2012
Total Surface Area	8269	8269	8269	8269	8269
Land Area	758	760	762	767	770
Sea Area	7511	7509	7507	7502	7499

Table 6-2 Area of the Kingdom of Bahrain 2008–2012 in Sq. Km[490]

Year	Area in Sq. Km	% of increase	Year	Area in Sq. Km	% of increase
1956	663.3		2005	741	11.70%
1968	665.3	0.30%	2008	758	14.30%
1976	673.98	1.60%	2009	760	14.60%
1986	691.24	4.20%	2010	762	14.90%
1996	703.62	0.60%	2011	767	15.60%
1998	709.49	7.00%	2012	770	16%

Table 6-3 Increase in area from 1968–1998[491].
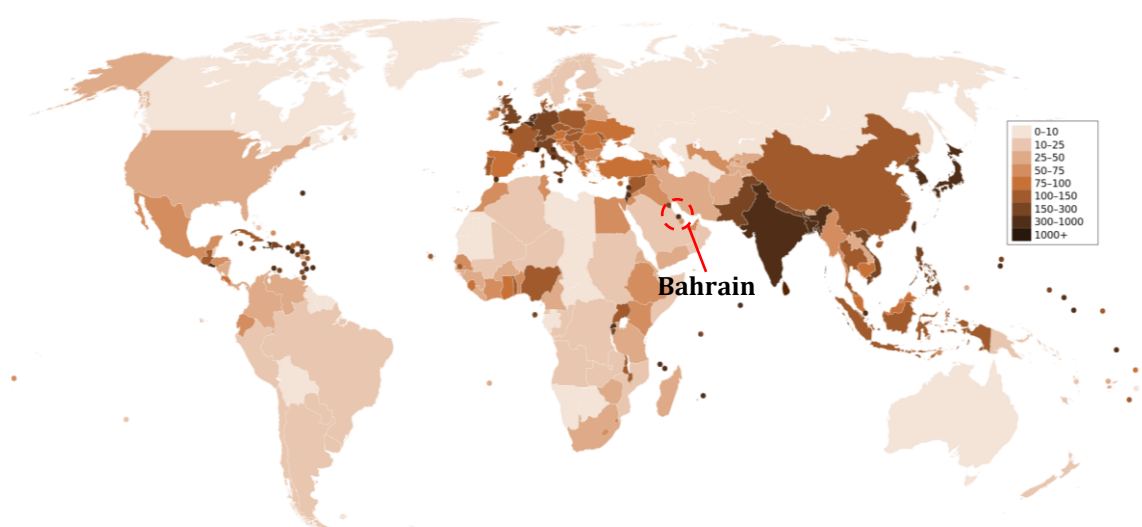
Figure 6-8 Population densities by country, 2006; showing Bahrain as one of the densest places on earth[492]

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[490] Central Informatics & Communication Organisation, 'Area of Bahrain', 2012.
[491] Al Ansari; SOGREAH Consultants.
[492] Miguel Contreras, 'Population Density (people per km2) by Country, 2006.' (Guatemala, 2006)
<http://en.wikipedia.org/wiki/Population_density#mediaviewer/File:Countries_by_population_density.svg> [accessed 13 June 2012].

1. Muharraq Island
2. Sitra Island
3. Bahrain Island
4. Manama
5. Riffa
6. Hamad Town
7. Isa Town
8. Northern Agricultural Villages
9. Khalifa Bin Salman Port
10. Sakheer Desert
11. Durrat Al Bahrain
12. Diyar Al Muharraq
13. Amwaj
14. Riffa Views
15. NGNT
16. EHNT
17. SGNT
18. Jaw
19. Askar
20. Awali
21. Bahrain Airport
22. King Fahad causeway
23. Al Seef
24. Financial Harbor
25. Zallaq

Figure 6-9 Location map of different developments around Bahrain⁴⁹³

⁴⁹³ Google Earth 6.0, 'Satellite Image of Bahrain' (26° 3'57.92'N, 50°33'28.08'E, elevation 21M, 2015) <http://www.google.com/earth/>.
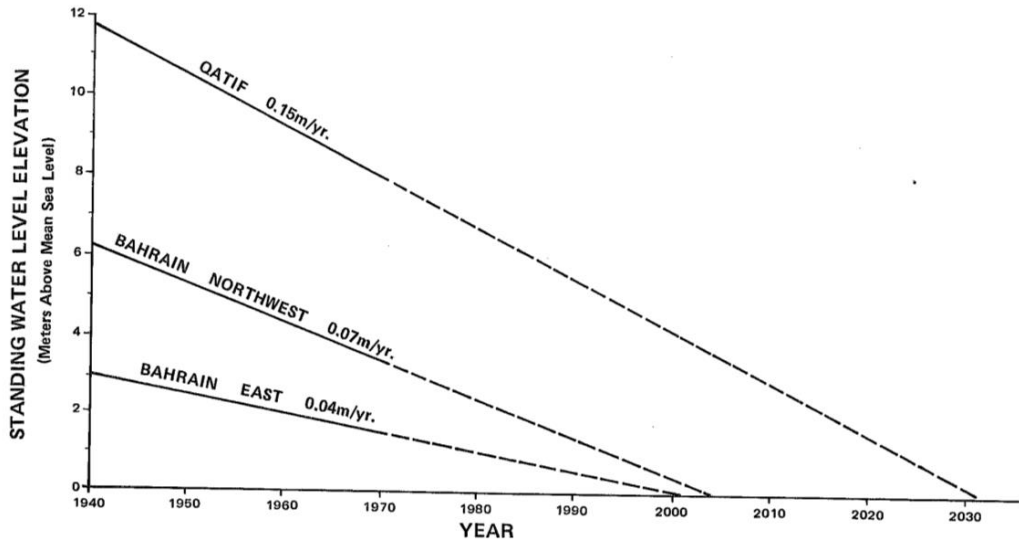
Figure 6-10 Water Level Decline in Bahrain and the Arabian Coast[494]
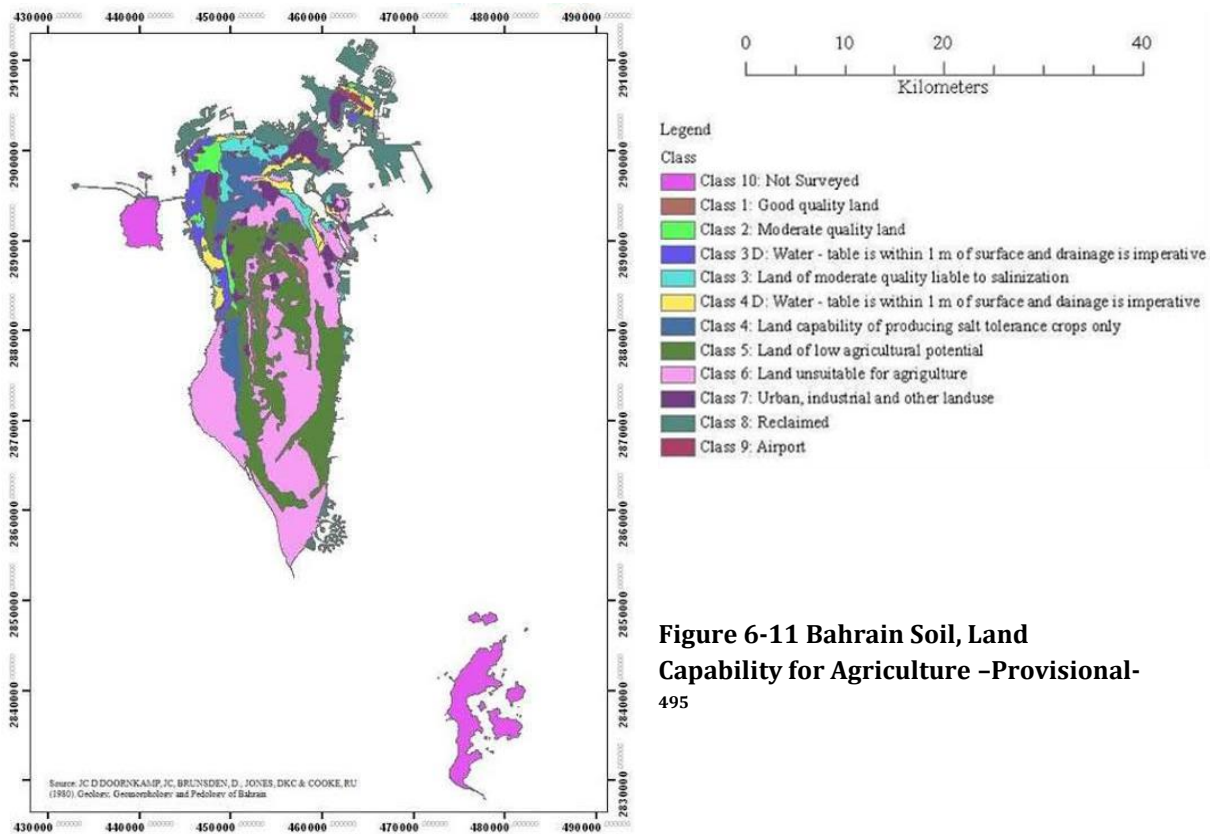
Figure 6-11 Bahrain Soil, Land Capability for Agriculture –Provisional-[495]

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[494] Italconsult, *Water and Agricultural Studies in Bahrain: A Report Prepared for the Kingdom of Saudi Arabia and the Govenment of Bahrain.* (Rome, 1971); Larsen.

[495] Supreme Council Of The Enviroment, 'Bahrain Soil, Land Capability for Agriculture –Provisional-' (Manama, 2014).

6.3 Demographic, Social, Economic and Political Characteristics

Bahrain is the smallest country within the Arabian Gulf States, with the smallest population. The Kingdom had a population of 1.3 million in 2013. This is half a million residents less than those in Qatar, almost half the population of Kuwait, and only one-sixth of the population of the United Arab Emirates[496]. The most recent and comprehensive official census of Bahrain was in the second half of 2010[497] and recorded a total population of around 1.23 million (Table 6-4). More recent figures recorded a total population of 1.3 million in 2013 indicating that the population of Bahrain has grown very fast in the last 50 years, from 0.2 million in 1960 to 1.3 million in 2013[498]. This rapid growth in population in addition to the scarcity of land and water puts the country today in a critical situation. Moreover, different sources anticipate this increase in population and density will continue over the next 50 years (Table 6-5). With 1.3 million inhabitants and a total area of 770 Sq. Km, the density of Bahrain is estimated at 1688.3 inhabitants per Sq. Km in 2012 and (Table 6-5) shows even higher numbers. Although it is a typical characteristic of urban islands to be relatively dense, for example, Hong Kong (6620 PP Sq. Km in 2012[499]), Singapore (7252.43 PP Sq. Km in 2010[500]), and The Maldives (1053.0 PP Sq. Km in 2010), this number is still extremely high compared to the United Arab Emirates (56.79 PP Sq. Km), Kuwait (171.21, PP Sq. Km) and Qatar (148.34 PP Sq. Km[501]), and is one of the highest in the world. Bahrain's high density requires special consideration and management of resources. The implications of this will be further discussed in the coming chapters.

Governorate	Total	Bahraini	Non-Bahraini
Capital	329,510	67,589	261,921
Muharraq	189,114	102,244	86,870
Northern	276,949	194,062	82,887
Central	326,305	171,573	154,732
Southern	101,456	32,931	68,525
Not Stated	11,237	N/A	11,237
Total	1,234,571	568,399	666,172

Table 6-4 Number of Population in Bahrain by Governorate and Nationality showing the total population of Bahrain in 2010[502]

Year	1950	1970	1990	2000	2005	2010	2015	2020	2030	2050	2075	2100
Population	116	213	496	668	880	1,252	1,360	1,480	1,642	1,835	1,749	1,520
Density	167	307	715	963	1,267	1,803	1,959	2,133	2,366	2,644	2,521	2,190

Table 6-5 Number of Population and density in Bahrain from 1950–2100[503]

The location of Bahrain on the trade route to India before the discovery of oil and the thriving economy after its discovery led to the migration of many people from different backgrounds and

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[496] The World Bank.

[497] Supreme Council Of The Enviroment, *Bahrain's Achievements in the Field of Sustainable Development* (Manama, 2012).

[498] Trading Economics, 'Bahrain Population', 2014 <http://www.tradingeconomics.com/bahrain/population> [accessed 16 May 2014].

[499] Hong Kong Government, 'Hong Kong: The Facts', 2013
<http://www.gov.hk/en/about/abouthk/factsheets/docs/statistics.pdf> [accessed 21 June 2014].

[500] World Bank Indicators, 'Singapore: Density and Urbanization', *Trading Economics*, 2013
<http://www.tradingeconomics.com/singapore/urban-population-percent-of-total-wb-data.html> [accessed 18 May 2013].

[501] World Atlas, 'Population Density', *Countries of the World*, 2012
<http://www.worldatlas.com/aatlas/populations/ctypopls.htm> [accessed 18 September 2013].

[502] Central Informatics Organisation, 'Population of Bahrain by Governorate' (Manama, 2010).

[503] United Nations Department of Economic and Social Affairs/ Population Division, *World Population Prospect: The 2012 Revision, Volume II: Demographic Profiles* (New York, 2012).

cultures into the islands[504]. Today, society in Bahrain consists of many nationalities beside the Bahrainis. The majority of the population consists of Asians and Arabs, followed by African, European, North American, Oceanian and South Americans (Table 6-6). The Majority of Arabs in Bahrain are Muslims, Sunnis and Shi'as. The Sunni Arabs are composed of three groups: the tribes who accompanied the ruling family to Bahrain in 1783; the Hawla, who are Arabs who migrated to Persia and then returned to the Arabian coast of the Gulf; and the Nejdis, who are non-tribal families originally from Nejd in Saudi Arabia, who settled in Bahrain at the same time as the Arab Tribes[505]. In addition there is a smaller population with Egyptian, Syrian, Jordanian, Palestinian and other Arab origins. The Shi'as in Bahrain are the Baharinah, who are Shi'as from Nejd in Central Arabia or Persians; and the Ajam, who are non-Arabs originally from Persia, who now speak Arabic and have settled in Bahrain for generations.

Bahraini	GCC	Other Arabs	Asian	African	European	North American	South American	Oceanian	Total
568,399	8,690	58,213	562,040	19,548	11,763	4,149	474	1,295	1,234,571

Table 6-6 Number of Population by Nationality, 2010[506]

The Gulf, in general, is one of the oldest continuously inhabited places in the world; this is evident in the discovered traces of the great civilisations[507]. In October 1931, the first oil well in the Arabian Gulf region was drilled in Bahrain. Seven months later, the well started producing 9,000 barrels of oil per day and the petroleum era in the Arabian Gulf began[508]. The transformation of the Arabian Gulf States following the discovery of oil is marked as being the fastest in the global world, making it an appealing laboratory to assess the theories of globalisation[509]. Bahrain, like the rest of the Arab Gulf countries, has undergone massive changes since the arrival of oil companies into the region after the First World War[510]; this resulted in the transformation of those countries from a number of coastal villages with mainly tribal societies into heavily urbanised countries dependent on oil wealth[511]. Unlike its neighbouring countries, Bahrain has relatively little oil and gas (Table 6-9). In 2012, the total production of Bahrain was 48,000 barrels per day (bbl/d) of total petroleum liquids, the least of any country in the Arabian Gulf[512]. However, Bahrain can refine more oil than it produces; the export refinery in Sitra has a capacity of 254,000 bbl/d, and is fed by an offshore field in Saudi Arabia through an old pipeline that Bahrain is today trying to replace to increase the country's refinery capacity[513]. The limited amount of oil reserves in Bahrain compared to its neighbouring countries and the possibilities of its complete depletion have been recently investigated. Although the country is still somewhat dependent on oil, Bahrain has the most diverse economy in the Arabian Gulf Countries (Table 5-1). The government is focused on attracting foreign investors and pursuing some privatisation to achieve the country's goal of economic diversification[514] (Figure 6-13). Policy showed that in 2009 the input of non-oil sectors in GDP increased to 87.6% as part of the kingdom's strategy to boost the non-oil based economy[515]. Nevertheless, many of the public sector projects, as shall be seen in chapter 9, are funded by other oil producers in the region. The implications of the economic sustainability of this practice will be discussed later.

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[504] Robison and Greenway.

[505] Zahlan.

[506] Central Informatics Organisation, 'Populations by Sex, Age Groups and Nationality Groups, Bahrain 2010' (Manama, 2010).

[507] Zahlan.

[508] Zahlan; Gardner, *City of Strangers: Gulf Migration and the Indian Community in Bahrain.*

[509] Khalaf; Looney, 'The Arab World's Uncomfortable Experience with Globalization'; Heard-Bey; Fox, Sabbah and Al-Mutawa.

[510] Zahlan.

[511] Anthony Cordesman, *Bahrain, Oman, Qatar and the UAE: Challenges of Security* (Oxford: Westview Press, 1997).

[512] U.S. Department of Energy, *Bahrain: Country Analysis Note* (Washington, D.C, D.C, 2013).

[513] U.S. Department of Energy.

[514] Zughaibi and B. Kabbani, 'Economy of Kingdom of Bahrain', 2014 <http://www.gulfbase.com/Gcc/Index/4> [accessed 18 June 2014].

[515] Supreme Council Of The Enviroment, *Bahrain's Achievements in the Field of Sustainable Development.*

Since the late 20th century, the relative rates of city growth in the Arabian Gulf were among the highest in the world; this is due to the massive foreign migration, and all indicators have suggested that this pattern of urban development will continue in the future as well[516]. Khalaf, Alshehabi and Hanieh (2015) who refer to the Gulf States as "Transit States", argued that "the intersection of labour, migration and citizenship lies at the core of understanding social life in the six states of the GCC"[517]. The migration into the States of the Gulf is not a new phenomenon. Kamrava and Babar (2012) explained that "the Persian Gulf region has always been at crossroads of civilization, a place whose inhospitable interior belied a rich mosaic of peoples and interests along the coastline in search of pearls, trading opportunities, and later, in the twentieth century, oil"[518]. The authors believed that the "scale and magnitude" of migration in recent years has been unprecedented. This fast transformation of the Gulf States attracted and was dependent on the massive migration of people to the different Gulf States. The high standards of living after the discovery of oil and the mix of contemporary and traditional lifestyles have attracted people to move into the region. Although expatriates consist of the majority of the population (Table 6-7), the traditional social structures in these countries are argued to direct the change and transformation by filtering what is acceptable[519]. Nevertheless, today, the many social complications led by this excessive immigration cannot be overlooked[520].

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[516] El-Arifi.

[517] Abdulhadi Khalaf, Omar Alshehabi and Adam Hanieh, *Transit States: Labour, Migration and Citizenship in the Gulf* (London: Pluto Press, 2015).

[518] Mehran Kamrava and Zahra Babar, *Migrant Labor in the Persian Gulf* (London: C.Hurst & Co. Ltd., 2012).

[519] Fox, Sabbah and Al-Mutawa.

[520] Gardner, *City of Strangers: Gulf Migration and the Indian Community in Bahrain.*

6.3.2 Expats and Migrants in Bahrain

The discussion about expats and migrants provides a useful starting point for any enquiry about the sustainability of the urban environments in the Arabian Gulf. The employment of British and American personnel in high managerial, technical and administrative positions by the government preceded the discovery of oil. One of those is the British Sir. Charles Belgrave, an influential figure in the history of Bahrain, who held an advisory post to the Bahraini government from 1926 to 1957, and had an influence on the decisions of the government at that time[521]. Following the discovery of oil in Bahrain in 1931[522] migration patterns that were more related to the pearling and trade industry changed[523].

City	Country	Population in metropolitan area (estimated)	Share of national population (%)	Proportion of foreign residents (%)
Manama	Bahrain	329,500	27	50
Kuwait City	Kuwait	2,380,000	90	55
Doha	Qatar	1,450,000	80	80
Dubai	UAE	1,900,000	92 (Dubai)	83
Abu Dhabi		970,000	60 (Abu Dhabi)	80

Table 6-7 Proportion of foreign residents in the Arabian Gulf states cities[524]

The flourishing of the oil industry in the latter half of the 20th century resulted in mass migration of foreign workers to Bahrain. Those held skilled, semi-skilled and clerical positions and were mostly western, related to the British and American oil companies, in addition to migrants from Iran and the Indian subcontinent. Because of the shortage in the local skilled workforce[525], migrants comprised most of the working force in the new oil-based industries despite the instructions of the ruler to favour the employment of Bahraini nationals: "BAPCO was ready to recruit competent workers, yet there were not nearly enough in the country"[526].

By the mid-20th century, western employees were at the top of the management pyramid, Bahrainis at the bottom in lower jobs, while Indians and Pakistanis were sandwiched in between[527]. Consequently, a number of Bahraini labour movements occurred, resulting in a wave of strikes over the years, demanding priority for Bahraini nationals in employment[528]. The economic growth following the rise of oil prices in the 1970s, and the independence of Bahrain in 1971, allowed the development of a generous welfare state and the subsidisation of many services including but not

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[521] May Al Khalifa, *Charles Belgrave: Biography and dairies (1957-1926)*, 2nd Ed (Beirut: Arab Foundation for Studies and Publications, 2010); Charles Belgrave, 'Papers of Charles Dalrymple-Belgrave, 1926-1957', in *Belgrave Diaries*, ed. by Charles Belgrave (Manama: Dar Al Balagha, 1945); Charles Belgrave, *Belgrave Diaries: former advisor of the government of Bahrain.*, trans. by Mahdi Abdulla (Manama: Dar Al Balagha, 2011); Al-Khalifa, 'An Urban Healing Agenda for Reform in Bahrain: Where the Dweller Falls into the Urban Gap and the Sailing Boat Hits the Skyscraper'; Fay Al Khalifa, 'An Urban Healing Agenda for Reform in Bahrain: Where the Dweller Falls into the Urban Gap and the Sailing Boat Hits the Skyscraper.'
[522] Gardner, *City of Strangers: Gulf Migration and the Indian Community in Bahrain.*; Zahlan.
[523] J. S. Birks, I. J. Seccombe and C. A. Sinclair, 'Labour Migration in the Arab Gulf States: Patterns, Trends and Prospects', *International Migration*, 26 (1988), 267–286; Laurence Louer, 'The Political Impact of Labor Migration in Bahrain', *City and Society*, 20 (2008), 32–53; Kamel Mellahi and Said Mohammad Al-Hinai, 'Local Workers in Gulf Co-Operation Countries: Assets or Liabilities?', *Middle Eastern Studies*, 36 (2000), 177–190.
[524] Fraser and Glozari.
[525] Ian Seccombe and R. Lawless, 'Foreign Workers Dependence in the Gulf, and the International Oil Companies: 1910-1950', *International Migration Review*, 20 (1986), 548–574; Radwan Shaban, Ragui Assaad and Sulayman Al-Qudsi, 'The Challenge of Unemployment in the Arab Region', *International Labour Review*, 134 (1995), 65–82; Louer; Mellahi and Al-Hinai.
[526] Louer.
[527] Willard A. Beling, 'Recent Developments in Labor Relations in Bahryn', *The Middle East Journal*, 13 (1959), 156–169; Louer.
[528] Emile Nakhleh, *Bahrain. Political Development in a Modernizing Society* (Lexington: Lexington Books D.C. Heath and Company, 1976); Mohammed Rumaihi, *Bahrain: Social and Political Change since the First World War* (London: Bowker/Centre for Middle Eastern and Islamic Studies of the University of Durham, 1976); Louer.

limited to healthcare, education, electricity, water and housing. Thereafter the public sector became the primary employer for unskilled Bahraini nationals, which resulted in an overstaffed, unmanageable and inefficient but substantial body[529]. The mass employment of Bahraini nationals in the public sector occurred in tandem with a mass import of foreigners in the private sector and the number of Bahrainis employed in construction and services was conspicuously low[530]. Today, because of the current lack of local experts working in the public sector, as shall be shown later, decision makers must hire foreign advisors and consultants in an attempt to come up with better decisions, policies and outputs.

A number of scholars have questioned the effects of expats on the local social structure and the cultural identity of the Arabian Gulf countries, suggesting that the vast labour migration has brought social and cultural changes that have encouraged political conflicts[531]. Although the Arabian Gulf countries, especially the coastal states of Kuwait, Bahrain, Qatar and the United Arab Emirates, are very similar in many of their cultural, social, and environmental conditions, the relatively small size of Bahrain, its high density, and its limited resources, makes this debate of migrants particularly important and critical politically, economically and environmentally.

While it is easy to generalise that naturalisation is not a predominant issue in the countries of the Gulf, Louer (2008) noted that migrants in Bahrain particularly have the most political influence between the states of the Gulf, and Nagy (2006) related this political power to the citizenship status of those migrants. In addition to the economic pressure caused by the subsidised services[532] of the public sector, migrants in Bahrain, unlike in many of the Gulf countries, are most likely to obtain Bahraini citizenship after a number of years of residency in Bahrain, which entitles them to receive all of the benefits and subsidies of the government, putting more stress on the already limited resources, which have continued to cause several cases of political unrest[533]. The serious political, social, cultural and economic consequences of migration and expats in Bahrain cannot be overlooked today; unlike in many of the Arabian Gulf Countries, Bahrain no longer enjoys the same access to wealth[534], yet the continuity of the welfare state encourages unrealistic expectations, and citizens refuse to accept the end of the socio-economic conditions that materialised following the discovery of oil.[535] The implications of this will be discussed in the coming chapters. As Costandi (2014) explained "adding to the richness of the tapestry of indigenous Bahrainis, one finds Indian Bahrainis, Persian Bahrainis, Syrian Bahrainis, Saudi Bahrainis, British Bahrainis ... American Bahrainis ... and many others, all weaved together into a mosaic that is quite impressive on this small island"[536]. Contrariwise, in most other countries of the Gulf, nationality is very hard to obtain for immigrants, irrespective of their length of residence[537]. For example, Qatari citizens comprise only about 25% of the total population with the majority of foreign expats on working permits, and with their accompanying families[538]. Similarly, in the UAE, migrants account for 80% of the total population[539]. Migrants elsewhere in the Arabian Gulf states do not directly compete with locals because they don't share the subsidies offered by the welfare system in those countries, making the political conflict caused by migration less significant and brutal than Bahrain.

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[529] Louer.

[530] Rob Franklin, *Migrant Labor and Politics of Development in Bahrain. MERIP 132: The Future of the Gulf* (Washington, 1985); Louer; Mellahi and Al-Hinai.

[531] Fred Halliday, 'Migration and the Labour Force in the Oil Producing States of the Middle East', *Development and Change*, 8 (1977), 263–291; Louer.

[532] In Bahrain, many services are subsidised including: education, healthcare, food, and oil.

[533] Onn Winckler, *Arab Political Demography: Population Growth, Labor Migration and Natalist Policies* (Brighton: Sussex Acadamic Press, 2005); Louer.

[534] Robert Looney, 'Manpower Policies in a Semi-Rich Oil Economy: The Case of Bahrain', *Journal of Asian and African Studies*, 25 (1990), 161–180.

[535] Louer.

[536] Samia Costandi, 'My Beautiful Bahrain', in *More of My Beautiful Bahrain: More short stories and poetry about life and living in the Kingdom of Bahrain*, ed. by Robin Barratt (Uk: Robin Barratt, 2014).

[537] Louer.

[538] Sharon Nagy, 'Making Room for Migrants, Making Sense of Difference: Spatial and Ideological Expressions of Social Diversity in Urban Qatar', *Urban Studies*, 43 (2006), 119–137.

[539] Louer.

Researchers who joined the enquiry on expatriate workers in the Gulf argued that expatriates were not only more specialised and experienced than local workers but also more disciplined, easier to control and relatively cheaper[540]. In the pre-development era, expensive but more productive and skilled foreign employees were attractive[541], while today, for the same level of training and work, the Bahraini employee in the junior post is more costly[542], and, therefore, less appealing[543]. Much of this discussion has been focused on technical and junior posts related to house management, gardening, and sales. This research, however, highlights the effects of expatriates employed by the government in higher academic and professional posts specifically related to the built environment, where their employment might be more costly than local employees.

Despite the importance of this issue in the Gulf, knowledge about the reliance on the foreign workforce, knowledge and consultancy are still limited, particularly in Bahrain. There is an urgent need for empirical research to develop a body of knowledge upon which sound policies could be recommended. This study aims to form an understanding of the challenges facing urban sustainability in Bahrain today. In this way, it will attempt to examine the claimed dependency on foreign knowledge, workforce and consultancy in Bahrain today by focusing on the effects and consequences of this dependency on the sustainability of the urban environment in Bahrain. As shown above Bahrain has always been heavily dependent on an external workforce, and consultancy and non-Bahraini employment continues to increase (Figure 6-14). Most of the foreign workforces today are employed in construction, trade, hospitality and domestic jobs (Table 6-11). The implications of this on the urban environment have not been previously examined and will be discussed in this study.

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[540] Hamid Atiyyah, 'Expatriate Acculturationvin Arab Gulf Countries', *Journal of Management Development*, 15 (1996), 37–47; Philip Lumsden, 'Dealing With The Problem of Localisation', *Middle East Economic Digest*, 37 (1993), 46–48; Mellahi and Al-Hinai; Louer..
[541] Louer.
[542] The Bahraini law sets a minimum wage for a local which is higher than the accepted salary for foreign workers at junior posts.
[543] Mellahi and Al-Hinai.

Country	Reserves*	Capacity**	Production**	Consumption**	Net Exports**
KSA	262.3	12.1	10.7	2.1	8.7
Kuwait	101.5	2.8	2.7	0.5	2.2
UAE	97.8	3.1	2.9	0.4	2.5
Qatar	15.2	1.2	1.1	0.1	1
Bahrain	0.1	0.1	0.05	0.03	0.02
Total	476.9	19.3	17.45	3.13	14.42

* Total Liquids- Billion bbl. **Total Liquids -Million bbl./d

Table 6-8 Arabian Gulf Countries' Petroleum Statistics 2006[544]

	2013	2014*	2015*	2016*
Real GDP growth %	5.30%	3.70%	4%	3.60%
Non-Hydrocarbons sector	3.00%	4.30%	5.00%	4.30%
Hydrocarbons Sector	15.30%	1.30%	0.00%	0.50%
Nominal GDP growth %	8.30%	3.60%	6.20%	5.90%
Inflation (CPI %)	3.30%	3.00%	3.00%	3.00%
Current account (%of GDP)	7.80%	5.80%	5.40%	5.30%
Fiscal balance (%of GDP)	-3.30%	-3.40%	-3.20%	-3.20%
Crude Oil Arabian Medium (USD)	106.4	100	100	100

*expected

Table 6-9 Bahrain Economic Outlook[545]

6.3.3 Governance in Bahrain

It is important to note that the Kingdom of Bahrain is a constitutional monarchy, and the only Gulf state ruled by a strict primogeniture, where power is inherited by the eldest son of the king [546]. The king appoints the government, which is led by the prime minister. The country is governed by the parliament of the Kingdom of Bahrain, which is a bi-cameral legislature, administrated by two councils. The first is the Consultative Council (upper), assigned by the king, and the second is the council of representatives (lower), which is directly elected by the people[547]. Sectarian tension and political unrest in Bahrain accelerated in 1994 and continued to arise in the following few years. Iran has always been accused of the training and funding of riots in Bahrain[548], and this resulted in years of tension between the two countries. The Bahraini government launched a severe crackdown on dissidents in 1997, and the situation has dramatically quietened down in Bahrain[549]. UK Prime Minister David Cameron (2012) said "**Bahrain** is **not Syria,** and there is a **process** of **reform under way**".[550] In 2011 and with the rise of the Arab Spring, which has changed the Middle East and affected the politics of the entire world, Bahrain experienced a revolution in February 2011. However, because the political and economic situation in the Arab Gulf countries is different to the situation in the rest of the Arab world, the revolution ended in mid-March with another crackdown from the government and promises for reform.[551] Nevertheless, political tensions, especially those of 2011, resulted in the paralysis of almost all governmental organisations, and

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[544] Marcon International, 'Persian Gulf Oil & Gas Exports Fact Sheet', 2014
<http://www.marcon.com/marcon2c.cfm?SectionListsID=93&PageID=771> [accessed 16 May 2020].
[545] Bahrain Economic Development Board, *Bahrain Economic Quarterly* (Manama, 2014).
[546] Robison and Greenway.
[547] Ministry of Shura Council and Representative Council Affairs, 'Constitution of Bahrain', 2002
<http://www.msrc.gov.bh/default.asp?action=category&id=207> [accessed 2 March 2011].
[548] Habib Toumi, 'Bahrain Blames Iran for "terror Cell"', *Gulf News* (Manama, 20 January 2013).
[549] Robison and Greenway.
[550] BBC News, 'David Cameron on GP: "Bahrain Is Not Syria"' (London, 20 April 2012).
[551] Toby Mattiesen, *Sectarian Gulf: Bahrain, Saudi Arabia, and the Arab Spring That Wasn't* (California: Stanford University Press, 2013).

caused delays to their development programmes, some of which are concerned with the development of the built environment and will be explained in the coming sections.
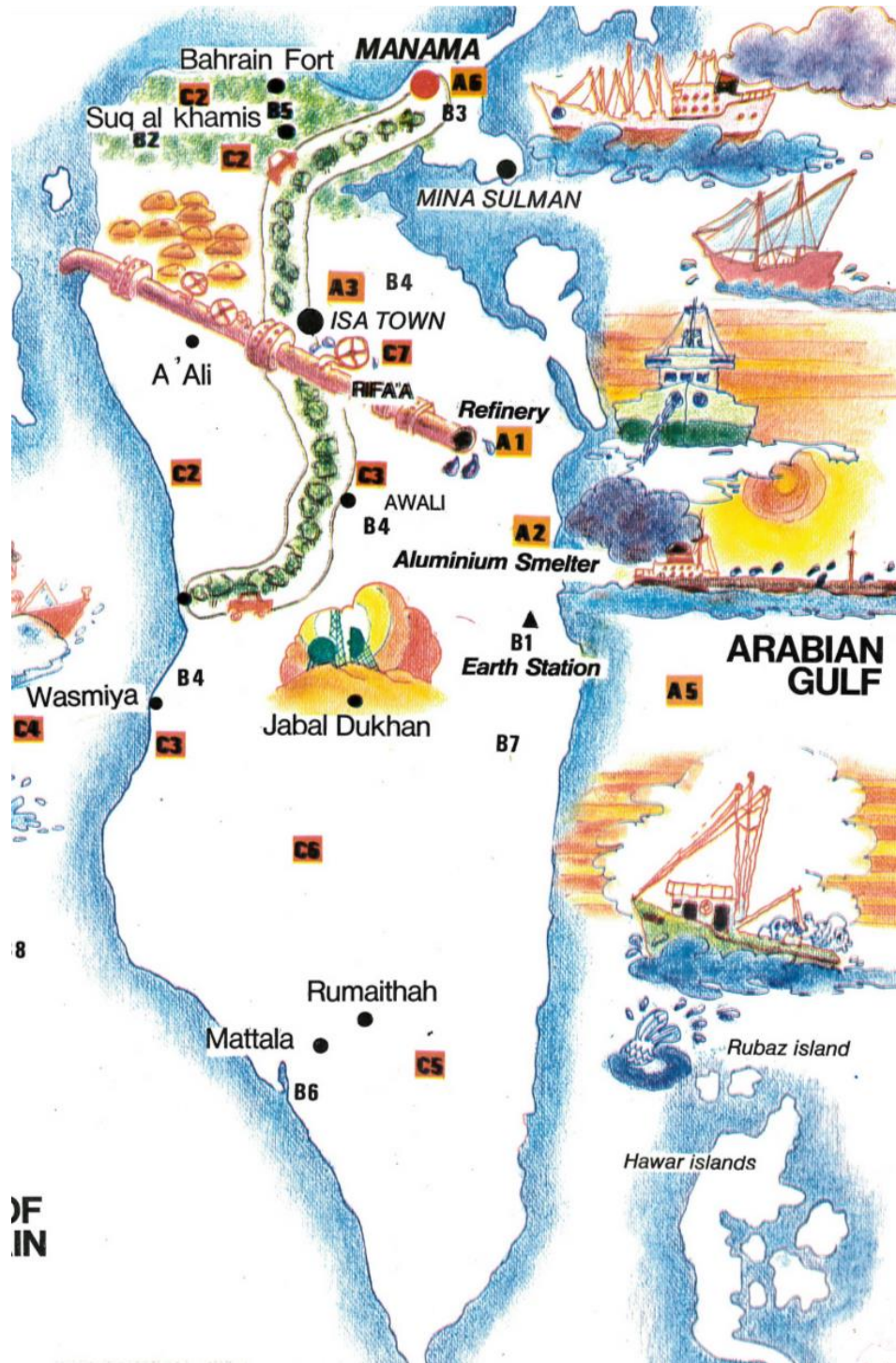
Figure 6-12 Sketch of Bahrain, showing the oil pipeline running through from the west coast to the east coast of Bahrain[552]

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[552] Bernard Gerard, *Bahrain* (Manama: Al-Yamama Publisher, 1974).
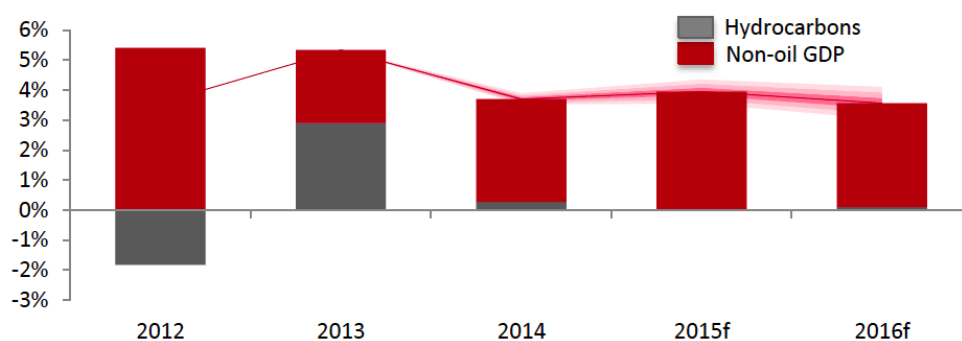
Figure 6-13 Projected GDP growth[553]
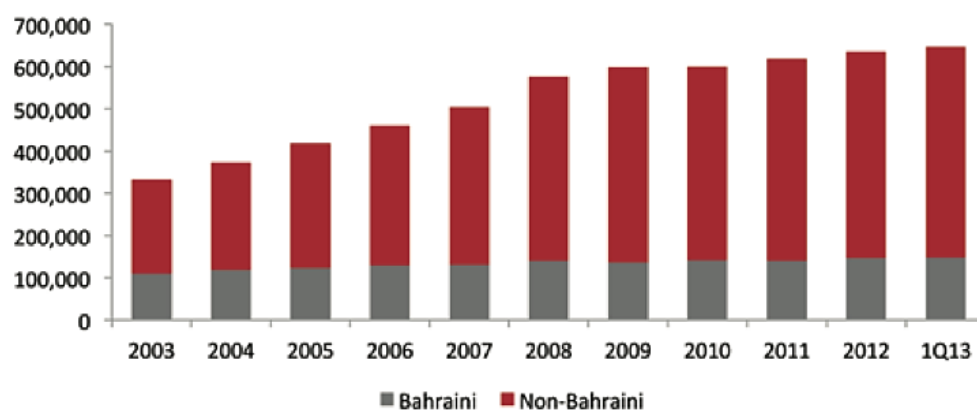
Figure 6-14 Employment by Nationality in Bahrain, 2002–12[554]

	Total	Bahraini	Non-Bahraini
Manufacturing	80,867	15,707	65,160
Construction	130,793	10,920	119,873
Trade	127,403	23,966	103,437
Hotels and restaurants	33,556	3,118	30,438
Transport and communication	20,474	8,130	12,344
Social and personal services	22,850	5,602	17,248
Real Estate and Business	37,613	8,071	29,542
Finance	14,849	9,273	5,576
Government	58,147	52,730	5,417
Domestic workers	95,297	-	95,297
Other	25,729	10,264	15,465
Total employment	647,578	147,781	499,797

Table 6-10 Number of Employees in Bahrain by nationality, 2011[555]

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[553] Bahrain Economic Development Board, *Bahrain Economic Quarterly*.
[554] Bahrain Economic Development Board, *Kingdom of Bahrain Economic Yearbook 2013* (Manama, 2013).
[555] Bahrain Economic Development Board, *Kingdom of Bahrain Economic Yearbook 2013*.

6.4 Planning System in Bahrain

6.4.1 History of Urban Planning in Bahrain, from Establishment of the Current Situation

In July 1919, the municipality was established by the government in the capital Manama, to serve the citizens of Bahrain and organise their daily matters. The municipality was not only the first official department on the islands but also the first of its kind in the region. The responsibility of the department grew in time and expanded. It started merely as the local authority responsible for public cleaning, hygiene and the provision of nominal fees; however, by the 1920s the municipality was soon responsible for roads, markets, drainage, and customs, in addition to policies and standards in Bahrain[556]. The Municipality in Bahrain has had planning and architectural duties since its establishment, by issuing the so-called declarations, such as the declaration on the organisation and planning of playgrounds in 1930; in the same year, the municipalities created the first bridge between the islands of Sitra and Bahrain[557]. In 1956, the Administrative Council of Bahrain was established to coordinate matters between government departments, and it held the responsibility of urban planning. Just a few years later and by the second half of the 1960s, the first unit of Physical Planning was created within the Board of Directors of the administrative council[558]. This allowed for the founding of more policies that will be explained in the coming section.

The administrative council of Bahrain was turned in 1970 into a state council, and the Urban Planning Unit was then moved to the Department of Municipalities and Agriculture[559]. In 1971, at the outset of the independence of Bahrain, the municipality was then named the Ministry of Municipality and Agriculture and by then it had three directorates: Municipalities, Agriculture and Village Affairs[560]. The Unit of Physical Planning continued to exist as part of the Ministry of Municipalities and Agriculture until 1975, when it was moved to the Ministry of Housing until 2003[561]. Later, the Ministry of Municipalities and Agriculture was renamed the Ministry of Municipalities Affairs and Urban Planning and the General Directorate of Urban Planning included two departments, the Department of Structural Planning and the Department of City and Village Development[562] (Figure 6-15). This was the situation at the time of data collection in 2013. Nevertheless, in December 2014 MoM and MoW joined to become the Ministry of Works, Municipalities Affairs and Urban Planning[563] to allow for more collaboration between the different departments. It is, however, important to note that for the purpose of consistency the former separate names will be used here.

6.4.2 Planning Laws and regulations in Bahrain

The first law for urban planning in Bahrain dates back only as far as 1994. The law was drafted based on earlier Legistlative decrees concerned with acquisition of land for public benefits, regulation of advertising, building regulations and public health. The law states that "it is the **responsibility** of the **MoH** through the **UPD** or **specialized consultation** offices [the role of consultants will be addressed in the coming chapters] or **both** and with the **cooperation** of the **concerned authority** in the country to **prepare** the **master plans** for **cities** and **villages** to

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[556] Ministry of Municipalities Affairs and Urban Planning, 'Historical View', 2013
<http://websrv.municipality.gov.bh/mun/index_en.jsp> [accessed 13 March 2014].
[557] Ministry of Municipalities Affairs and Urban Planning, 'Urban Planning in Brief', 2013
<http://websrv.municipality.gov.bh/ppd/indexen.jsp> [accessed 13 June 2012].
[558] Ministry of Municipalities Affairs and Urban Planning, 'Urban Planning in Brief.'
[559] Ministry of Municipalities Affairs and Urban Planning, 'Urban Planning in Brief.'
[560] Ministry of Municipalities Affairs and Urban Planning, 'Historical View.'
[561] Ministry of Municipalities Affairs and Urban Planning, 'Urban Planning in Brief.'
[562] Ministry of Municipalities Affairs and Urban Planning, 'Organizational Chart', 2013
<http://websrv.municipality.gov.bh/ppd/doc/org_chart_en.pdf> [accessed 26 March 2012].
[563] Royal Decree (No.83) of 2014 to form the cabinet

accommodate architectural, environmental, social, and economic needs"[564]. Later in the same year, and after the cooperation with concerned ministries, the minister of housing issued the regulations and decisions of this law[565]. Three years later, in 1997, three more legislative decrees were issued, two of them concerned with the protection of the environment and one regarding the ownership of real estate and land in Bahrain to the citizens of the GCC. This has been discussed since 1968, and few laws have been issued until the latest one in 1997[566]. Furthermore in 2001 a legislative decree was issued allowing the ownership of land to non-Bahraini citizens for the first time in specific assigned areas for investment purposes,[567] for example, Durrat Al Bahrain, and Amwaj Islands (Figure 6-9). Later in 2003 a legislative decree was issued to re-organise the Ministry of Municipalities and Agriculture, and that is when the UPD re-joined the ministry. Consequent laws have been published in the few following years regarding more re-organisation of the ministry's structure[568]. And finally in 2008 the last legislative decree concerned with urban planning in Bahrain was issued to adopt the Structural Strategic Plan of Bahrain, part of the Bahrain 2030 National Planning Development Strategies, developed by overseas consultant SOM[569]. The implications of this will be discussed in the coming chapters.

6.4.3   Planning Strategies and Implementation Plans

The UPD has a long history of using foreign firms to provide urban strategies and plans for Bahrain, due to the lack of local experts. The first of these was the cooperation with the United Nations Human Settlements Programme between 1989 and 2001 to provide land-use master plans for several parts of Bahrain. This was followed by the cooperation between the Bahrain Development Board (EDB) and Skidmore, Owings and Merill (SOM) to provide the Bahrain Economic Vision 2030 which is a set of National Planning Development Strategies (NPDS1) initiated in 2005 by a group of experts known as the National Planning Development team to outline the future for the development of Bahrain's economy, society and environment[570]. The strategy gives general guidelines for Bahrain's plans for improvement. The document is the first of its kind in Bahrain; it was produced to unify the work of the different governmental institutions in Bahrain. However, today, 10 years after the production of this plan, the economic side of the transformation strategy has dominated the environmental, and, more importantly, the cultural sides of the equilibrium of sustainability[571]. The NPDS1 was initiated after the adaptation of the new constitution in 2002, which promised for more reform and prosperity and was inaugurated in 2008. It is based on three principles: sustainability, competitiveness and fairness. The vision stated "Our **society** and the **government** will **embrace the principles of sustainability, competitiveness and fairness** to **ensure** that **every Bahraini has the means to live a secure** and **fulfilling life** and **reach their full potential** … [this] **national plan's** ultimate **goal** is to **create a physical foundation** for **sustainable economic growth** and **development** over the **next century**"[572]. The NPDS1 is an eight-volume confidential report and was shown only to ministers and undersecretaries following its approval by the king. The document was kept in isolation, away from other government

[564] Ministry of Municipalities Affairs and Urban Planning, 'Legislative Decree No. (2) for the Year 1994 On Urban Planning' (Manama, 1994).

[565] Ministry of Municipalities Affairs and Urban Planning, 'Order Number (1) for the Year 1994 of the Enforcement Regulations for the legistlative decree Number (2) for the Year 1994 for Urban Planning' (Manama, 1994) <http://websrv.municipality.gov.bh/ppd/doc/legislations/ministries/1994_1.pdf>.

[566] Ministry of Municipalities Affairs and Urban Planning, 'Legislative Decree No. (9) For the Year 1997 for the Ownership of the Citizens of the United Arab Emirates of Real Estate and Land in Bahrain' (Manama, 1997) <http://websrv.municipality.gov.bh/ppd/doc/legislations/decree/L970002.pdf>.

[567] Ministry of Municipalities Affairs and Urban Planning, 'Legislative Decree No. (2) for the Year 2001 on Non-Bahraini Ownership of Properties and Land' (Manama, 2001).

[568] Ministry of Municipalities Affairs and Urban Planning, 'Legislative Decree No. (88) for the Year 2006 on the Adjustment of the Organization of the Ministry of Municipalities Affairs and Agriculture' (Manama, 2006).

[569] Ministry of Municipalities Affairs and Urban Planning, 'Legislative Decree No. (24) for the Year 2008 On the Adoption of the Strategic Structural Plan for the Kingdom of Bahrain' (Manama, 2008).

[570] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.

[571] Fay Al Khalifa, 'Interview with the Economic Development Board in Bahrain' (Manama, 2013).

[572] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.

employees and the general public because of the sensitivity of the information it incorporated (section 4.7). The eight volumes were[573]:

1. Summary of the National Plan
2. Economic Strategies
3. Transportation Strategies
4. Marine Environment Strategies
5. Terrestrial Environment Strategies
6. Heritage and Archaeology Strategies
7. Sustainability and Infrastructure Strategies
8. Coastal Modelling Study

Soon after the submission of those documents, the UPD realised that the implementation of those strategies in Bahrain was not yet possible because they had not yet acquired the right application tools; therefore, in 2010, they brought in ATKINS, another foreign consultant, to develop an implementation tool for the NPDS1 and called it the NPDS2. The project was supposed to be completed in 2012 but because the UPD continued to ask for more modifications from the consultant, the project was still ongoing at the time of data collection in 2013. The national strategy was set to be reviewed every four years, and the first stage, 2009–2014, was approved in 2008[574]; however, as shall be seen later, not much was done, mostly because of the lack of implementation tools mentioned above but also because of the political uprising in 2011, which was explained in (section 6.3). It is important to note here that the NPDS1 was based on a population of 1.42 million in 2020 (see Appendix 6.1). However, as seen in (section 6.3) the population of Bahrain dramatically increased to reach 1.3 million in 2013. Moreover, another consultant who worked in the development of a housing project master plan in 2014 estimated that the population of Bahrain would reach 2.2 million in 2030[575] which indicates the shortcomings of the NPDS1 and questions the appropriateness of its strategies for solving urban issues in Bahrain. It also indicates, however, that the government today is aware of those shortcomings and are working on the rigorous review of the NPDS2. More about this will be discussed in the coming chapters.

Furthermore, consultants from different fields – conservation, urban design, control and management, and information technology – in addition to economic and legal consultants, were consulted by the Ministry of Municipalities Affairs and Urban Planning in Bahrain to develop urban design projects within the historic quarters of Bahrain. Each of these consultants produced an advice document, and all of the documents were put together in a reference report (Phillips et al., 2006)[576]. This material is now used by governmental institutions in the country to aid them in the process of urban regeneration. However, one should note here that although the document is rich in valuable information, none of the consultants of the report are Bahraini nationals. This raises some questions in connection with understanding the cultural identity of Bahrain and its historic fabric,   and   the   customs   and   beliefs   that   led   to   its   formation.

[573] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.
[574] Supreme Council Of The Enviroment, *Bahrain's Achievements in the Field of Sustainable Development*.
[575] ATKINS, *East Hidd Housing: Detailed Master Plan Report Draft* (Manama, 2014).
[576] Duane Phillips and others, *Capacity Building for Enhancement of Urban Governanc: Urban Design Projects for Traditional Areas in Bahrain- Consultants Reports*, 2006.
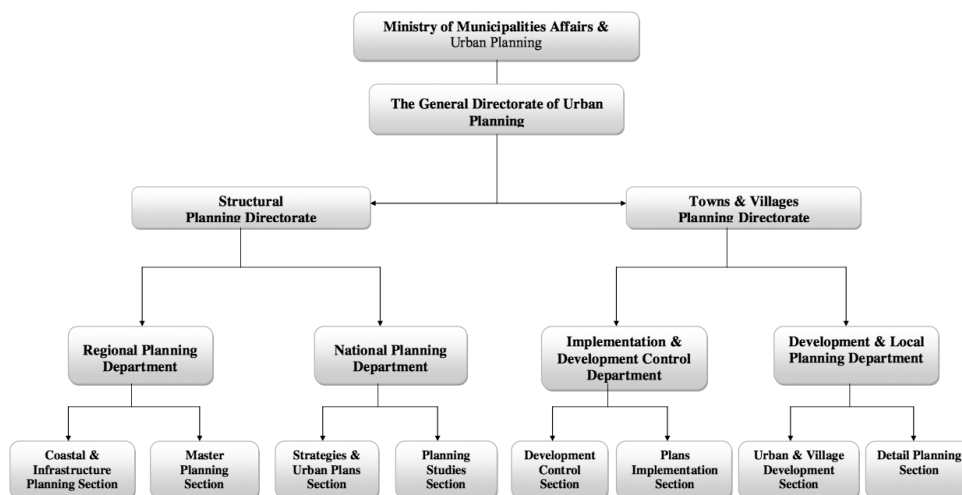
Figure 6-15 Organisational Chart of the General Directorate of Urban Planning[577]

6.5 Research on the Sustainability of the Urban Environment in Bahrain

Within the context of Bahrain, few research studies have focused on the urban fabric of the country and the changes it went through. Most of the researchers who conducted these studies are, or have been at some point in their career, a member of the faculty of the Department of Civil Engineering and Architecture at the University of Bahrain. This Department is part of the College of Engineering and was opened in 1990. The first graduating students were awarded a BSc in Architectural Engineering in 1995[578]. The programme changed its name from Architectural Engineering to Architecture at the beginning of the 21st century. In addition, some changes in the curriculum also followed suit to redirect the programme from being engineering- and services-oriented to being more focused on design and conceptual developments. Nevertheless, as we shall see later, the department is still dominated by the engineering section.

The department offers BSc degrees in Interior Design, Architecture, and Civil Engineering. However, the university does not yet provide any postgraduate programmes in these or relevant fields. Other private universities in Bahrain also offer Architectural Engineering programmes, including the Kingdom University[579] and the Gulf University[580]. However, there are still no programmes offered in Urban Design or Urban Planning in any institution on the island[581]. This relatively young and small programme of architecture at the University of Bahrain illustrates the limited knowledge of urban sustainability in the country. In addition, graduates of this programme are mostly in architect or senior architect positions and are not yet in decision making posts. Most of those who are currently in leadership positions are either expatriates or are Bahrainis who were educated abroad. The impact of this on the sustainability of the urban environment will be investigated in this research.

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[577] Ministry of Municipalities Affairs and Urban Planning, 'Organizational Chart.'
[578] Dr Mohammed Al Koheji, head of the Interior Design programme at the Department of Civil Engineering and Architecture.
[579] The Kingdom University, 'College of Architecture Engineering & Design', 2012
<http://www.ku.edu.bh/en/academics/college-of-engineering> [accessed 17 June 2013].
[580] Gulf University, 'Architectural and Interior Design Engineering Department', 2011
<http://gulfuniversity.edu.bh/en/college-deanships/college-of-engineering/departments3.html> [accessed 26 June 2012].
[581] Al Khalifa, 'An Urban Healing Agenda for Reform in Bahrain: Where the Dweller Falls into the Urban Gap and the Sailing Boat Hits the Skyscraper'.

One of the staff at the department who studied the urban fabric of Bahrain is Dr Mustapha Hamouche, an Algerian architect who held the position of Associate Professor of Architecture at the University of Bahrain from 1990 to 2010. Dr Hamouche focused his research on two cities, Muharraq and Manama, and discussed their changing urban morphology, urban planning patterns, and the factors that affected their formation in a few articles and books he published on the traditional architecture of Bahrain. Dr Hamouche's writings were based on his observations of the situation in Bahrain during the number of years he lived in the country, and mostly depended on archival materials. Although he produced productive publications, they mostly lacked the social perspective. Senior citizens of Bahrain are one of the country's most valuable sources of information. The knowledge gained from those senior citizens sometimes opposed that found in the literature available in the archives that were mostly written by colonial powers or foreigners who had documented the situation in Bahrain in the past.

Other academics have researched the massive expansion of the coastlines and the consequences of such rapid and vast developments in Bahrain's urban morphology. One of the first scholars to study the substantial transformation of Bahrain's coastlines was Al-Ansari (2009). His Ph.D. research focused on the lack of public open spaces in Bahrain in general, and more specifically on the waterfronts of the capital, Manama. His findings showed that most of Bahrain's beaches are privately owned or are occupied by private investors who are mainly interested in developing gated communities that segregate the waterfronts from the rest of the community. The research showed that only 3– % of its beaches are accessible to the general public and although Bahrain is an island surrounded by water in all directions, its inhabitants have lost their once-strong connection with the sea [582]. Dr Al-Ansari integrated the missing component of Dr Hamouche's work. His work is balanced between archival records and the social perspective.

Another academic who conducted further research on the same issue of waterfronts is Al Hammadi (2011). In a Master's dissertation, the author focused on the Al Hidd region in the city of Muharraq, a smaller geographical area than the one studied by Dr Al-Ansari (the different areas of Bahrain will be explained in the next section). In an attempt to provide more public access to the coastline, the research resulted in the formation of an urban design scheme for the regeneration of the waterfront of Al Hidd[583]. Furthermore, in collaboration with the University of Bahrain and along the same line of enquiry, in 2010, the Ministry of Culture focused on this issue and invested in research. The subsequent study investigated the changes and transformation of the coastlines in Bahrain and described the situation objectively. The findings of this research formed the national submission of the Kingdom of Bahrain to the Venice Architecture Biennale. Interviews were used to document the effects of those developments on the general public in Bahrain, and, more specifically, on the fishermen who were directly affected by the reclamation[584]. Bahrain won the Venice Biennale Golden Lion for this participation.

The above three research studies focused on the problems and consequences associated with the massive developments taking place on the waterfronts of Bahrain and were all inspired by Dr Al-Ansari's Ph.D. research. They paid particular attention to the lack of public open spaces on these coastlines. Although they do not directly discuss the relationship between cultural change in Bahrain and urban sustainability, they nevertheless tackle one of the main factors responsible for the decline of Bahrain's historic centre and the inner city, and resemble an important milestone in the transformation of the quality of urban spaces and the process of change on the sustainability of

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[582] Fuad Al Ansari, 'Public Open Space on the Transforming Urban Waterfronts of Bahrain - The Case of Manama City.' (University of Newcastle, 2009).

[583] Fatema AlHammadi, 'Urban Waterfront Regeneration: A Case Study of Hidd City, Bahrain' (Leeds Metropolitan University, 2011).

[584] Ministry of Culture, 'RECLAIM: Kingdom of Bahrain National Participation in Venice Biennale 2010' (Manama, 2010).

the urban life, which in turn relate to this research. Outside of the context of the University of Bahrain, Dr Tarek Waly is another key researcher who studied the indigenous architecture of Bahrain. In particular, he studied the courtyard house, the primary residential module of the traditional city which resembles the typology of native architecture in Bahrain[585], in addition to the architecture of Muharraq, one of Bahrain's oldest cities[586]. Hamouche focused more on the urban scale in his studies, while Waly zoomed in to tackle the typology of the unit, mainly the residential houses. However, both researchers focused on the typology of settlements, their Islamic origins, and the cultural factors that shaped their formation.

In 2010, the Laboratory of the Production of Architecture (LAPA) collaborated with the Faculty of the University of Bahrain and the Ministry of Culture to produce a cultural master plan for the country. This arose as a result of an urban study that drew attention to the urban potential of the Kingdom of Bahrain[587]. In addition to the cultural master plan, the study above also resulted in a set of recommendations that were combined in what the research team named an "urban constitution". This vaguely touches upon the role of the discovery of oil in changing the urban fabric of Bahrain. Although this collaboration was successful, the published documents are, however, still not available for direct purchase in Bahrain, which in turn limited the spread of the knowledge produced by this project.

From the literature review in this and previous chapters, it clear that the number of studies conducted on the urban fabric of Bahrain is limited. Most of these studies were conducted by foreigners who worked or spent some of their lives in Bahrain and a few were conducted by consultants hired by the Bahraini government. Moreover, there appear to be a number of studies tackling the historic urban fabric of Bahrain, the indigenous architectural style and the traditional community, but hardly any regarding the connection between the cultural transformation and the sustainability of the urban planning system in Bahrain. This research aims to fill this gap in the literature by focusing on the relationship between cultural change and the sustainability of the urban environment in Bahrain, a country which, as presented earlier, is in need of urgent urban regeneration plans that govern a sustainable future for this highly dense country with very limited resources and a lost identity.

6.6 The Urban Growth of Bahrain's Cities: A Brief Description of Each

6.6.1   Manama: The Historic Port

"Manama" is derived from "Manam Al Sheikh" meaning where the elder man sleeps, or from the word "Muna`ama" meaning the blessed and referring to the land that blesses its inhabitants with integrity and offerings[588]. Manama was a small village with a seaport established in 1320. It was first mentioned in ancient Portuguese documents upon their conquest of the islands of Bahrain in 1559. It is said that Manama had a huge fence built of mud; its gates were shut in the evening and in times of external blockade and were opened in the daytime and during periods of peace and safety. Manama was then mentioned in 1573[589] in a document sent to the Ottoman Sultan and sealed by the stamp of the Ottoman governor of Al-Ahsa[590], followed by an Ottoman document sent by the

[585] Tarek Waly, *Private Skies: The Courtyard Pattern in the Architecture of the House, Bahrain* (Arabian Printing & Publication House W.L.L., 1992).
[586] Tarek Waly, *Al Muharraq (1783-1971) : The Architecture of A Gulf City* (Gulf Panorama Publications, 1990).
[587] Gugger.
[588] A. Karim Al Orrayed, *Manama City through Five Centuries* (Manama: Ministry of Information and Culture, 2006); A. Karim Al Orrayed, *Manama: People and Heritage*, trans. by Loona Al Orrayed (Bahrain: Oriental Press, 2009).
[589] Abdulla AlSaif, *Cities and Villages from My Country* (Manama: Alayam, 2012).
[590] Al-Ahsa, City in eastern Saudi Arabia

Ottoman Sultan to the local governor mentioning the fort of Manama in 1575[591]. Soon communication between governors of the region and the Ottoman Sultan referenced to the city of Manama more frequently. The small coastal village developed during the Portuguese occupation of Bahrain (1521–1620) and transformed gradually from a coastal village to a very central port and important commercial centre[592].

Since the beginning of the 19th century and because of the British presence in the region, more literature discussed the city of Manama, focused on its physical and social structures and highlighted its commercial importance. Most of this literature comes from the political diaries and correspondence between Britain and the various states in the Arabian Gulf. There are no copies of such documents in Bahrain, which could be attributed to the general cultural tendency not to write things down. Thereafter, since the publication of those documents by the British archives in 1993[593], local and foreign researchers have been using them for various research purposes in addition to the historical diaries and writings of travellers and foreigners who journeyed or settled in the region. For example, a British officer described Manama in relation to other towns in the region: "Both the location and the environment of the city of Manama are a lot better than many other places I have visited in the Gulf. Even though its houses are made of palmed branches, it is seen to be cleaner and more organized. It was apparent from the behaviour of the inhabitants that they come from a high-level society. The farms outside the city are grown with care and study. One would see the long rows of trees standing in straight lines in inner areas and would find clean and well-laid palm trees. What struck me mostly in that particular period of the year was the presence of plentiful *Berseem* [trefoil] that the cattle fed on, the latter produces the best of meat, milk and butter that we ever tasted since we left England" (Captain Francis Lotesh, British officer, 1820[594]) (Figure 6-16). This indicates the sustainability of the urban environment which, as will be shown later, did not continue after the discovery of oil.

Manama officially became the capital of Bahrain in 1936[595] and developed significantly since the beginning of the 20th century. It transformed from a small coastal port into one of the largest cities in Bahrain (Figure 6-18). The original urban fabric has changed dramatically from its former organic and casual look, as seen in (Figure 6-16, Figure 6-17 and Figure 6-20), to a more organised and planned urban scene, as seen in (Figure 6-19 and Figure 6-21). Because of its strategic location between the west and the east, a lot of merchants from different cultural backgrounds migrated to the city and gathered around distinct neighbourhoods during the beginning of the 20th century. This soon resulted in dividing Manama into a number of distinct communities according to their trade[596]. More about this transformation will be illustrated in the coming chapters. Today Manama includes most of the important governmental buildings in Bahrain, such as the Ministries of Housing, Works, Municipalities, Culture, Finance, Foreign Affairs and many more. Most of the foreign embassies in Bahrain are also located in Manama, in addition to the country's financial district and most of its law-making institutes. Recently Bahrain's first national theatre was constructed in Manama, in proximity to the national museum. The city also includes a number of malls, and some of Bahrain's finest hotels and apartment buildings; furthermore, today Manama is an attraction to many visitors, both tourists and business travellers.

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[591] Mustapha Ben-Hamouche, *Plans of Manama City: Urban Transformations of the Gulf Cities*.
[592] AlSaif.
[593] Mustapha Ben-Hamouche, *Plans of Manama City: Urban Transformations of the Gulf Cities*.
[594] Al Orrayed, *Manama: People and Heritage*.
[595] Gugger.
[596] Gugger.

Figure 6-16 Aerial drawing of the northern part of Bahrain showing the cities of Manama and Muharraq in 1835[597]

Figure 6-17 Map of Manama 1933 showing its historical organic urban fabric[598]

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[597] Al Orrayed, *Manama: People and Heritage*.
[598] Mustapha Ben-Hamouche, *Plans of Manama City: Urban Transformations of the Gulf Cities*.
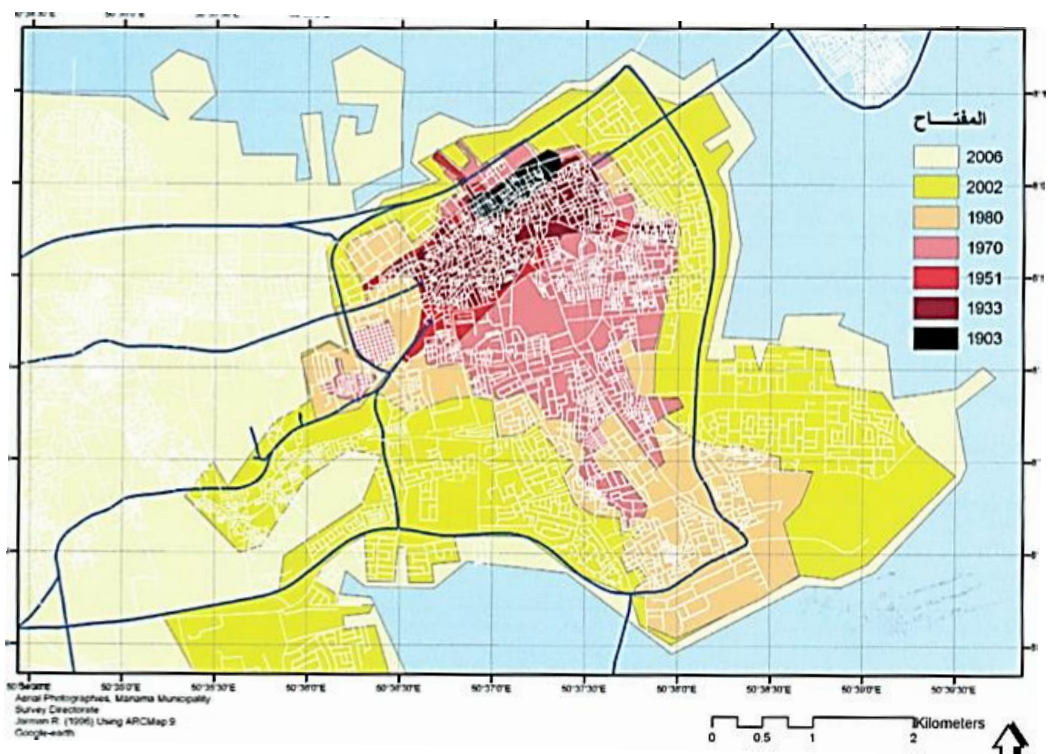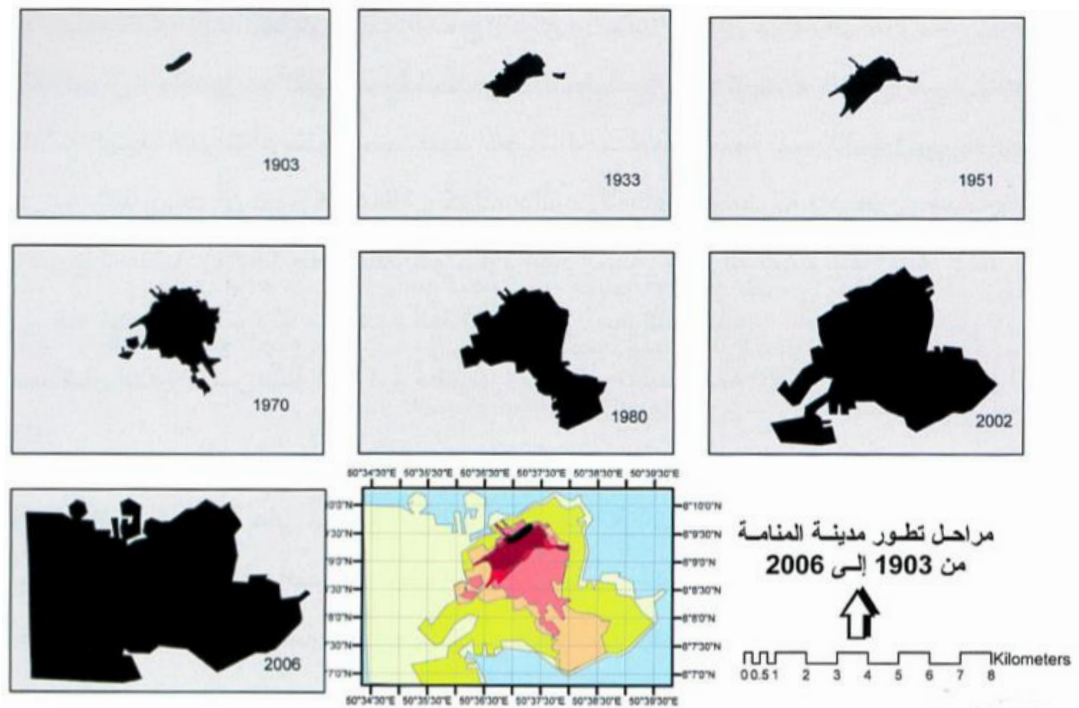
Figure 6-18 Maps showing the development and expansion of the city of Manama, 1903–2006[599] and the gradual change in the planning style from dense and casual to less dense more formal straight lines planning

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[599] Mustapha Ben-Hamouche, *Plans of Manama City: Urban Transformations of the Gulf Cities*.
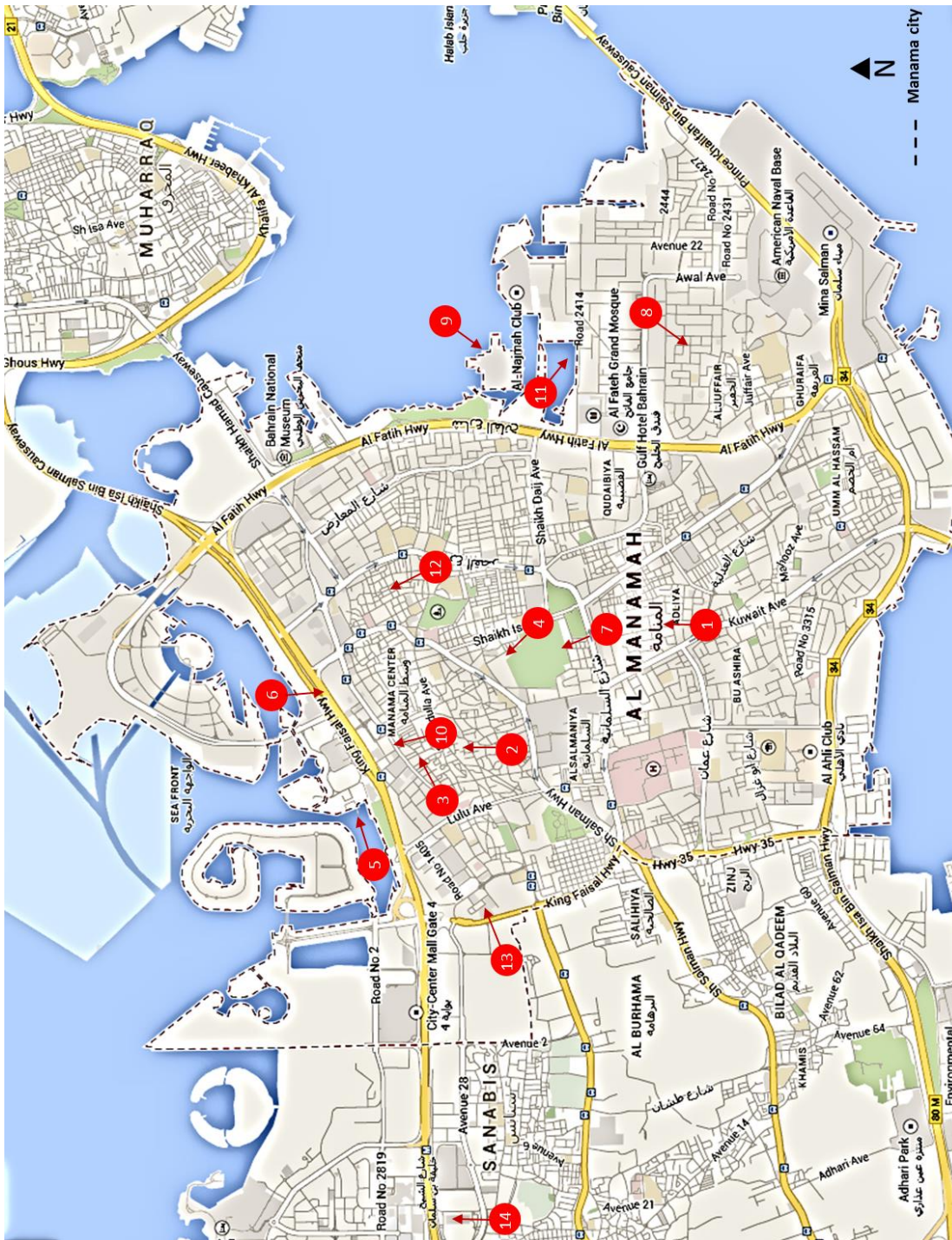
Figure 6-19 Map of Manama city in 2013[600] showing dense casual developments in the centre of the city and less dense more planned on the outside.

[600] Google Earth 6.0, 'Map of Manama' (26°13'13.45'N, 50°34'40.21'E, elevation 10M, 2013) <http://www.google.co.uk/intl/en_uk/earth/>.
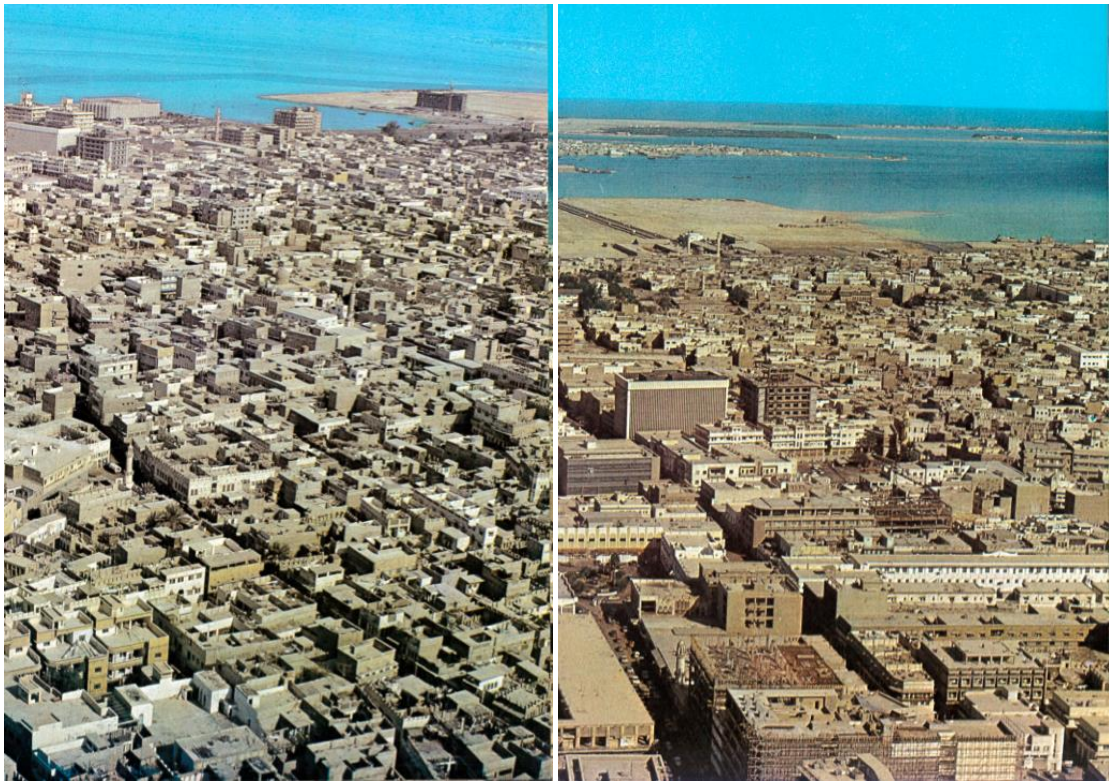
Figure 6-20 (A) an Aerial picture of Manama in 1970s showing the dense organic urban fabric that was still intact (left) and (B) an aerial picture of Manama in 1970s showing the new high rise developments and the reclamation areas (right)[601]

Figure 6-21 A contemporary aerial photo of Manama, showing the concentration of high rise developments and the new skyscrapers defining the skyline of the city, 2010[602]

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[601] Gerard.

Figure 6-22 Aerial photos of Manama City, 2010[603]

[602] Jacobs Vua, 'Aerial Photo of Manama' (Manama: French Embassy in Manama, 2010).
[603] George Mathew, 'Aerial Images around Bahrain', 2010 <https://www.flickr.com/photos/7655378@N04/sets/>
[accessed 14 March 2014].

Figure 6-23 Aerial photos of Manama City, 2010[604]

[604] Mathew.

Figure 6-24 New developments arising on the land reclaimed in the 70s, 1980[605]

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[605] Gerard.
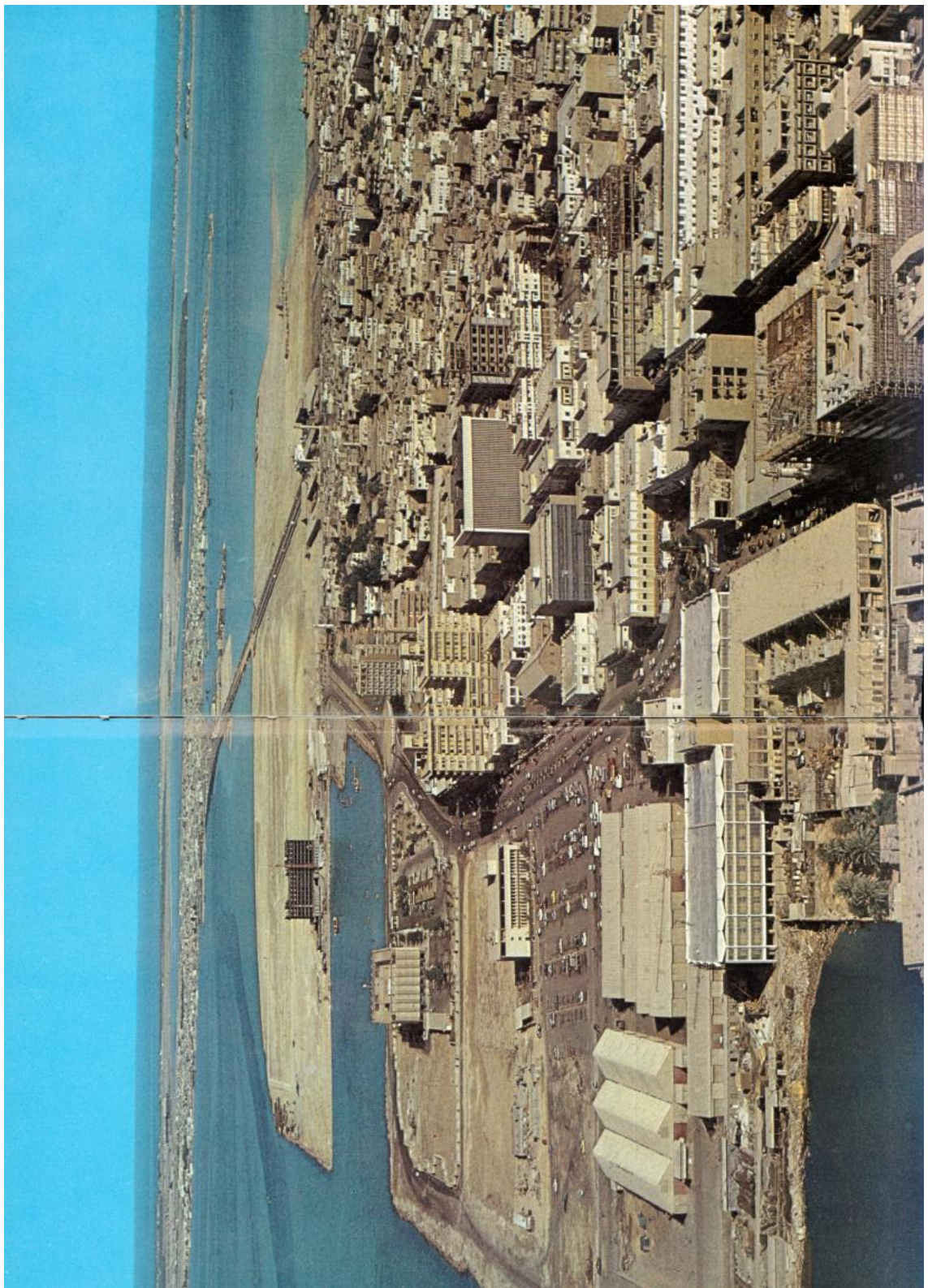
Figure 6-25 Aerial view of the reclamations in the northern side of Manama, 1980s[606]

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[606] Gerard.

Figure 6-26 Satellite image of Manama[607]

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[607] Survey and Land Registration Bureau, 'Satellite Image of Manama' (Manama, 2013).

6.6.2 Muharraq: City of Culture, Pearling and Traditions

Muharraq is a younger settlement than Manama, built in 1810 (Figure 6-29) and located on a separate island opposite the north-eastern coast of the mainland of Bahrain and the city of Manama (Figure 6-16). The island was historically called "Samaheej" and "Araad" derived from "Arados" in Greek. In 1810, the Amir of the Island, Sheikh Abdulla bin Ahmed Al Khalifa, built a small city on a highland in the middle of the island of Arad, to congregate all of the Arab tribes and clans who were scattered around the island at that time and officially called the island for the first time "Muharraq"[608], Arabic for Holocaust or the place which was burnt a number of times. There is no clear evidence in the literature why the name "Muharraq" was chosen for the new city. The most articulated evidence refers to a holocaust that occurred on the northern part of the island; however, more recent literature disclosed that the naming referred to a fire that broke out in several locations on the island about three centuries ago[609].

The flourishing of Muharraq came with the pearling era in the 19th century; the city was famous for its concentration of pearl merchants and pearl markets, which stimulated the economy of Bahrain at that time[610]. The Sunni inhabitants of Muharraq controlled the pearl trade and markets, and the spreading of this trade led to the migration of more populations to the island[611]. The beginning of the 20th century witnessed the discovery of Japanese cultivated pearls; this, however, did not affect the pearl industry in Bahrain until the demand for luxury goods dropped with the collapse of the U.S stock market in 1929[612]. The discovery of oil in Bahrain in 1931 and the failure of the pearling industry led eventually to the collapse of the city of Muharraq, resulting in the migration of the pearl merchants and their families to Manama and other areas of Bahrain[613]. Consequently, the historic houses in Muharraq were abundant for foreign workers and low-income population, which led to the deterioration of the physical, social and economic state of the city. This will be further discussed in the coming chapters.

The literature also showed that during the pearling era, houses in Muharraq, which, like in all Bahrain's coastal towns, competed to be built on the coastline, were compact and very organic, where the sizes and heights of the buildings respected the human scale, and all of the daily commodities and services were within a walking distance of the houses. This is shown in (Figure 6-27 and Figure 6-32). However, as shall also be seen later, things changed after the unearthing of oil and the adaptation of foreign planning schemes. Today, a three-lane motorway surrounds the island and completely disconnects the urban fabric from the sea (Figure 6-30); new houses are built in urban sprawl, and the physical and social characteristics of the city are gradually being lost[614] (Figure 6-28 and Figure 6-31). Many researchers who are interested in the urban morphology of the two cities focused on this transformation; however, less attention was given to the impact of this transformation on the sustainability of the urban environment in Bahrain, and this research will investigate this impact by focusing on the relationship between cultural change and urban sustainability in Bahrain.

It is important to note here that particular attention has been paid to the city of Muharraq for the richness of its cultural heritage. The Ministry of Culture in Bahrain has been trying to revive the historic area of Muharraq since its formation in 2008, to bring back the lost unique urban and

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[608] AlSaif.

[609] Bashar AlHadi, *Samaheej and Al Muharraq: A Study on Causes behind Nomenclature* (Manama: Bashar Al Hadi, 2006).

[610] Gugger.

[611] Gardner, *City of Strangers: Gulf Migration and the Indian Community in Bahrain.*

[612] Zahlan; Gardner, *City of Strangers: Gulf Migration and the Indian Community in Bahrain.*

[613] Gugger.

[614] Fay Al Khalifa, 'An Urban Healing Agenda for Reform in Bahrain: Where the Dweller Falls into the Urban Gap and the Sailing Boat Hits the Skyscraper.'

architectural feel for people to enjoy; there are several completed projects around the island of Muharraq to restore some of the old houses. Also, since 2010 the ministry has been working on the PTP, which is an urban conservation and revitalisation project submitted to UNESCO for its nomination as a world heritage site[615]. The project attempts to document the pearling history of Bahrain by narrating the story of pearls on the island using a 2-mile-long pathway located in the south of Muharraq island[616]. The implications of this on the urban form will be discussed later.
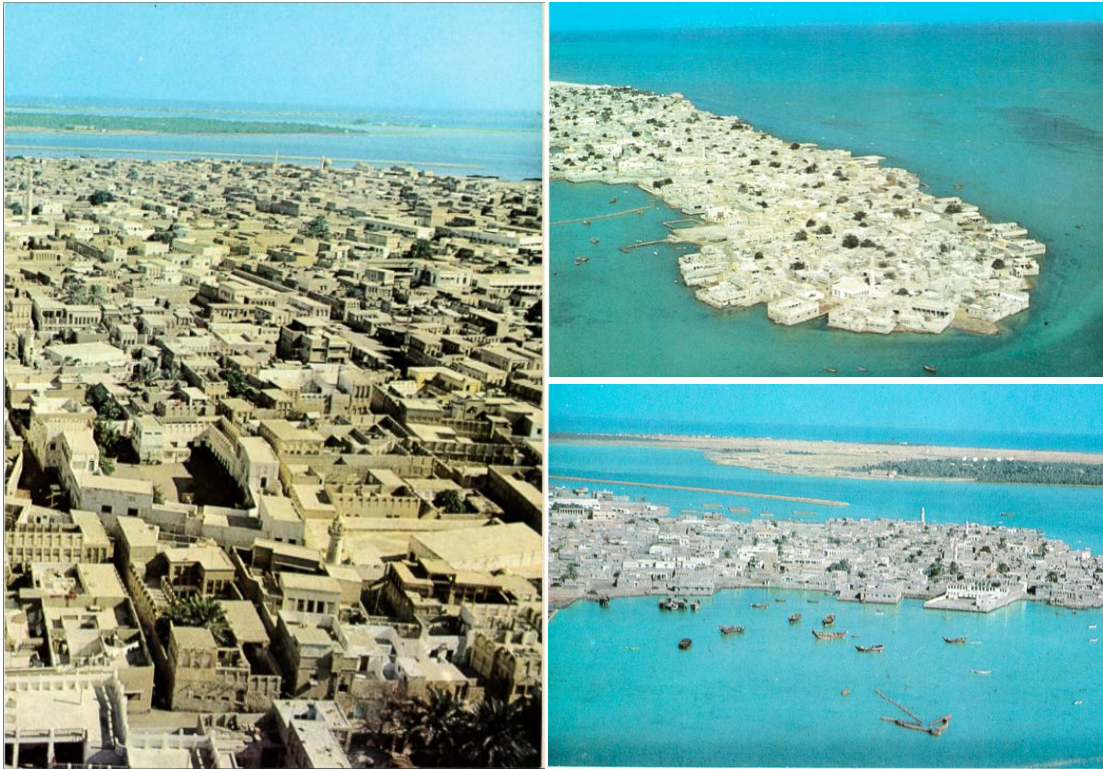
Figure 6-27 Aerial view of Muharraq in 1970s showing the dense, organic urban fabric (left) An aerial view of Hedd Town in Muharraq, 1970s showing the strong relationship between the urban fabric and the water (upper right). An aerial view of Muharraq in the 1970s showing the fishing boats and fish traps (lower right).

[615] Ministry of Culture, *Pearling: Testimony of an Island Economy* (Manama, 2010).
[616] Ministry of Culture, 'The Pearling Pathway', 2013 <http://culture.gov.bh/en/> [accessed 3 February 2014].

Figure 6-28 Aerial image of the new developments in Muharraq in 2004[617]

[617] Brian McMorrow, 'Ariel Image of Muharraq' (Manama, 2004).

Figure 6-29 Urban evolution of Muharraq old city (1810–1951)[618]

Figure 6-30 Satellite image of Muharraq[619]

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[618] Waly, *Al Muharraq (1783-1971) : The Architecture of A Gulf City*.

Figure 6-31 Satellite images showing the outer planned developments in Muharraq[620]

[619] Survey and Land Registration Bureau, 'Satellite Image of Muharraq' (Manama, 2013).
[620] Survey and Land Registration Bureau, 'Satellite Image of Muharraq.'
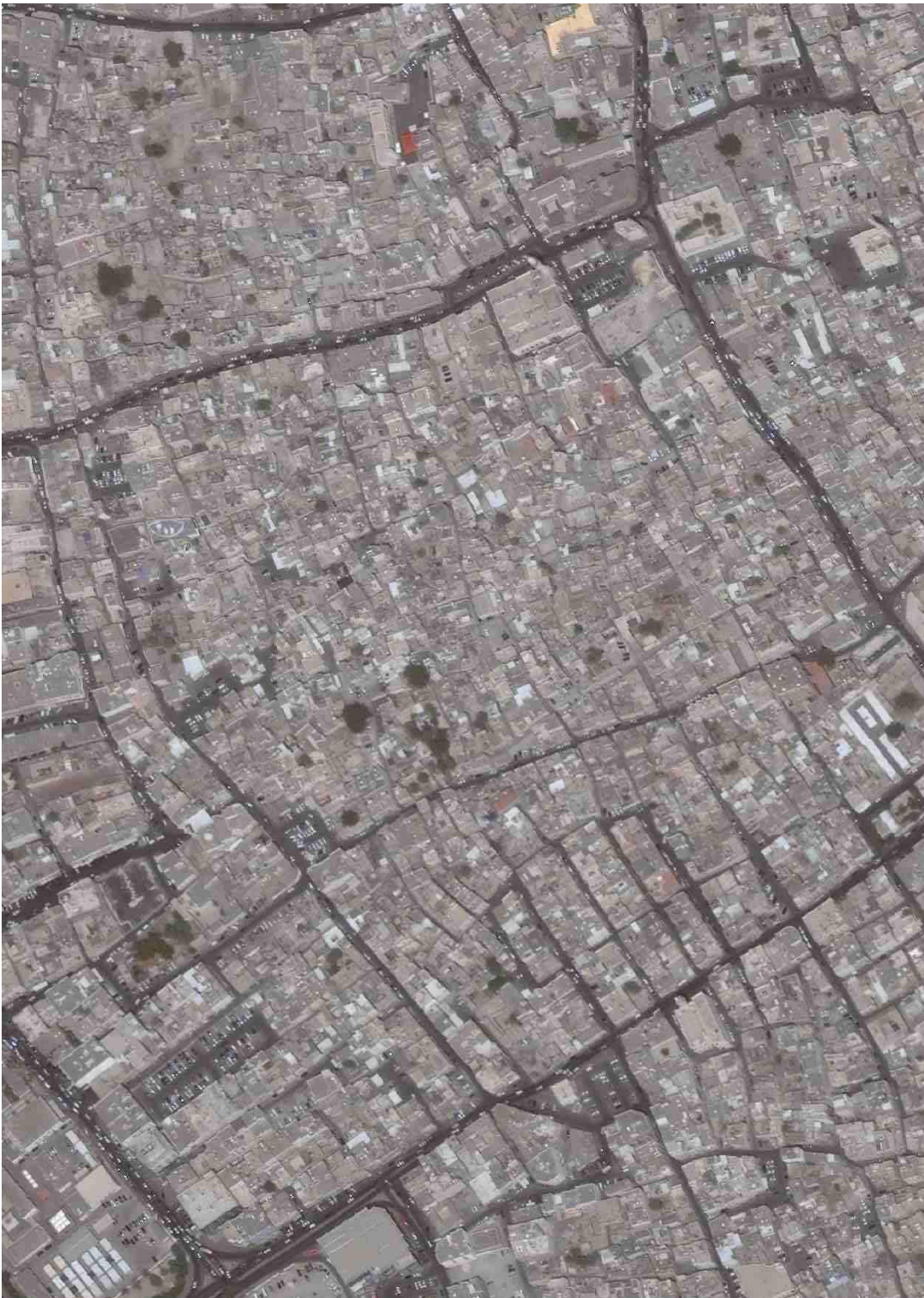
Figure 6-32 Satellite image showing the dense core of Muharraq city[621]

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[621] Survey and Land Registration Bureau, 'Satellite Image of Muharraq.'
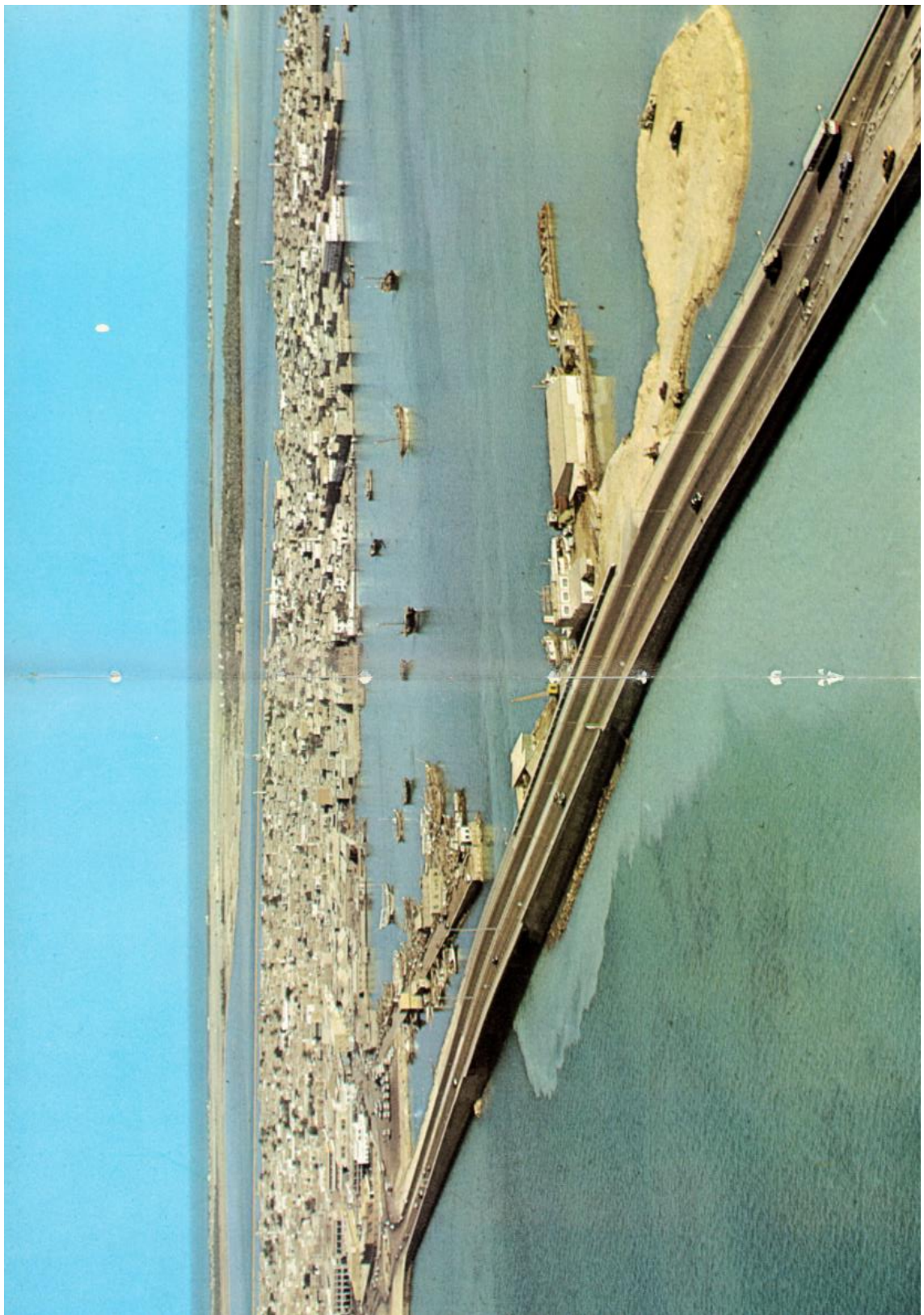
Figure 6-33 Aerial photo of Muharraq Island 1980s[622] showing the strong connection with the sea

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[622] Gerard.

Figure 6-34 Aerial view of Muharraq City, 1980s[623] showing the dense urban fabric and courtyard houses

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[623] Gerard.

6.6.3   Riffa: City of the Elite

Riffa is the main settlement in the centre of mainland Bahrain, (Figure 6-36)[624]. The city was named after its higher altitude compared to other areas of Bahrain. Riffa, Arabic for the high land, was established at the foot of a northern mountain in the 1800s by the former governor of Bahrain Sheikh Ali Bin Khalifa Al Khalifa. The settlement in Riffa developed because of the three sweet water wells on its southern side, in addition to "Al Hnaineyah", a fourth well, famous for its extremely pure water dug up by Sheikh Salman Bin Ahmed Al Khalifa[625]. Although Riffa was established around the same time of Muharraq, compared to the previous two cities, the existing sum of urban and architectural literature of the city is very limited, mainly because most of the inhabitants of Riffa are from the ruling family and their supporting tribes and clans make research in this area of Bahrain particularly difficult; for example, up-to-date aerial photos are prohibited for security reasons (Figure 6-35).

Research showed that soon after the collapse of the pearling industry in the beginning of the 20th century, about 90% of the inhabitants of Riffa worked in the Bahrain Petroleum company, BAPCO, following the discovery of oil in Bahrain in 1931, with the exception of the ruling family, who worked primarily in the Ministries of Interior and Defence in Riffa or other governmental organisations around Bahrain[626]. This explains the strong urban connection between Riffa and Awali, the planned town that was built for BAPCO employees; this town will be further described in the next section. Riffa city is divided into two parts; East Riffa and West Riffa, located on the east and west sides of Al Hnaineyah valley, one of Bahrain's very few valleys which contains the well mentioned above. As seen in (Figure 6-37 and Figure 6-38), the two parts of the city have been gradually extended and in some locations merged with other parts of Bahrain like A'ali (Figure 6-39). Riffa is mostly a residential area with the exception of military and police forces and their associated amenities strategically situated to protect the elite population inhabiting the city; this is in addition to a small number of shopping malls and leisure centres.

Figure 6-35 Aerial photo in the 1970s of the palace of the Amir in West Riffa built in 1932[627].

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[624] Robison and Greenway.
[625] AlSaif.
[626] AlSaif.
[627] Gerard.
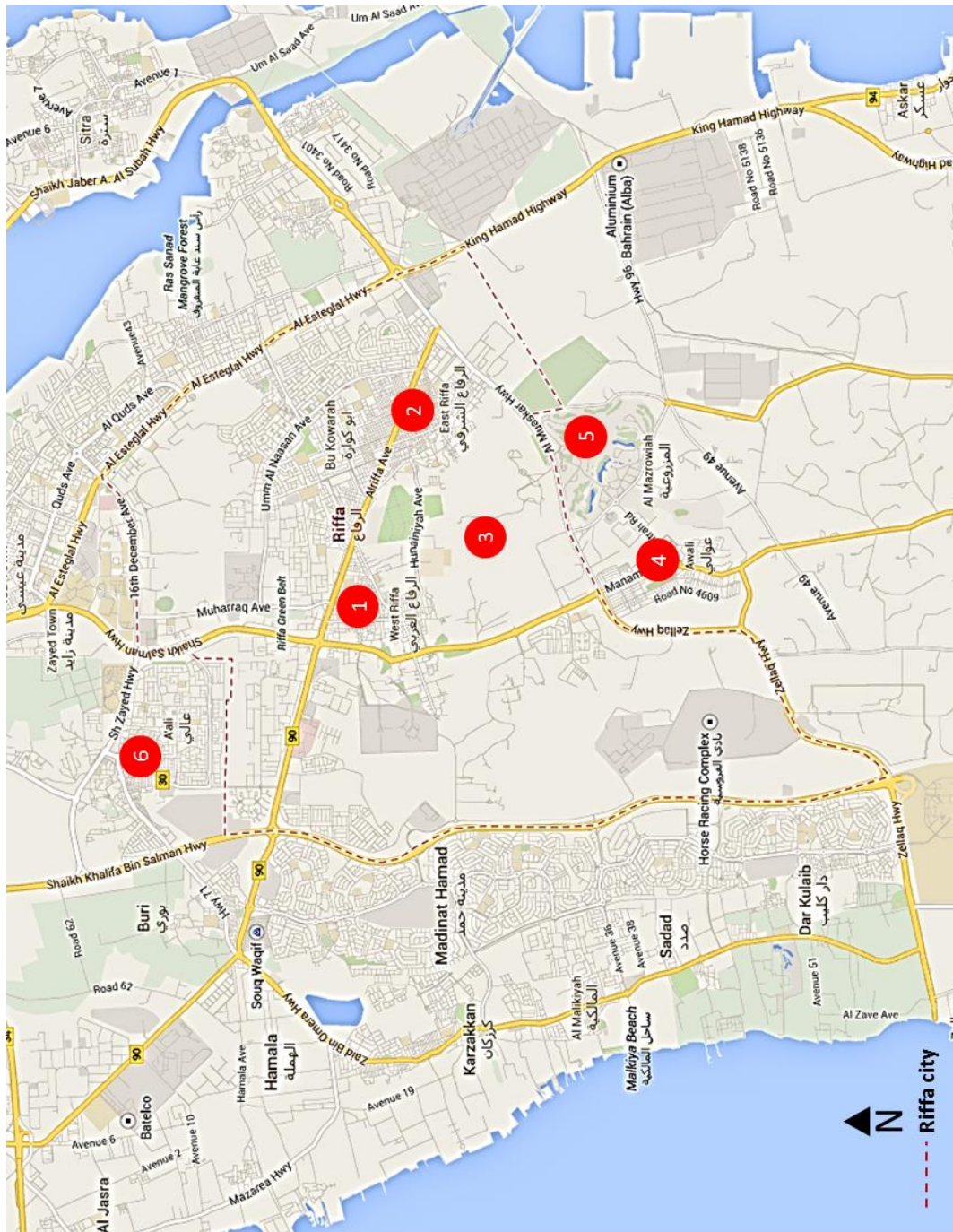
1. West Riffa
2. East Riffa
3. Al Hnaineyah
4. Awali
5. Riffa Views
6. A'ali

Figure 6-36 Map of Riffa city[628]

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[628] Google Earth 6.0, 'Map of Riffa' (26° 7'33.78'N, 50°32'36.36'E, 45M, 2013)
<http://www.google.co.uk/intl/en_uk/earth/>.
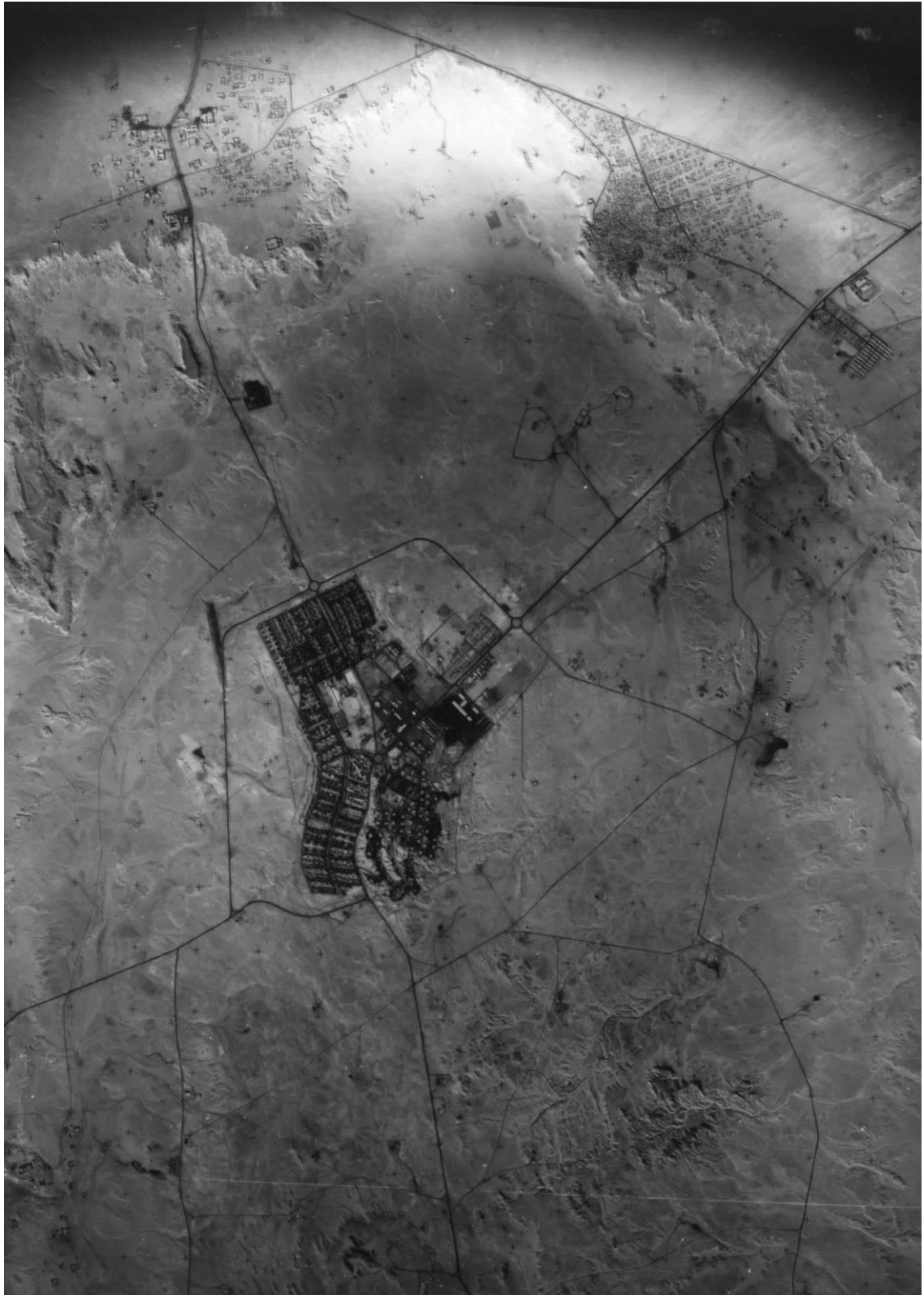
Figure 6-37 Satellite image of Riffa showing East and West Riffa and the strong connection with Awali town in 1971 [629]

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[629] Survey and Land Registration Bureau, 'Satellite Images of Riffa' (Manama, 2014).

Figure 6-38 Satellite image of Riffa showing East and West Riffa and the strong connection with Awali town in 1976 [630]

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[630] Survey and Land Registration Bureau, 'Satellite Images of Riffa.'

Figure 6-39 Satellite image of Riffa in 2013[631]

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[631] Survey and Land Registration Bureau, 'Satellite Image of Riffa' (Manama, 2013).

6.6.4   Hamad Town, Isa Town and Awali: The Planned Towns

The first planned town in Bahrain was Awali, located on relatively elevated land, 9 kilometres south of Riffa (Figure 6-36). The town was built in 1934 to accommodate the international expatriates who came to work in BAPCO after the discovery of oil in Bahrain. The town was entirely inhabited by 1937 and was argued to be the world's first fully air conditioned town. This could be attributed to the harsh climate of Bahrain for those who came to live and work in the oil industry. Many names had been assigned to the newly built town, until 1938 when the Amir of Bahrain officially named the town Awali, Arabic for the elevated, after its high altitude location. Unlike most other places in Bahrain, the town was built in a European style, similar to many suburban settlements in Europe (Figure 6-41), to bear a resemblance to the original environment of its inhabitants, on what used to be an empty deserted land, home to deer, hares and other desert animals[632]. Delahunty (2014) described his impression of Awali in 1985: "My initial impression of Awali was reminiscent of the small, backwater township that I had seen in North Carolina during my initial overseas assignment in 1974. This appeared to be a typical American village style, with a single storey, stucco finished, duplex and detached homes, all similar with a confusion of street scenes!"[633] Awali's houses are all pitched roof, despite the very humble precipitation levels in Bahrain, (Figure 6-42). The population of Awali decreased rapidly between the 1960s and 1970s to about 1,769 inhabitants, due to the replacement of many expatriates with locals living elsewhere in Bahrain[634]. Today, the town continues to house a few international oil-related employees, in addition to some locals, and is a destination for those who want to enjoy an outdoor walk in a westernised atmosphere. The small town includes a hospital, church, grocery shop, gym and a park.

The second planned town built in Bahrain was Madinat Isa, Arabic for Isa Town, located 8 kilometres south the capital Manama and named after the late Amir of Bahrain. The town was built in 1963 by the government to accommodate the increasing need for houses for the low-income population who could not afford to buy land and build a house on their own; more about this will be explained in chapter 9. The town was the country's first large-scale governmental housing project and was, like Awali, built following the American grid system. Three hundred and fifty houses were distributed in the first phase, and since then, houses have been added and given to those in need of housing units[635]. Today, Isa Town has extended and expanded to include both government and private houses of inhabitants varying between low and middle income. It also accommodates the country's largest educational area including the Ministry of Education, the old campus of Bahrain University[636], a number of private universities and a concentration of private and governmental schools and institutions, in addition to Bahrain's traditional market, which has been recently renovated by the Ministry of Municipalities and is now one of the country's oldest shopping malls.

With the increase of oil revenues and investment, the purchasing power of those who work in related industries has also increased, which in addition to the liberal real estate laws and the freedom from tax has led to the growth of land prices and housing demand[637]. However, a lot of other Bahrainis were pushed out of the market; this forced the government to establish council houses to cater for the increasing low-income population[638]. In 1984, a housing town was also built based on the American grid system and was named after the current King of Bahrain, 9 kilometres

[632] AlSaif.

[633] Paul Delahunty, 'Sand In My Eyes', in *Most of My Beautiful Bahrain: More short stories and poetry about life and living in the Kingdom of Bahrain*, ed. by Robin Barratt (Uk: Robin Barratt, 2014).

[634] Encyclopædia Britannica, 'Awālī', *Encyclopædia Britannica Online* (Encyclopædia Britannica Inc., 2015) <http://www.britannica.com/EBchecked/topic/46000/Awali> [accessed 3 February 2015].

[635] AlSaif.

[636] The new campus is located in Sakheer and will be outlined later.

[637] Global Property Guide, 'Property Prices Still Surging in Bahrain', 2008 <http://www.globalpropertyguide.com/Middle-East/Bahrain/Price-History> [accessed 28 March 2011].

[638] Gugger.

to the south-west of mainland Bahrain[639]. Madinat Hamad, Arabic for Hamad Town, is characterised by its linear organisation and its 22 roundabouts, which organises and defines the long strip of monotonous houses[640] (Figure 6-48). Similar to Isa Town, today Hamad Town also has a dynamic commercial zone in the north and small commercial centres with essential services scattered around the 22 roundabouts to accommodate the needs of the local inhabitants. A highway connects the town to Riffa and Manama from the north and Sakheer desert in the south.

Figure 6-40 Map of Awali in 2005[641]

[639] AlSaif.
[640] Gugger.
[641] Chris, 'Awali Plan, 2005', 2006 <http://www.flickr.com/photos/91932303@N00/193320449> [accessed 16 March 2011].
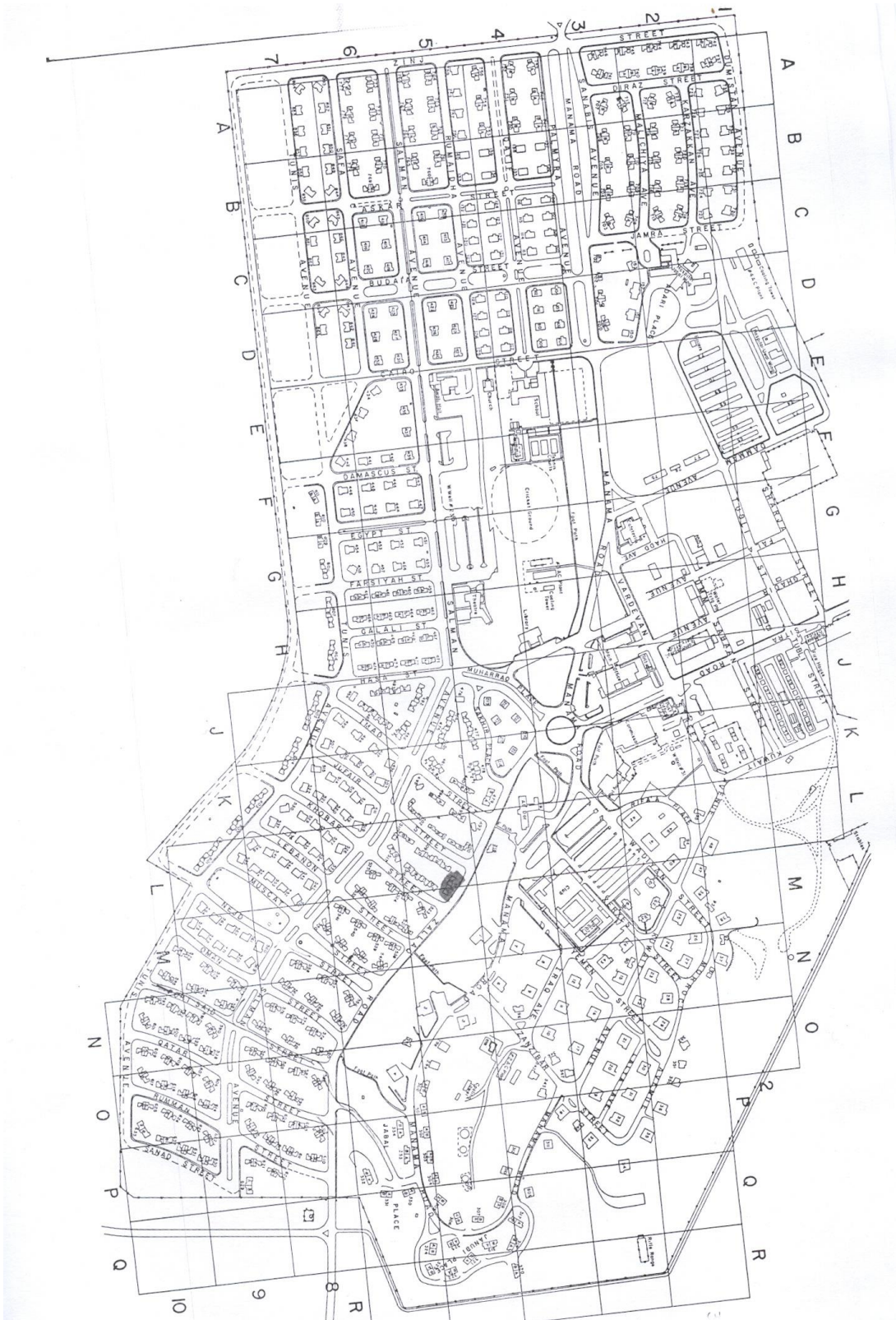
Figure 6-41 Map of Awali in 1967[642]

[642] Mike, 'Awali Plan, 1967', 2006 <http://www.flickr.com/photos/83817365@N00/95380975> [accessed 19 February 2011].
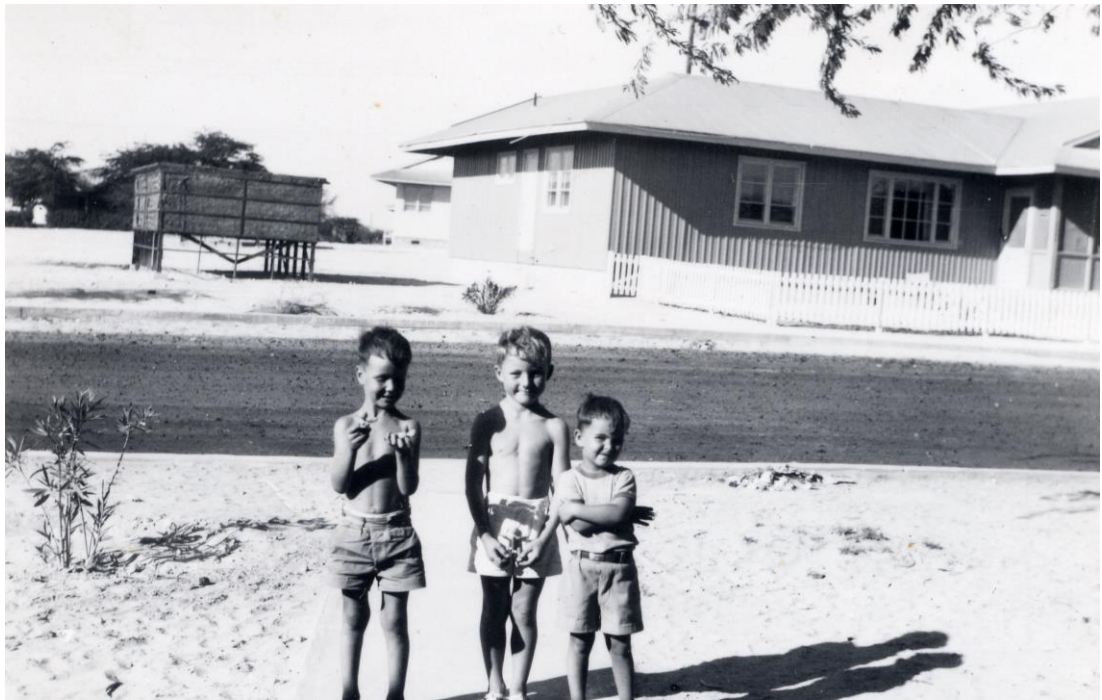
Figure 6-42 Children in Awali 1953, showing the pitched roof houses in the background[643]

Figure 6-43 Aerial view of Awali Town in the 1970s[644]

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[643] Mike, 'Mike & Friends - 1953ish' (Manama: Flicker.com, 2005)
<https://www.flickr.com/photos/knightrider/6130149/in/album-151780/> [accessed 2 June 2011].
[644] Gerard.

Figure 6-44 Aerial street view of Isa Town in the 1970.s[645]. Also showing green cover in the background which has all disappeared today

Figure 6-45 Houses in Isa Town[646]

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[645] Gerard.
[646] Gerard.
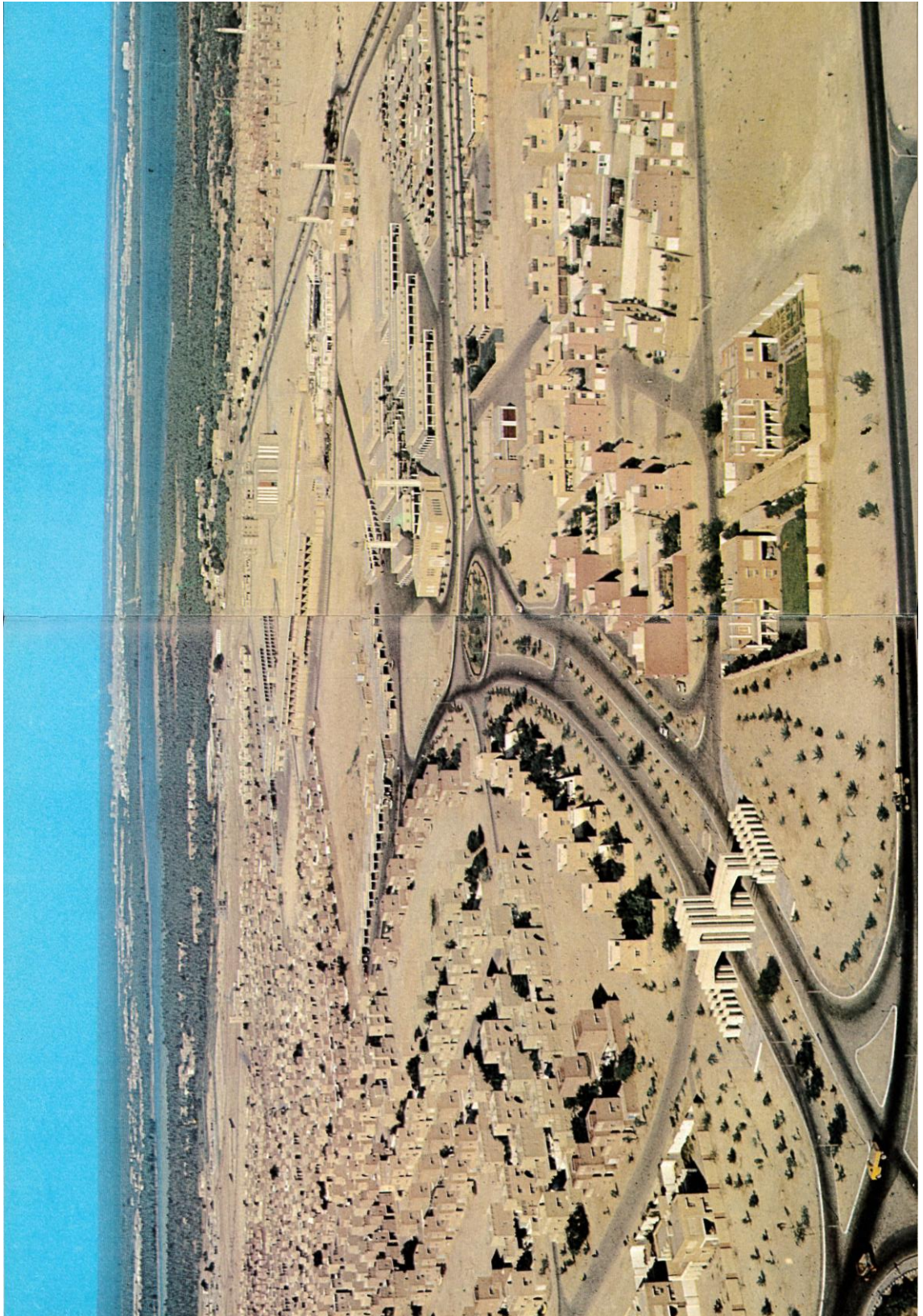
Figure 6-46 Aerial view of Isa Town in the 1970s showing Bahrain's first large-scale governmental housing project, based on the American grid system[647]

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[647] Gerard.
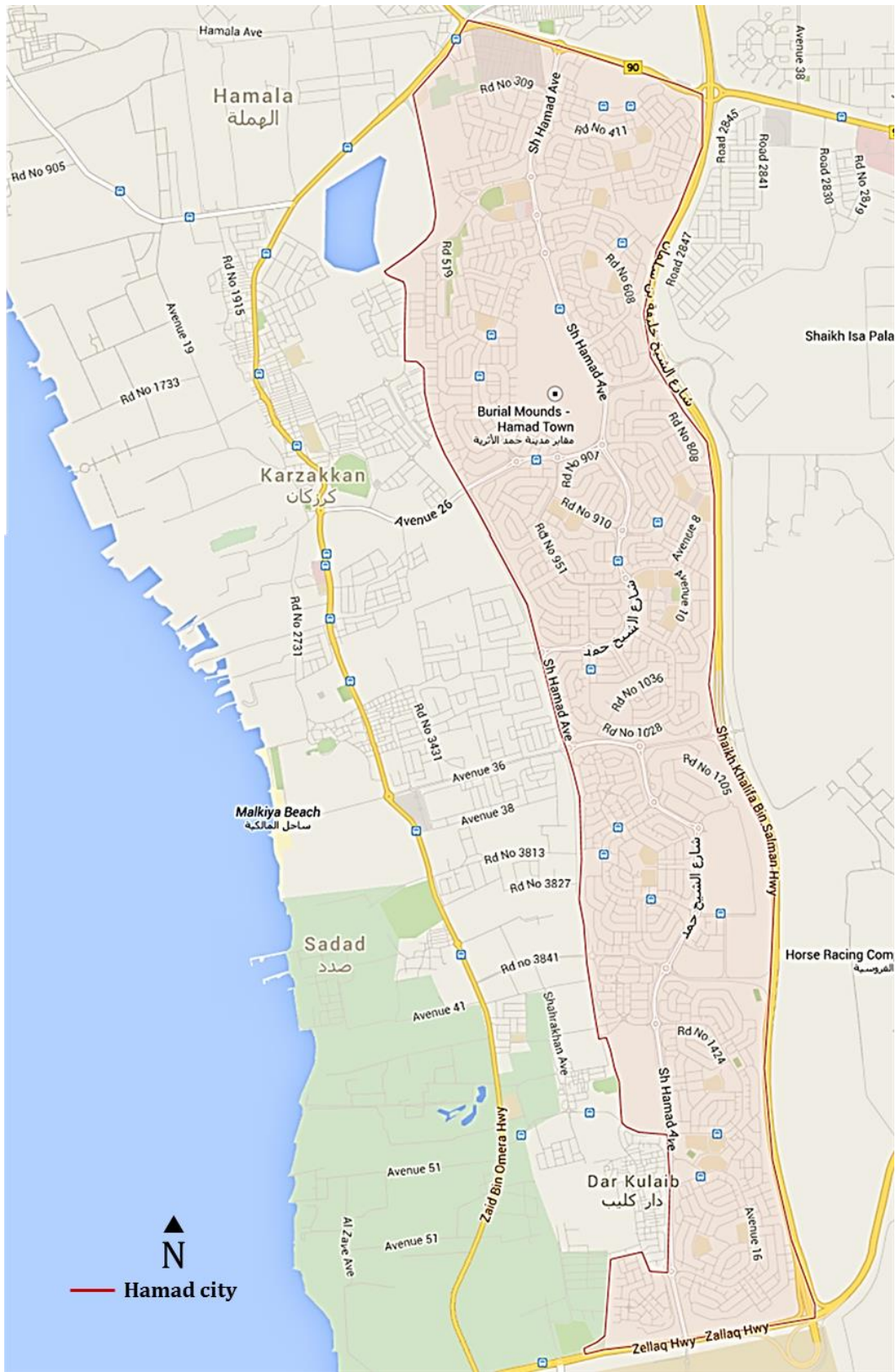
Figure 6-47 Map of Hamad Town[648]

[648] Google Earth 6.0, 'Map of Hamad Town' (26° 6'5.63'N, 50°30'19.11'E, elevation 30M, 2013) <http://www.google.co.uk/intl/en_uk/earth/>.

Figure 6-48 Satellite image of Hamad Town[649] showing the 22 roundabouts settlement

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[649] Survey and Land Registration Bureau, 'Satellite Image of Hamad Town' (Manama, 2013).

6.6.5 Northern and Northwestern Agricultural Villages: Budaiya, Diraz, Barbar, Jid al Haj, Karanah, Karbabad, Saar and Others

It is assumed that historically Bahrain was the paradise of Dilmun, known for being the home of millions of palm trees for the several palm tree farms that are scattered around the island (Figure 6-52). This agricultural richness of Bahrain, in addition to its natural sweet water springs and the fertility of its soil, was described in the Sumerian Epic, Enki and Ninhursag: "Enki, the lord of **fresh water,** blessed **Dilmun** with **springs,** and so it became **the land of water**, **crops, infinite health** and, therefore, the **world's harbour**"[650]. The northern agricultural villages, located in the north-west of the mainland of Bahrain, are an outcome of this blessing: historically the villages depended merely on agriculture as their main source of economy, and the flourishing of the agriculture commodity was supported by the vast sweet water springs, in addition to the fertility of soil. Unfortunately, the numerous reclamation projects led to the gradual destruction of the natural fresh water channels, and subsequently this resulted in the degradation of the agriculture commodity in Bahrain, as was explained in (section 6.2) The destroyed agricultural fields were soon converted into residential compounds to serve the increasing need for housing, leaving only some parts of northern Budaiya as one of the island's few remaining agricultural zones[651].

Today, one of the most obvious infrastructures defining the north-west region of Bahrain is Budaiya Road. It cuts through the northern part horizontally and divides it into two parts. On the upper section lies the historic northern villages of Bahrain (Figure 6-54), while on the southern side more modern residential developments are present, especially around the historic village of Saar in the south, where recently private villas were developed into a maze of urban sprawl (Figure 6-55). As seen in the two figures, houses on the southern part are contemporary, large and usually inhabited by expats and wealthy Bahrainis, while those on the northern side of the road are more humble, small, dense and compact, inhabited by low-income Shi'as[652]. More villages are also scattered along the western coastline; those are similar in typology and inhabitants to the northern villages, while on the inside more compound-style developments are found in Al Janabiya and Hamalah (Figure 6-50).

Figure 6-49 Satellite image of the northern agricultural villages of Bahrain, showing Budaiya Road cutting the region horizontally into two parts[653]

[650] Ali Alawi, 'Bahrain – The Home of a Million Palm Trees', *Your Middle East* (Manama, April 2013).
[651] Gugger.
[652] Gugger.
[653] Google Earth 6.0, 'Satellite Image of Northern Villages', 2013 <http://www.google.co.uk/intl/en_uk/earth/>.
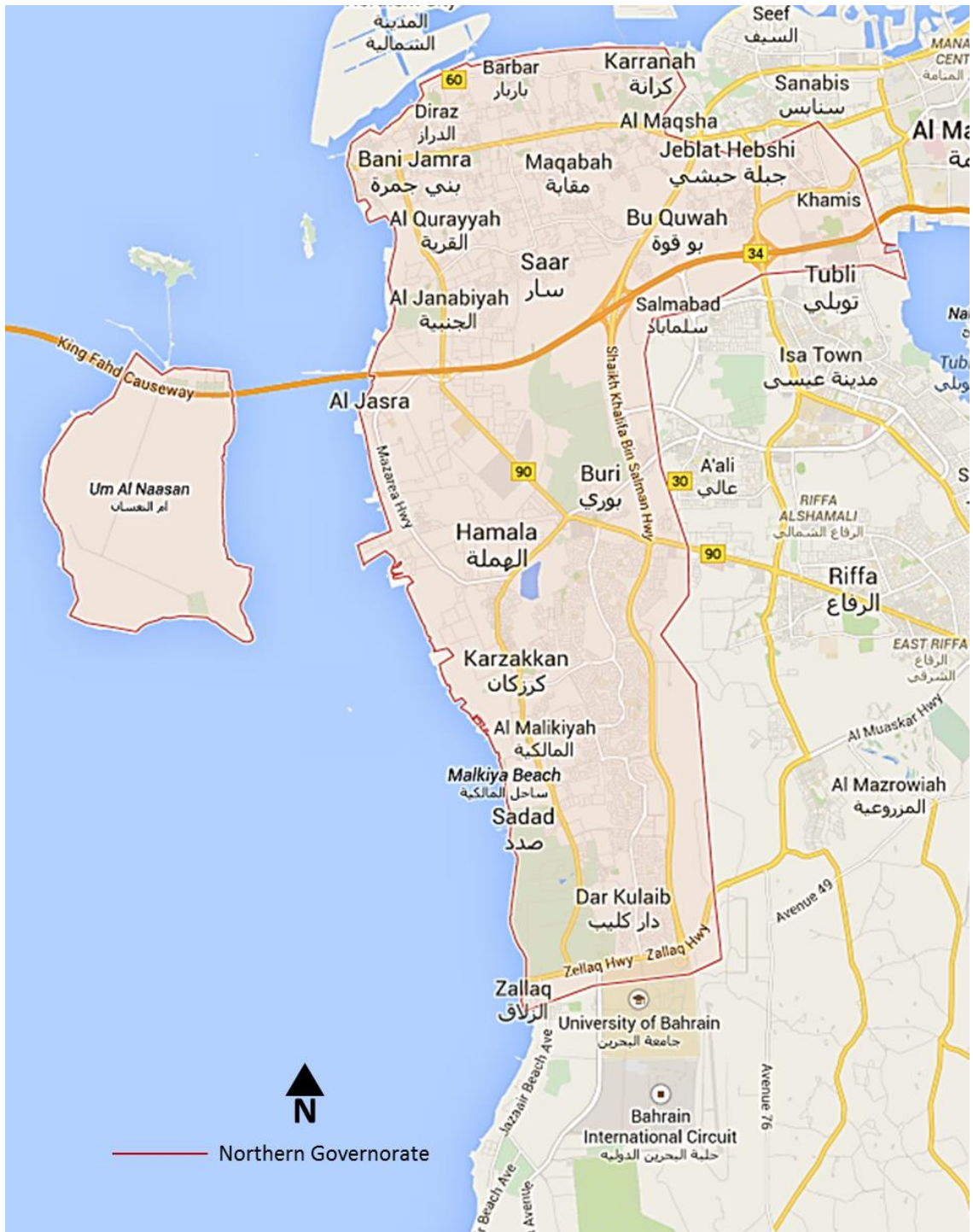
Figure 6-50 Map of the Northern Governorate, including Hamad town and the northern villages[654]

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[654] Google Earth 6.0, 'Map of Hamad Town.'

Figure 6-51 Satellite image showing the north and northwestern villages[655]

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[655] Survey and Land Registration Bureau, 'Satellite Image of Northern Governorate' (Manama, 2013).

Figure 6-52 Aerial photo of a palm tree farm, 1970s[656]

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[656] Gerard.
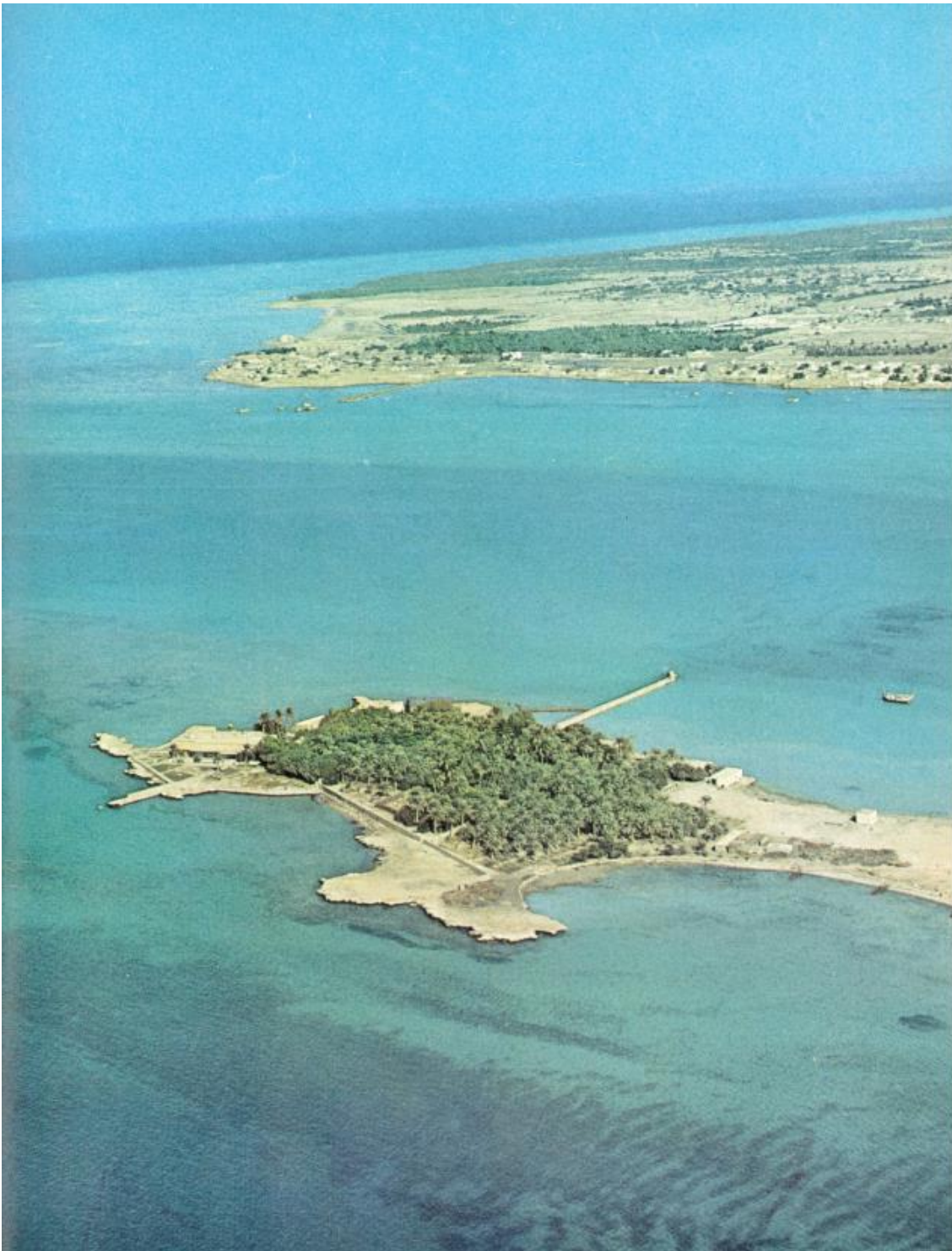
Figure 6-53 Aerial Photo of Muhammadiya Island and the north-western part of Bahrain island in the 1970s showing the green cover of the agricultural villages[657]

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[657] Gerard.

Figure 6-54 The dense village developments to the north of Budaiya Road[658]

Figure 6-55 The less dense compounds to the south of Budaiya Road[659]

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[658] Survey and Land Registration Bureau, 'Satellite Image of Northern Governorate.'
[659] Survey and Land Registration Bureau, 'Satellite Image of Northern Governorate.'

6.6.6   Khalifa Bin Salman Port, Salman Port and Sitra: The Industrial Centres

With the discovery of oil in 1931 and the various reclamation projects in the northern part of mainland Bahrain, Bab Al Bahrain[660] lost its importance as the country's main port used for trade vessels. It could no longer accommodate the different needs for export and import and there was an urgent need for a new larger harbour; therefore, Mina Salman, Arabic for Salman Port, was built in 1964 by land reclamation. A large industrial zone was established, including warehouses and manufactory buildings[661]. Following that, in the beginning of the 21st century, with the expansion of the city of Muharraq and the flourishing of the trade industry, Mina Salman in turn needed an expansion and Khalifa bin Salman Port was developed in 2009. This port was an extension to the already existing Hidd town, a historic fishing village on Muharraq Island. Today the port is in proximity to Hidd Distillate Forwarding Station and ship repair yards, and is connected to Sitra and Mina Salman via Khalifa Bin Salman Causeway, which is the third and latest bridge connecting the island of Muharraq to Bahrain (Figure 6-56).

Sitra, Arabic for curtain, is named after the dense palm groves and farms that historically covered the island, before being replaced by industry after the discovery of oil[662]. Sitra is an older industrial zone than the two previous ports and is one of Bahrain's natural islands (Figure 6-3). Unlike the two ports, Sitra has a high concentration of oil-related industries, such as petroleum storage tanks, a crude oil port and the Bahrain Petroleum company's marketing terminal. The island also includes some highly populated areas, mostly inhabited by Shi'a Muslims. Those populated centres have developed from a number of historic villages[663], and to the east of Sitra Road, which is the main infrastructure facility running vertically through the west of the island and connecting Sanad in the south with Manama in the north (Figure 6-58). Today, Sitra is also a hub for car and furniture showrooms, concentrated around the main road. It is the home of one contemporary mall in addition to Bahrain's Yacht Club, and Al Bandar Resort, two of Bahrain's first water recreation facilities.

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[660] BaB Al Bahrain; Arabic for the gate to Bahrain is located in the northern side of Manama, explained in section 6.6.1. It used to be close to the sea when it served as an export and import gateway, however due to the many reclamations and the loss of its function, the gate is now merely a cultural symbol, surrounded by many developments in the city centre of Manama.
[661] Gugger.
[662] Gugger.
[663] Gugger.
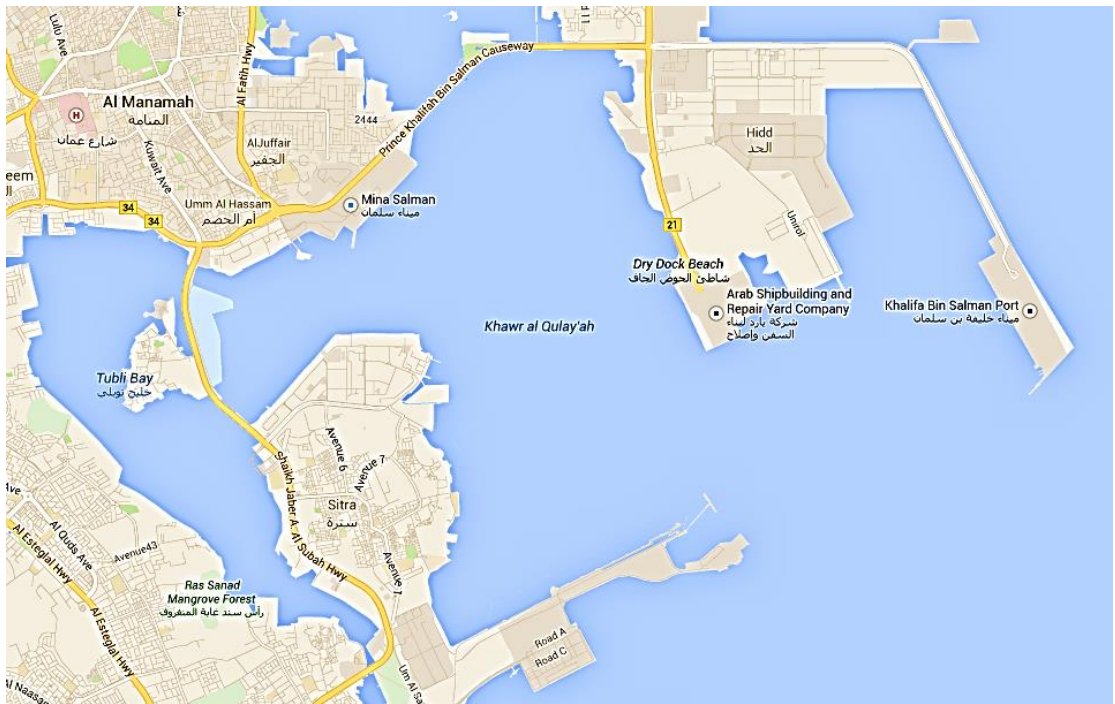
Figure 6-56 Map showing the Island of Sitra, Salman Port and Khalifa Bin Salman Port[664]

Figure 6-57 Satellite image of Sitra, Salman Port and Khalifa Bin Salman Port[665]

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[664] Google Earth 6.0, 'Map of Sitra, Mina Salman, Mina Khalifa Bin Salman' (26°12'22.39'N, 50°36'32.27'E, elevation 4M, 2013) <http://www.google.co.uk/intl/en_uk/earth/>.
[665] Google Earth 6.0, 'Map of Sitra, Mina Salman, Mina Khalifa Bin Salman.'

Figure 6-58 Satellite image showing the island of Sitra[666]

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[666] Survey and Land Registration Bureau, 'Satellite Image of Sitra Island' (Manama, 2013).
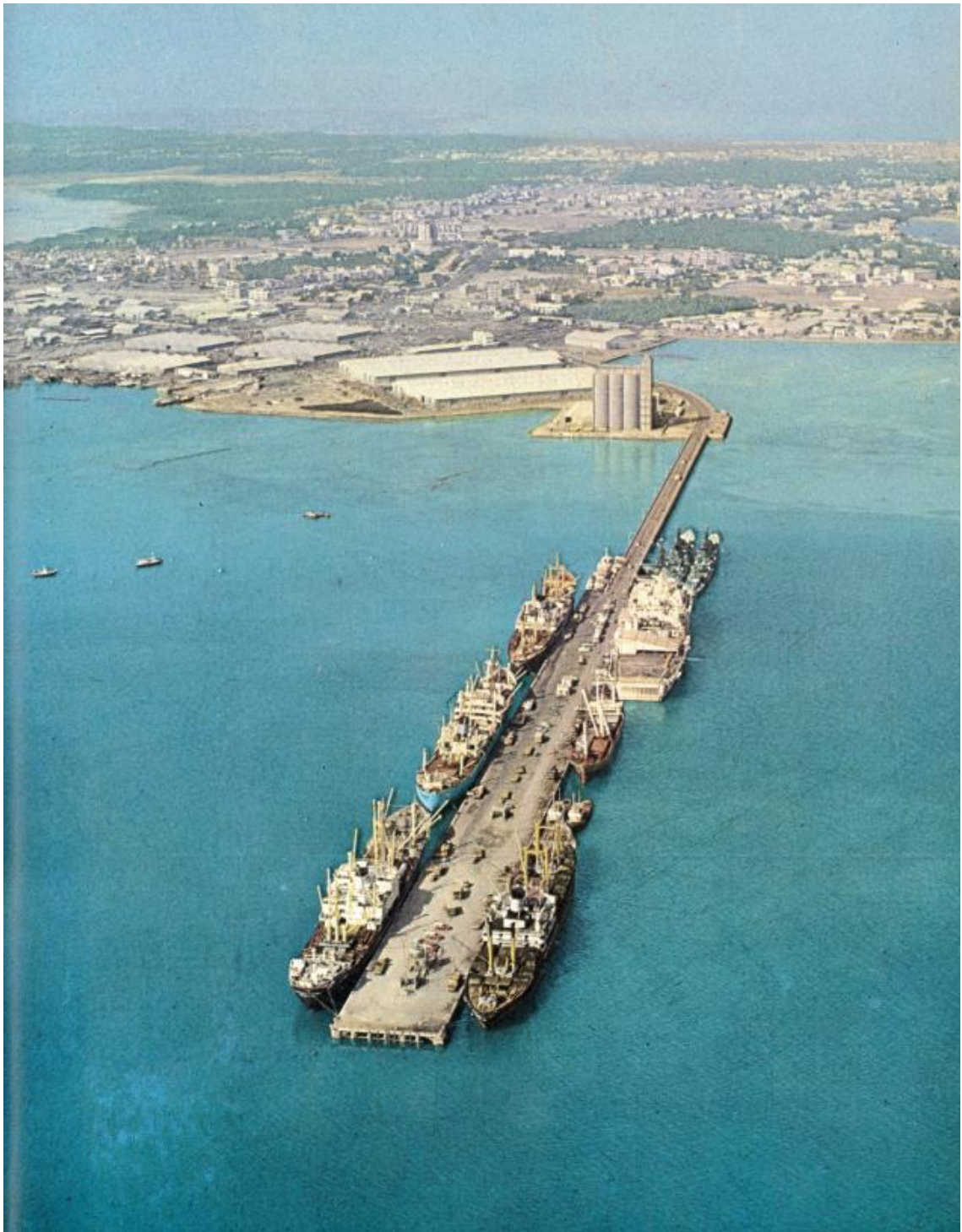
Figure 6-59 Aerial photo of Salman Port in 1970s, also showing the green cover and scale of development on Bahrain Island[667]

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[667] Gerard.

6.6.7   Sakhir Desert: The Southern Void

Bahrain is characterised by its highly populated northern areas and the almost vacant south (Figure 6-6). Few villages on the east and west coast of the southern void have existed historically. Zallaq, Jaw, Askar and Al Dur are small coastal villages which were inhabited by Shi'a populations until the second half of the 19th century when the original population moved to northern villages to work in agricultural practices. Since then, those villages have been inhabited by Arab tribes, who have made out of those remote destinations gated southern communities inhabited mostly by their tribes and their descendants. The inhabitants of these villages, today mainly work in other governmental organisations around the island and a few own fishing boats operated by Asian expats as a second income. On the other hand, the centre of the southern void remained empty because of the concentration of oil fields and the resulting cover of oil pipes (Figure 6-61) in addition to the elevated land altitude caused by the island's only mountain, Jabal Al Dukhan, Arabic for the mountain of smoke (Figure 6-7).

Up until 1990, development in the southern void of Bahrain was limited to the infrastructures of the oil industry: Al-Sakhir Palace of the Amir, built in 1870, AlAreen Wildlife Park and Reserve, established in 1976[668], and the University of Bahrain Sakhir campus, which opened after its establishment in 1986[669]. Nonetheless, growth in the southern void started with the development of Sheikh Isa Airbase in 1990, followed by the construction of Bahrain's International Circuit for car racing in 2004[670] (Figure 6-62). In addition, a number of resorts and gated residential developments were developed by foreign consultants at the beginning of the 21st century to promote the country's exotic desert life; these will be elaborated on in the coming section[671]. Despite the fact that urbanisation started in the southern void few years ago, development in the south is still relatively very slow and restricted for various safety and security reasons, such as military restricted locations, and the danger of oil explosions.

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[668] AlAreen Wildlife Park and Reserve, 'History', 2014 <http://www.alareen.org/AboutAlAreen/History.aspx> [accessed 4 March 2014].
[669] University of Bahrain, 'Brief Description', 2009
<http://www.uob.edu.bh/english/pages.aspx?module=pages&id=651&SID=156> [accessed 25 March 2011].
[670] Gugger.
[671] Gugger.

Figure 6-60 Aerial photo showing Askar Village on the east coast, one of the southern void coastal villages[672]

Figure 6-61 The southern void landscape, the oil fields and Sheikh Isa military air base[673]

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[672] Google Earth 6.0, 'Satellite Image of Askar' (26°03'20.06'N, 50°36'57.44'E, elevation 7M, 2015).
[673] Survey and Land Registration Bureau, 'Satellite Image of Sakheer' (Manama, 2013).
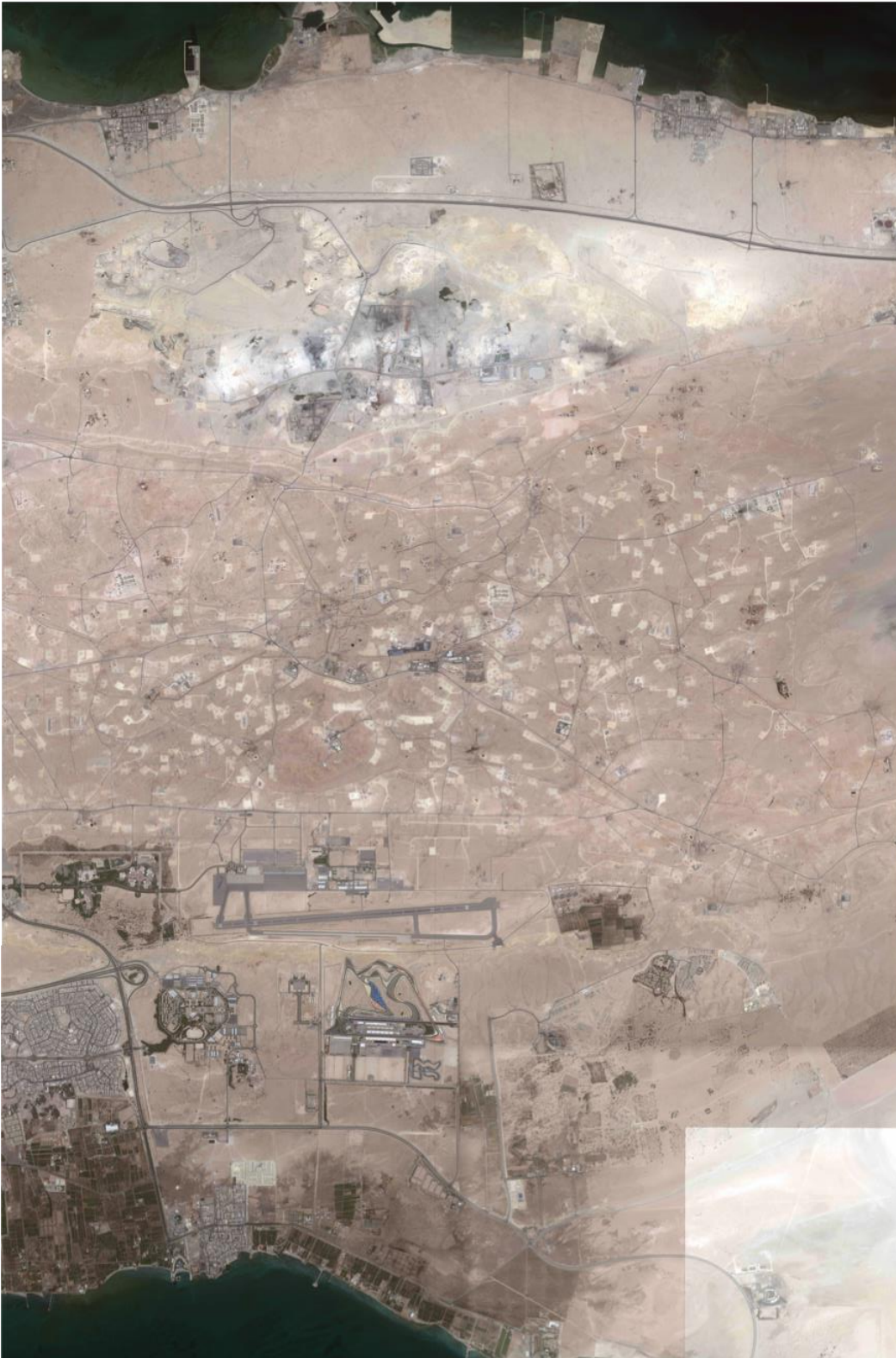
Figure 6-62 Aerial photo showing the villages of Askar and Jaw to the east and the village of Zallaq on the west and the four developments in the west[674]

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[674] Survey and Land Registration Bureau, 'Satellite Image of Sakheer.'
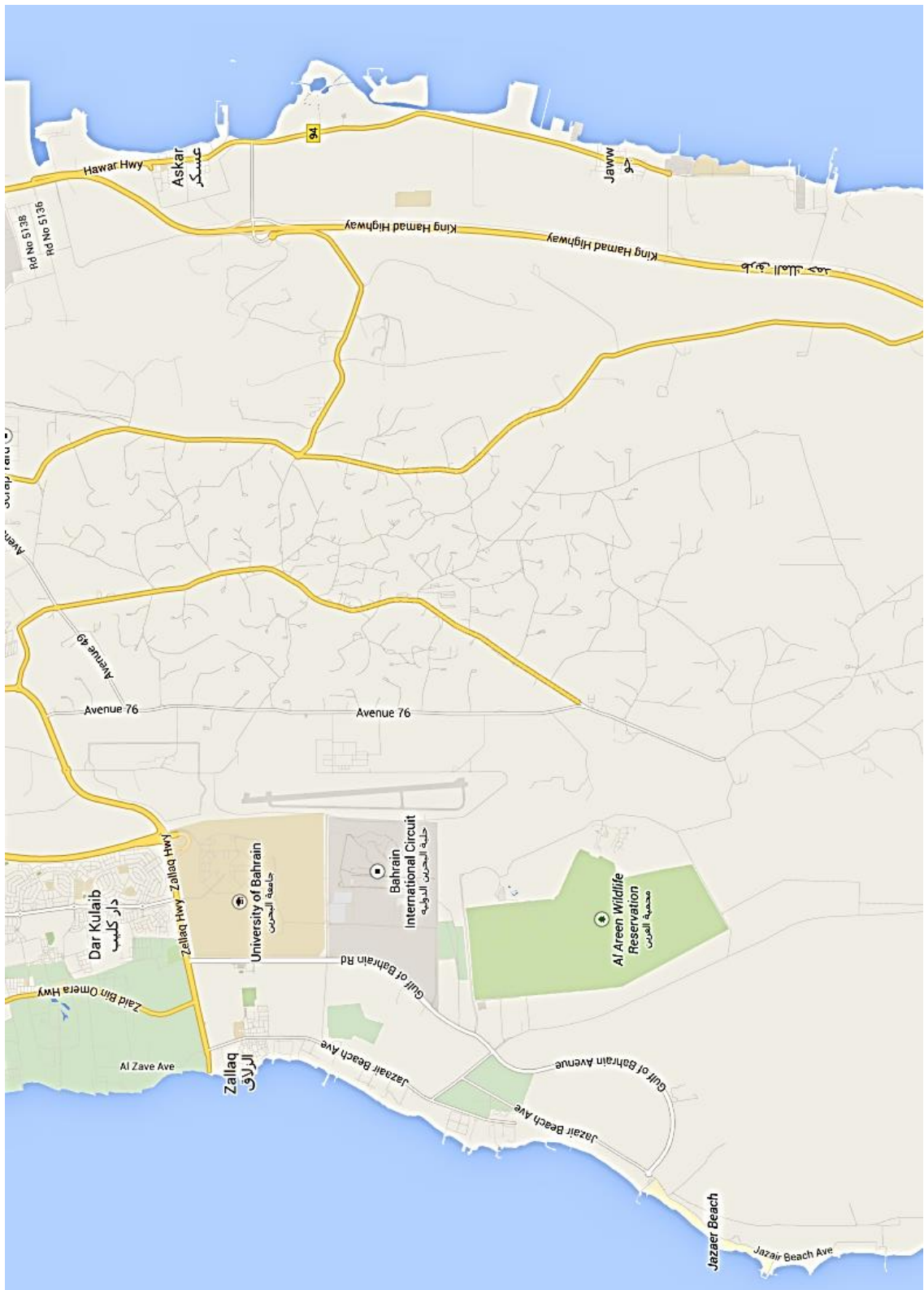
Figure 6-63 Map showing the villages and developments of the southern void[675]

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[675] Google Earth 6.0, 'Map of Sakheer' (26°12'22.39'N, 50°36'32.27'E, elevation 4M, 2015)
<http://www.google.com/earth/index.html>.

6.6.8   The New Planned Towns: Durrat Al Bahrain, Amwaj, Diyar Al Muharraq and Riffa Views

A number of artificial islands have been planned around Bahrain, some of which have already been inhabited, and others which are still being reclaimed and are not yet completed. Most of these are on the north-eastern side and were reclaimed to expand the already populated island of Muharraq. The first of these projects is Amwaj, a marine residential community located in the northeast of Muharraq. The project started in 2005 and was developed in three phases. The first was the reclamation of land, then the construction of the infrastructure, and then the development of the residential and commercial lots[676]. Amwaj was the first project in Bahrain to offer 100% freehold ownership of property to expatriates[677]; the laws for thsi were discussed in (section 6.4.2). It spans an area of 2.8 million square metres[678] and accommodates different types of residential units, recreation and commercial facilities in addition to a number of private beaches.

Diyar Al Muharraq is another project to be developed on a cluster of reclaimed artificial islands and is also, like Amwaj, connected to the Island of Muharraq, and in proximity to the previous project (Figure 6-64). Diyar is the biggest private urban development project in Bahrain, built to accommodate 100,000 inhabitants, targeted to house the middle- to high-income local population. The project started in 2006[679]; however, unlike Amwaj, the development of these islands is going at a slower rate and the islands are not yet inhabited. Durrat Al Bahrain (Figure 6-65) is another artificial island development, located in the south-east of the mainland, targeting high-income locals and expatriates. The project spreads along 21 square kilometres of land and sea and once completed it is estimated to accommodate 60,000 inhabitants[680]. The construction of phases one and two has been completed, and some of the houses have already been inhabited. The project is progressing steadily and recently has been selling quickly. A number of retail shops, cafes and restaurants were encouraged to cater for the inhabitants of those new islands; however, unlike Amwaj, which is open in some locations to the general public, Durrat al-Bahrain is only accessible to the inhabitants of the islands and access is strictly managed by security personnel at the gates. Also, Durrat al-Bahrain is relatively remote from the city centre and houses are used primarily at the weekends and on holidays; only a few decide to have a primary home in this location.

Riffa Views, unlike all of the previous projects, is not located along the coastline and does not overlook the sea. It has been developed south of Riffa city, in proximity to Awali as a desert oasis including a number of artificial lakes and an extensive golf course (Figure 6-66). The project was launched in 2006, and the development of its different zones is still ongoing. It targets high-income locals and expatriates, mainly those who prefer to live closer to Riffa than the highly populated northern cities. Today the project includes a number of leisure and commercial activities in addition to an international school and is on the opposite side of the road from Bahrain Royal University for Women, the country's first women-only higher education institution.

All of the above-mentioned projects were developed because of the increasing purchasing power of Bahrainis following the increase in oil revenues and foreign investment, which, in addition to the

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[676] IBP USA Staff, *Bahrain Mineral & Mining Sector Investment and Business Guide* (Manama: Int'l Business Publications, 2013).

[677] Wikipedia, 'Amwaj Islands', *Wikipedia the free encyclopedia*, 2014.

[678] The Emirates Network (TEN), 'Amwaj Islands', *TEN Real Estate*, 2007 <http://realestate.theemiratesnetwork.com/developments/bahrain/amwaj_islands.php> [accessed 15 March 2011].

[679] KFH-Bahrain, 'Diyar Al Muharraq', 2014 <http://www.kfh.bh/en/investments/protfolio.html#diyar_al_muharraq> [accessed 5 February 2015].

[680] KFH-Bahrain, 'Durrat Al Bahrain', 2014 <http://www.kfh.bh/en/investments/protfolio.html#diyar_al_muharraq> [accessed 5 February 2015].

liberal real estate laws and secure home financing, have assisted the growth of such projects[681]. Other smaller-scale developments are also evident around the island to cater for more middle- to high-income locals and expatriates.

Figure 6-64 A satellite image of Amwaj and Diyar Al Muharraq islands in the northeast of Bahrain[682]

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[681] Global Property Guide.
[682] Survey and Land Registration Bureau, 'Satellite Image of Amwaj and Diyar Al Muharraq' (Manama, 2013).

Figure 6-65 A satellite image of Durrat Al Bahrain project in the south-east of Bahrain[683]

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[683] Survey and Land Registration Bureau, 'Satellite Image of Durrat Al Bahrain' (Manama, 2013).

Figure 6-66 A satellite image of Riffa Views project and Awali Town[684]

[684] Google Earth 6.0, 'Satellite Image of Riffa Views' (26° 5'46.73'N, 50°33'59.96'E, elevation 30M, 2013) <http://www.google.co.uk/intl/en_uk/earth/>.

6.7 Future of Urban Sustainability in Bahrain: A Tale of Three New Cities

After the first data collection stage, findings indicated the importance of investigating the sustainability of some of the mega projects produced by the MoH; the reason for selecting those projects was outlined in Chapter 4. Before explaining the three projects, a brief description of the housing provision system in Bahrain will be outlined in the next section.

6.7.1   Housing Provision in Bahrain: A Brief Description

An understanding of the context of social housing is necessary for the understanding of this section. The MoH in Bahrain was established in 1975, by a decree of the prince of the state of Bahrain[685] at that time. The primary aim of the ministry was to provide social housing for citizens with low income[686]. The two most notable achievements of the MoH are the urban developments of Hamad and Isa Towns (Section 6.6.4). Since then, the ministry has been providing social housing in different areas of Bahrain, by adding expansions to the villages and cities of the islands (see Appendix 9.3). The ministry has provided more than 36,000 social housing support services since 1999 including 13,500 houses and flats, 16,600 housing loans, 1,850 flats for subsidised rental, and 4,600 gifted land plots. Moreover, the ministry also provided more benefits and subsidies including waiving half of the remaining house loans or instalment values on homes, rebuilding derelict houses and providing rental subsidy for those who have been on the waiting list for more than five years[687]. L/SSP/3.1 explained, "The MoH is **not** just looking at **building social housing**, because to **fulfil** housing projects of this **calibre**, we need to look at **other venues**, we already have **PPP** … for those who **don't want to wait** … there are private developers who will provide **affordable houses** … The ministry will **support** the **purchase** through a **loan.**"

Some of the consequences of this enormous number of housing applications will be discussed later including the limited number of staff dealing with those requests, which results in low-quality unsustainable houses. Moreover, because of the increasing demand for social housing, the ministry is now planning to undertake some mixed-density mega projects around Bahrain (see Appendix 9.4). Some of these are completely new towns (see Appendix 9.5). L/SSP/3.1 highlighted: "We **need** these projects because we have about **53,000 applications waiting** to be housed and every year, there is an **addition** to that list." E/DSP/3.6 supported this. It is important to note here that the three proposed projects are supposed to provide approximately 45.7% of the total demand for housing in Bahrain. Comparing this to the 36,000 social housing support services which have been provided by the MoH since 1999, indicates that there is a massive increase in the demand for social housing in Bahrain. As seen in (Table 9-6) the average household in Bahrain consists of 6.04 people, and given that the total number of the Bahraini population is 568,399[688], this indicates that the total number of people waiting for social housing in Bahrain is 320,120 persons, which is 56.3% of the total population. Article 9 of The Bahrain Constitution states "The **state** shall strive to **provide housing** for **citizens with limited income.**" This raises concerns about the sustainability of the housing provision practice and the impact of this on the sustainability of the urban environment in

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[685] Bahrain was a state country in the Arabian Gulf between its independence in August 1971 and 2002. The current king of Bahrain SH Hamad Bin Isa became Amir of the state in 1999 and initiated the national action charter which was voted on by the public in Bahrain in 2012, since then Bahrain changed its formal name from "The state of Bahrain" to the "Kingdom of Bahrain".

[686] Decree-law (No. 10) of the year 1976 on housing, updated by decree (No. 83) for the year 2006 on amending some of resolutions of the decree-law (No.3) on housing system

[687] Ministry of Housing, 'Affordable & Social Housing', 2014 <http://housing.gov.bh/en/AboutUs/Pages/AffordableandSocialHousing.aspx> [accessed 24 November 2014].

[688] 2010 Census

Bahrain, given that more than half of the population are considered low income[689]. This will be further discussed later. Furthermore, it is anticipated that the regulations for housing provision in Bahrain will change, because of the increasing demands of the citizens to take into account only the monthly income of the paterfamilias, excluding the wife's salary from this equation, which nominates more families to receive the social housing services. This is in its last stages of being approved by the government[690] and will put more applications on the waiting list in the near future, which raises more concerns about the sustainability of this housing provision process in Bahrain. This will be addressed in chapter 10.

Three of those new towns were selected and studied for the purpose of this study. The first is the New Town in the Southern Governorate (SGNT), the second is the New Town in Northern Governorate (NGNT) (Figure 6-2), and the third is the New town in East Hidd (EHNT). The three projects are located in different locations on or around the mainland Bahrain, as illustrated in (Figure 6-68), and all of the three new towns are directed by the Strategic Projects Department (SPD) at the MoH, (Figure 6-67), and are being planned in collaboration with other governmental organisations concerned with the built environment. (Table 6-12) shows the proposed total number of units in each town.
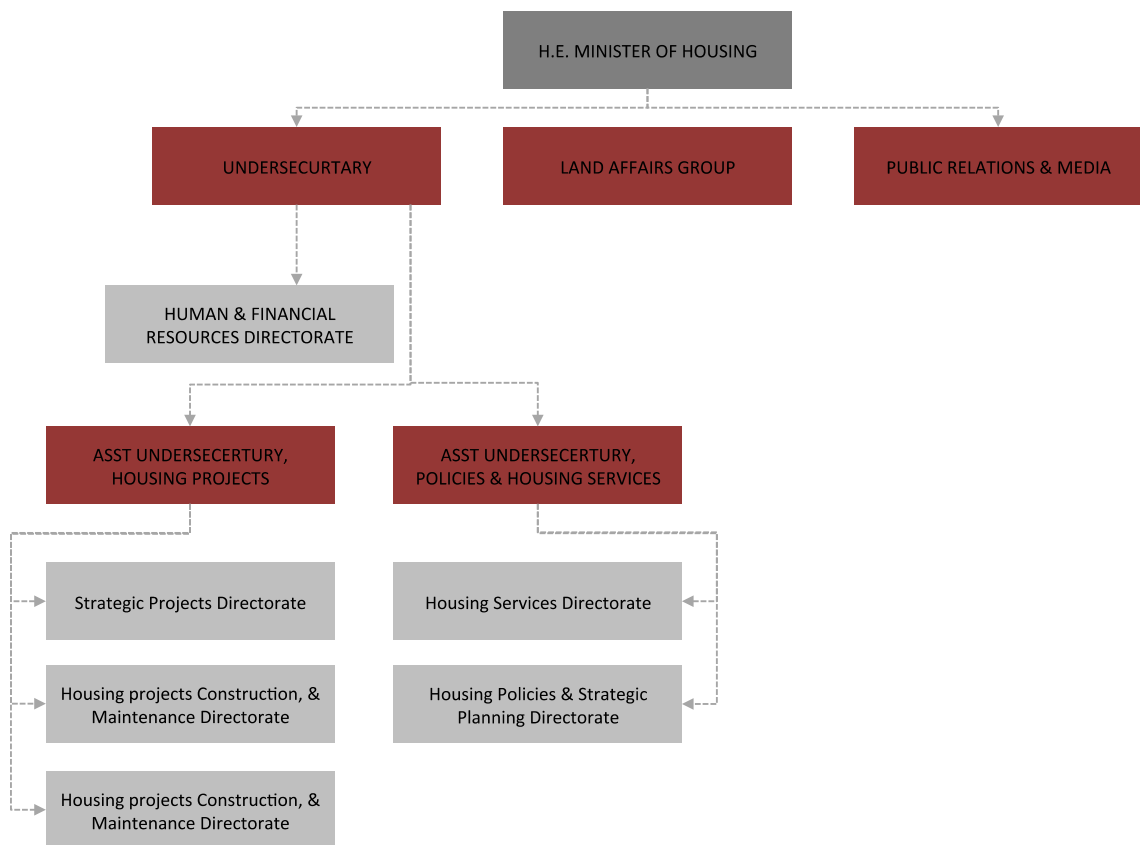
Figure 6-67 The SPD within the organisational chart of the MoH

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[689] Decree (No. 83) of 2006 regarding amending some of the provisions of decree (No. 3) of 1976 concerning the regulation of housing, states that a family is considered of limited income if the total monthly income of all its members is equal to or less than 900 Bahraini dinars, which is equivalent to 1500 British Pounds (according to 0.6 exchange rate).

[690] Alayaam Foundation For Press and Publication, 'Activation of the Separation of the Wife's Salary from the Husband's', *Alayam News Paper* (Manama, 24 November 2014), p. 1 <http://preview.alayam.com/epaper>.

Governorate	Average Household Size	Persons	Households
Southern	6.6	113,811	17,244
Northern	6.7	309,622	46,212
Central	6.5	356,801	54,892
Capital	4.5	336,062	74,680
Muharraq	5.9	213,815	36,240
Total	6.04	1,330,111	229,268

Table 6-11 The average household size in Bahrain[691]

 Figure 6-68 The locations of the three projects under study; sites could be also viewed in reference to the Bahrain 2030 National land use strategy in (Appendix 9.2)

Governorate	Project	Service	Area/ Hectare	Gifted Plots	Houses	Apartments	Total Number of Units
Muharraq	East Hidd New Town	Social Housing + Affordable Housing	238	500	2881	1189	4570
Northern	Northern Governorate New Town	Social Housing + Affordable Housing + PPP + Private developments + Gifted Plots	740	506	5352	9904	15762
Southern	Southern Governorate New Town	Social Housing			N/A		4000*
		Total					24332

* The total number of units for the SGNT Project is still unknown however the first phase was estimated at 4000 units

Table 6-12 The total number and different types of housing units in each project[692]

6.7.1.1 Northern Governorate New Town (NGNT)

The NGNT[693] is a project that consists of 14 reclaimed islands, located to the northeast of the mainland Bahrain (Figure 9-11) and connected to the mainland via a bridge. The reclamation process of those islands started in 2004[694] and was completed in 2007[695] (Figure 9-12). This was highlighted by E/HEP/8.1. The project was first appointed to a French Town Planning Group (FTN), a foreign consultant in 2004, which produced the initial master plan; later, the project was passed to AECOM, another international American expert, who presented the detailed master plan in 2013[696]. This was explained by L/SSP/3.1: "it was **FTP** before **AECOM** took over. So AECOM **verified** the **FTP** plan and continued their work to do a **detailed master plan** because **FTP** only did a **conceptual master plan.**" Initially, 14 islands were reclaimed in 2007. However, only 10 islands were part of the scope of the detailed master plan report; those are islands 3-12 and island 14, while island 13 and parts of island 14 are PPP sites and are excluded from the detailed master plan report (Figure 6-70). Also, islands 1 and 2 are private properties.

The first package of 530 houses was completed[697] and is awaiting distribution to those who are on the waiting list for social housing. The second package has been awarded to the contractor, and the ministry is now working on the third. L/SSP/3.1 and L/IPM/3.5 explained this. Moreover, L/SSP/3.1 highlighted the different types of housing services provided by the town, saying "in **NGNT**, we have **PPP**, and **affordable housing** ... the **land** will be **given to developers**, with an agreement to **provide affordable housing** ... also **private developments**, done by **commercial companies** whom will **invest** in a particular area, and build houses **for sale** in **prime** locations,

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[692] Ministry of Housing, 'Future Projects', 2014 <http://www.housing.gov.bh/en/Pages/default.aspx> [accessed 14 February 2014].
[693] The Northern Governorate New Town (NGNT), Also referred to as "Al Madina Al Shamaliya" Arabic for Northern City/Town
[694] MOHAMMED Al A'ALI, 'Northern Town Reclamation Work on Way', *Gulf Daily News* (Manama, 3 March 2005) <http://www.gulf-daily-news.com/NewsDetails.aspx?storyid=105698>.
[695] Alwatan Foundation For Press and Publication, 'Completion of the Reclamation Works of the 14 Islands in Northern City', *Alwatan News Paper* (Manama, 21 April 2013).
[696] AECOM, *Al Madina Al Shamaliya Detailed Master Plan Report* (Manama, 2013).
[697] Alwasat Foundation For Press and Publication, '12 Years After the Foundation Stone, Northern City Is Still an Unrealized Dream', *Alwasat News Paper* (Manama, 2 September 2014) <http://www.alwasatnews.com/4378/news/read/916931/1.html>.

with **closed beaches** or other **incentives** that **differentiate** them from **social housing**, since they are going to **pay the full price.**" This raises concerns about the social sustainability of building more gated communities in Bahrain to differentiate Bahrainis who live in private villas from those who live in government-provided houses. More about the social sustainability of the three projects will be discussed in chapter 9.

The NGNT is a complete new town with a number of services including a hospital, museum, aquarium, university, a huge stadium, a large community hall a grand mosque and a civic plaza in addition to a number of health, youth, disabled and elderly centres, small mosques, schools, hotels, malls, libraries, petrol stations, post offices, and lagoons [698] (Figure 6-71). L/SSP/3.1 explained "**NGNT** is **not just** about **housing ...** providing **services** to **facilitate** for the **people** who will **move** into this **new town** ... we have to build **infrastructure ... sewage treatment plans** ... **electricity**, and building **substations** ... [and] other amenities ... because it is **so far out**, so **it needs to be a whole complete town.**" In addition to the university, the new town will also include some educational facilities including 4 libraries, 20 kindergartens and 5 secondary, 6 intermediate, and 12 primary schools. The town will also include the Northern Governorate Municipality Council and all of the above facilities are to be connected with an intricate transportation system including ferries and a light train network[699]. This raises questions about the public adaptation to those different types of transportation systems and relates to the MoM plans to introduce public transport in Bahrain which will be disccued in details later. The argument above highlights the scale of this development, it is the first public planned community in Bahrain of this size, and this raises concerns about the impact of this development on the sustainability of the urban environment in Bahrain, given the problems highlighted earlier. This will be further discussed later.

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[698] AECOM.
[699] AECOM.

Figure 6-69 The reclaimed Islands of NGNT in 2014[700]

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[700] AECOM.
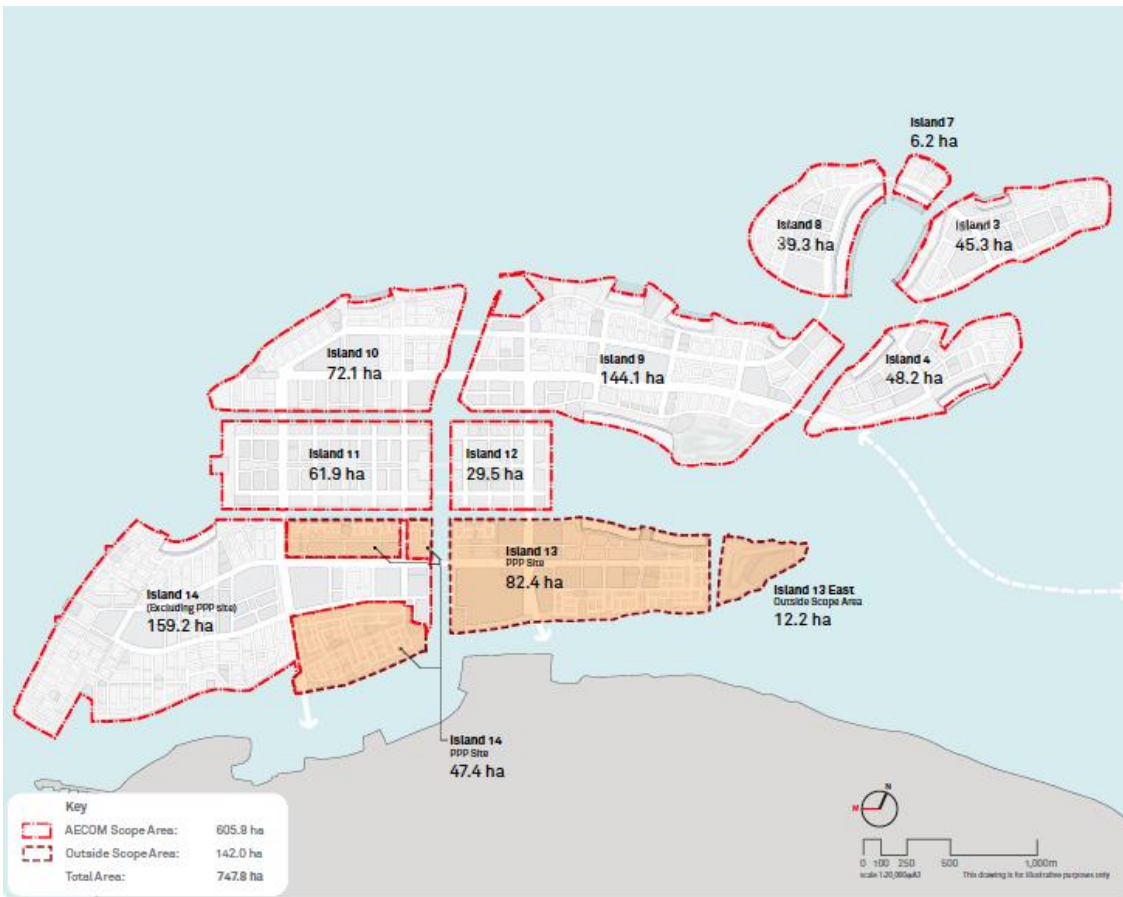
Figure 6-70 The detailed master plan scope area[701]

Figure 6-71 An illustrative master plan of NGNT[702]

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[701] AECOM.

6.7.1.2 East Hidd New Town (EHNT)

EHNT is another project on the reclaimed land. It is located northwest of the mainland Bahrain, in proximity to the Al Hidd area in Al Muharraq Governorate (Figure 6-68). The project is smaller than the previous project in size and capacity (Table 6-12). Although the project is built on reclaimed land, the reclamation was done from the original coast of the mainland, so the site is connected to the mainland and its road network from one edge (Figure 9-16). The EHNT comprises one of the three strategic new islands developments being promoted by MoH in pursuance of the Government's Bahraini housing programme[703]. The project was designed by ATKINS, from concept through to the detailed architecture and infrastructure master planning[704].

In addition to the residential villas, apartments and gifted plots (Table 6-12), the project also includes a number of facilities including civic centres, four grand mosques, five small mosques, five schools, a health care centre and a good number of public open spaces and waterfronts (Figure 9-15). The first package of houses in EHNT has been awarded and is under construction, which was highlighted by L/SSP/3.1 and E/DSP/3.6. L/IPM3.5 added, "we are now **finishing** the **detailed master plan** for **EHNT,** and we **awarded** the **contract** for the **first phase** including 483 houses, and we are now trying to **tender** the packages for the **infrastructure** and **landscaping.**" This raises concerns about the order in which those events are being planned; the sustainability and viability of this order will be further investigated later. L/SSP/3.1 explained the different types of social housing services included in this town (Table 6-12).

This project is characterised by its new roads and urban layout systems, and will include the first shared surfaces road networks in Bahrain (Figure 9-18). L/SSP/3.1 highlighted, "EHNT is a **phased project** because it **includes shared surfaces**. The **elements will dictate the pavement** … **trees, bollards,** and **seating**. It will include **speed tables**, not **speed humps** … a **slow mechanism** because of the **shared surfaces**…The **first phase** will include villages BI and BII [Figure 6-74], so we are going to **check**, how that is **going to work,** and then we will consider the **next phase.**" This project is also characterised by its village cluster approach (Figure 6-76 and Figure 6-77); L/SSP/3.1 explained "like **old Muharraq**, **urban streets**, all the houses are **wrapped around a courtyard** or **a playground**, so there are **a lot** of **open yards**, and **cul-de-sacs** so you **drive, park** your car, and this is your **entity, not one street goes into another.**" This indicates that the government is trying to bring back the lost urban identity in Bahrain, and the gradual movement between public semi-public and private spaces, which was lost in the recent urban planning system. Nevertheless, such projects of mass housing raise concerns about the consequences of stripping away the individual identity of the inhabitants by providing large quantities of similar houses to different families[705]. (Figure 6-78) clearly shows the government is trialling the bringing back of the indigenous feel, in an attempt to reverse the effects of cultural change, this will be further discussed in (section 8.3). However, this raises concerns about imitating features of the indigenous planning system and whether those imitations work with today's lifestyles and technologies, which will be discussed further in Chapter 10.

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[702] AECOM.

[703] ATKINS.

[704] ATKINS, 'East Hidd Housing Unveiled for Bahrain National Day Celebrations', *News releases, 8th January*, 2013 <http://www.atkinsglobal.co.uk/en-GB/media-centre/news-releases/2013/group/2013-01-08> [accessed 25 November 2014].

[705] Frank Wassenberg, Richard Turkington and Ronald van Kempen, 'High-Rise Housing in Europe: Current Trends and Future Prospects', *Housing and Urban Policy Studies*, 28 (2004), 1–14; Robert Rowlands, Sako Musterd and Ronald Van Kempen, *Mass Housing in Europe: Multiple Faces of Development, Change and Response* (London: Pallgrave Macmillan, 2009).

Figure 6-72 EHNT land use plan[706]

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[706] ATKINS, *East Hidd Housing: Detailed Master Plan Report Draft*.

Figure 6-73 An illustrative master plan of EHNT[707]

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[707] ATKINS, *East Hidd Housing: Detailed Master Plan Report Draft*.
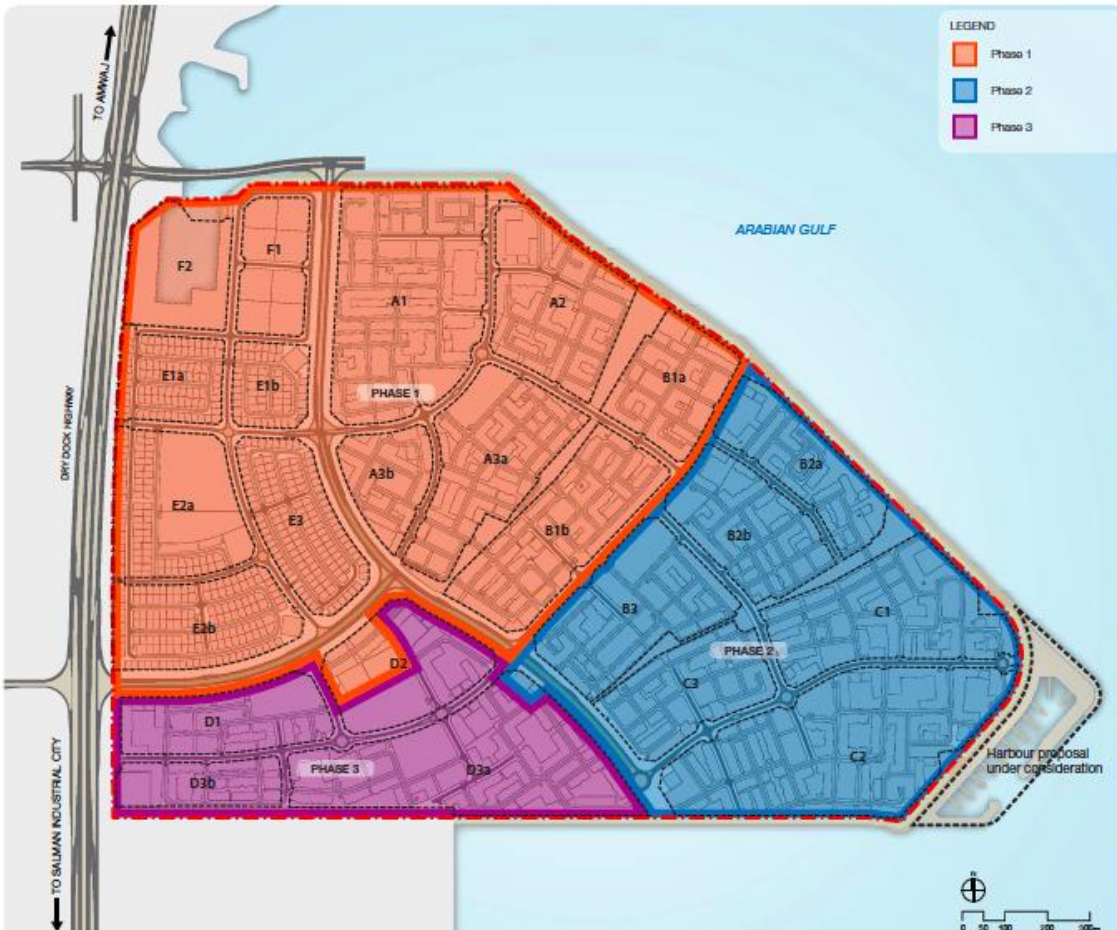
Figure 6-74 Phases and different villages of EHNT[708]

Figure 6-75 The shared surfaces approach in EHNT[709]

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[708] ATKINS, *East Hidd Housing: Detailed Master Plan Report Draft.*
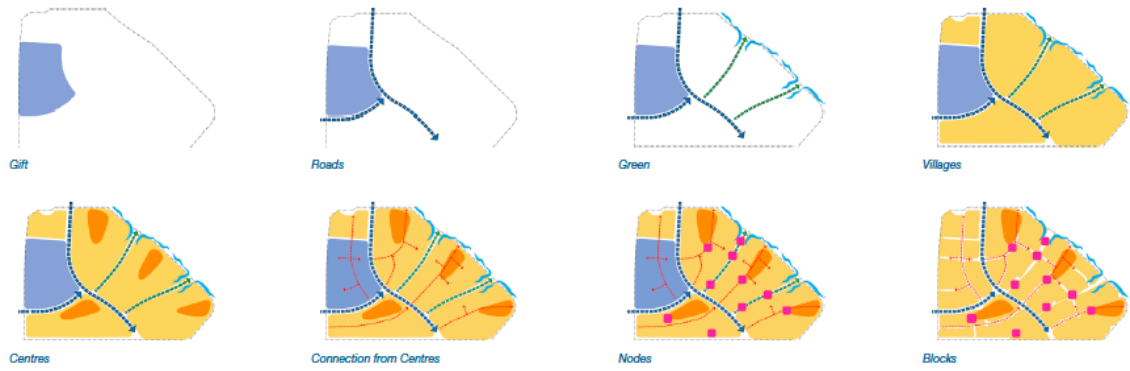
Figure 6-76 The site structuring principles of EHNT[710]
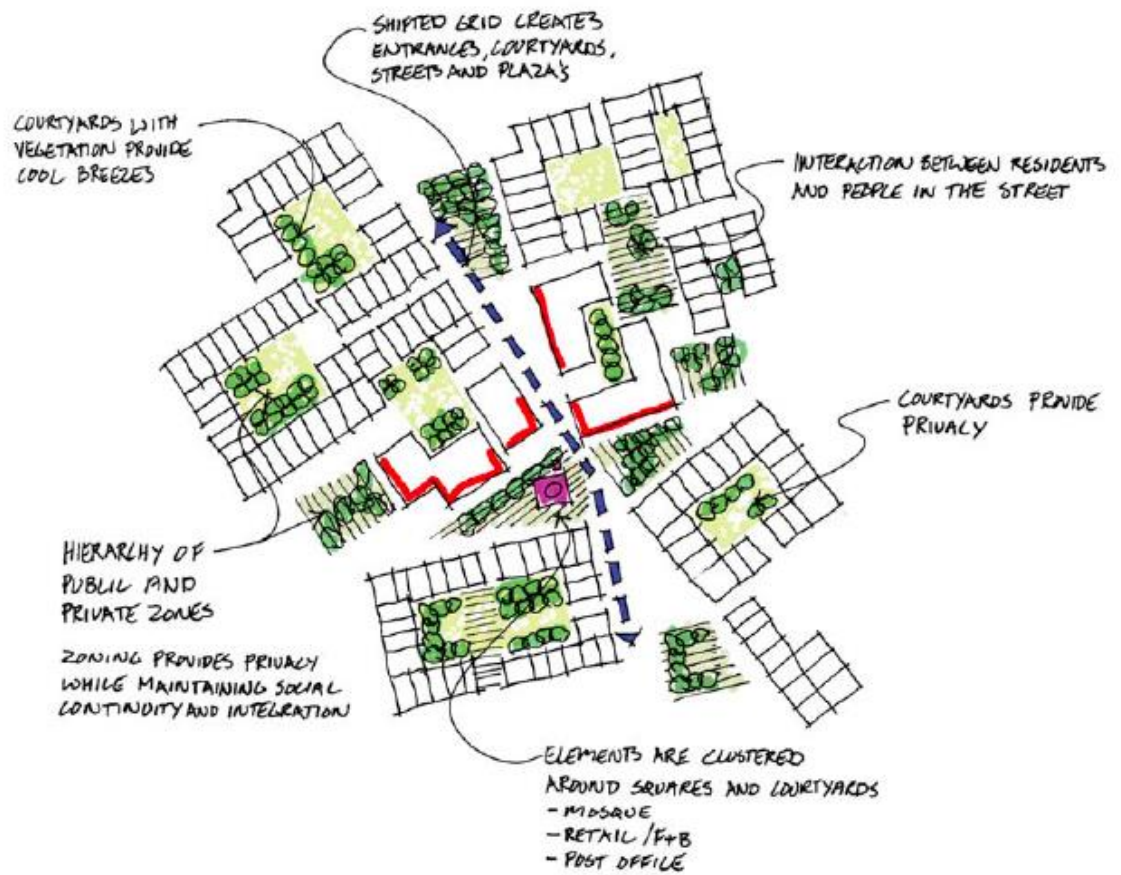
Figure 6-77 The village cluster approach of EHNT[711]

[709] ATKINS, *East Hidd Housing: Detailed Master Plan Report Draft.*
[710] ATKINS, *East Hidd Housing: Detailed Master Plan Report Draft.*
[711] ATKINS, *East Hidd Housing: Detailed Master Plan Report Draft.*

Figure 6-78 The approved concept master plan of EHNT[712]

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[712] Ministry of Housing, 'New Towns', 2014.

6.7.1.3 Southern Government New Town (SGNT)

Unlike the previous two projects, SGNT is not planned on reclaimed land; the project is located in the middle of the east shore of mainland Bahrain (Figure 6-68) and is in proximity to the south coastal villages (section 6.6.7). The project is still in its initial conceptual stages. The master plan is not yet drafted, and work has not yet started on the site; L/IPM/3.5 highlighted this. E/DSP/3.6 added, "**SGNT** won't move into construction till probably **early to mid-part of 2016** for the **first phase.**" Moreover, L/SSP/3.1 highlighted that there are 1,560 Saudi-funded houses to be built next to the SGNT site. Also, a number of other housing projects appeared to be scattered around the proposed site for the SGNT, in addition to a number of mega projects in the area, such as: a medical city to the south of the project, an extension of the factory to the north of the project, and the causeway connecting Bahrain to Qatar.

The SGNT is a project that was initiated by the king of Bahrain, who appointed the crown prince to sign an agreement in 2013 with the Prince Charles Foundation for Building Community (PCF) to advice Bahrain on the housing development of SGNT[713]. This was highlighted by L/SSP/3.1: "The king then asked **our minister** [MoH] to be the **lead ministry** to take this project on board. So it is **our project**, and we are **working with other ministries**, we also have the **support of the Southern Governor.**" L/SSP/3.1 explained that unlike previous projects, SGNT would only include social housing: "we haven't looked at **private development** because we are still at the **conceptual stages**, but they have subdivided the land." Furthermore, the interviewee also highlighted that SGNT is a slow-build project, saying "We will **build a small part** of it, see how **people react** to it ... **success** and **failures**, then **phase out** the project and **tweak** it for the next phase, so there will be **continued phases** of **tweaking** and **checking** how things work." This indicates that the MoH recognises the impact of the large-scale project and has learnt from previous mass housing projects such as Hamad Town.

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[713] Cahal Milmo, 'First Poundbury, Now Bahrain: Should Prince Charles Really Be Selling Town Planning to Despots?', *The Independent* (London, 14 May 2013).

IMAGE : CONSOLIDATED SITE ANALYSIS

Legend:
- Proposed Development Boundaries
- Special Nature Projects
- Ministry of Interiors Land
- Sports Facilities
- Services and Public Facilities
- Cemetery
- Ministry of Housing Allocation
- Gifted Housing
- Existing Villages
- Highway / Primary Road
- Secondary Road
- Coast
- Recreational Area

Labels on map:
- Desalination Plant
- Landfill
- Askar
- Asker Housing Project (567 Units)
- Riadh Asker Housing Project (423 Units)
- Institute of Technology
- Contour Slope
- Rehabilitation Centre
- Quarry
- Petrol Station
- Contour Slope
- Contour Slope
- Hawar Road
- Jaw
- Jaw Housing Project (160 Units)
- Archeological Site
- King Hamad Highway
- Bur Al Dur Housing Project (1150 Units)
- Al Dur
- Al Dur Housing Project (150 Units)

Table 6-13 The site of SGNT[714]

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[714] Prince's Foundation For Building Community, *New Town in Southern Governorate Scoping Workshop* (Manama, 2013).

6.7 Conclusion

The small size and high density of Bahrain, in addition to the different physical, economic and environmental challenges, nominates Bahrain as an ideal case to study and investigate issues of urban sustainability in the Arabian Gulf. Thus, by taking Bahrain as a case study, this research will assess our overall understanding of urban sustainability in this region of the world. This chapter helped achieve the first objective for this research by exploring the social, cultural, environmental, economic and political mechanisms behind the formation of Bahrain's urbanism.

Table **6-14** presents the different phases of urban transformation in Bahrain. The table summarises the literature outlined in this chapter and also uses some of the findings, which will later be explained in chapters 8-9. This will be reflected on again in the concluding chapter.

Phase	Period	Urban Areas	Planning	Overall Sustainability	Urban Features
Heritage	20s and before	Central Muharraq	Planned and designed by local's slightly influenced by foreign political powers and other cultures through trade	Sustainable at the time but unsustainable inherited urban environment	local materials and resources
		Central Manama			ecological designs
		Northern Villages			buildings were not conserved or studied
					buildings require high level of maintenance
Transitional	30s-70s	Awali Town	Planned and designed by foreign consultants using foreign planning systems	Somewhat sustainable	Foreign materials, resources and designs
					some ecological designs
		Isa Town			Buildings were conserved and studied
					Buildings require less maintenance
Radical Transformation	80s and 90s	Hamad Town		Unsustainable	previous systems were ignored
		Riffa Views			everything was disfigured
		Amwaj			focused on creating new areas by reclamation
					disfigured country boarders
		NGNT			new type of architecture and urbanism
					overall unsustainable designs with some few good examples
Nostalgia	2005 - now	Diyar Al Muharraq	Planned and designed by foreign consultants using indigenous planning systems influenced by worldwide and regional examples	Seeking Sustainability	indigenous systems respected
					copying traditional elements
		EHNT			Still built on reclaimed land
		SGNT			Focused on creating new areas with traditional feel

Table 6-14 The different phases of urban transformation in Bahrain

This chapter further showed that the planning system in Bahrain is relatively young and indicated the need for an investigation of the current planning context, its structure and processes.

Furthermore, it pointed out the need to assess the projects, policies and strategies of the UPD and the laws and regulations that drive its operational system. The chapter also indicated the crucial need for evaluating the impact of the latest planning policies and strategies on the sustainability of the urban fabric in Bahrain. This study will focus on assessing the understandings and outputs of governmental organisations concerned with the built environment, and will emphasise in the coming chapters the effectiveness of governmental policies in achieving urban sustainability in Bahrain. The next chapter will start by highlighting the educational and training barriers to and difficulties of achieving urban sustainability in Bahrain.

The chapter also showed that there are a number of new large-scale completed projects around the islands, in addition to a greater number of even bigger planned projects for the near future in different areas of the archipelago. The environmental, social, economic and cultural impacts of those projects have not yet been investigated and it is clear that there is a need for an urgent study to investigate the impacts of those completed projects in addition to the different potential effects of those which are planned on the sustainability of urbanism in Bahrain. Private developments that were explained in this chapter are beyond the scope of this research, but could be a good forefront for further research on this topic. Nevertheless, this study will investigate the impact of large-scale developments by focusing on newly developed large governmental housing towns and the sustainability of the urban environment in Bahrain, some of which are similar to private developments, built on newly reclaimed islands and of similar characteristics and capacity, those were explained in the last section.

"The traditional Gulf suddenly opened its eyes and found itself in the midst of a secular and interdependent world. A new, educated elite had graduated from the most prestigious universities in Beirut, Cairo and Baghdad in the 1960s and 1970s and began to take on leading roles in the Gulf Society"[715] Shafeeq Ghabra

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[715] Ghabra.

7.1 Introduction

This chapter is the first of three interrelated chapters that illustrate the research findings and their discussion. It mainly focuses on the education and training barriers and difficulties and their consequences on the sustainability of the urban environment in Bahrain. It discusses the continued dependency on foreign knowledge, workforce and consultancy, which started with the oil boom in Bahrain. The chapter then moves on to examine this dependency's causes, and consequences, with a particular focus on the deficiencies of the working environments, processes and internal systems in addition to the insufficiencies of policies, laws and programmes in the governmental organisations concerned with the built environment.

7.2 Shortfall of the Architectural Curriculum and Lack of Urban and Planning Studies

Within the field of the built environment, The University of Bahrain (UoB) offers a number of BSc degrees in Engineering, in addition to Architecture[716] and Interior Architecture. There are higher postgraduate degree courses in Engineering and Project Management, but not in Architecture or Interior Architecture. In addition, Civil Engineering, Architecture and Interior Architecture were up until very recently in one department (Table 7-1). Today, they are in separate departments, but are still within the College of Engineering (CoE) with a lot of engineering courses in the curriculum, particularly the architecture programme, which includes more than six engineering courses (see Appendix 7.1). This was emphasised by E/AP/1.1 "We are **administered largely** by the **Civil Engineering section** because [it] is **the original** [department], and **Architecture came in later**, so we are **secondary** in that sense.". As seen in (Table 7-1) the Civil Engineering and Architecture Department at the UoB comprise more than half the entire CoE**.** The large number of students in the department, in addition to other administrative reasons, such as the appointment of a civil engineer to chair the department, resulted in an engineering influence on the architectural curriculum, and the decrease of the architectural section's power; the implications of this will be discussed later. Furthermore, the university does not yet offer any programmes on Urban Design, Urban Planning, Landscape Architecture, Architectural or Urban Sustainability, Conservation, or Regeneration, and this scarcity was acknowledged by an assistant professor with a background in urban studies. AL/AP/1.5 stressed the need for an urgent revision of the current curriculum to include urban studies. L/TA/1.4, also believed that there is a need for specialised faculties in those fields. Whether it is the need to modify the existing architecture curriculum to include those shortages or the necessity of developing new programmes, the acknowledgement of the lack of those specialisations seemed to be limited to the faculties who are interested in those fields.

The possibility of changing the curriculum to accommodate those shortages was discussed with interviewees, and the responses of those in senior positions related to the ability to change the course contents instead of the already fixed curriculum. For example, E/AP/1.1 explained that "when we **feel** that **changes need to happen**, we have the **freedom** to **bring it up to the council** and so on, **the process is always open** and we **can make those changes if necessary."** On the other hand, L/DEO/1.5 clarified that "Most of the projects I give to students are influenced by the university projec**ts**, and also by **my involvement with governmental projects**, **I try to link**, so I **don't do direct changes in the curriculum** but I **change the types of projects** that are **given to students**, most of them are **actual projects that the government is interested in."** L/TA/1.4 also agreed with this. It was clear from the interviews that the possibility of changing the curriculum was mostly in the hands of expats, who hold most of the higher posts at the DoA (Table 7-2) while locals focused on changing the course contents of their individual courses. It is important to note here that any changes to the architecture curriculum would have to pass through the college council, and then the university council, for approval. Most of the members of both councils are locals. However, they would be in most cases from irrelevant fields, such as engineering, law, or management, with limited ability to assess those changes.

Key Findings:

- There are educational limitations in Bahrain, in fields related to the built environment in general and urban sustainability in particular.
- The education of architecture in Bahrain has a great engineering influence.

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[716] The University of Bahrain is the only national university in Bahrain and the only university in Bahrain that offers an approved program of Architecture, other private universities offer programs in Architecture and interior design however are not yet approved by The Quality Assurance Authority for Education and Training (QAAET) in Bahrain.

- The architecture education in Bahrain is administered largely by foreign academic staff.

Department	Section	Undergrad	Postgrad (Master)	Postgrad (Ph.D.)	Number of Students	Percentage	Total
Architecture and Civil Engineering	Architecture	B.Sc. in Architecture	N/A	N/A	535	56%	1696
	Interior Architecture	B.Sc. in Interior Architecture			240		
	Civil Engineering	B.Sc. in Civil Engineering	M.Sc. in Civil Engineering	Ph.D. in Civil Engineering	921		
			M.Sc. in Engineering Management	Ph.D. in Engineering Management			
Mechanical Engineering		B.Sc. in Mechanical Engineering	M.Sc. in Mechanical Engineering	Ph.D. in Mechanical Engineering	434	14.30%	434
Electrical Engineering		B.Sc. in Electrical Engineering	M.Sc. in Electrical and Electronics Engineering	Ph.D. in Electrical Engineering	286	9.40%	286
Electronics Engineering		B.Sc. in Electronics Engineering		N/A	225	7.40%	225
Chemical Engineering		B.Sc. in Chemical Engineering	M.Sc. in Chemical Engineering	Ph.D. in Chemical Engineering	386	12.70%	386
TOTAL							3027

Table 7-1 The different programmes offered by the CoE at the UoB[717].

7.3 Dependency on Foreign Knowledge, Workforce and Consultancy and their Effect on the Local Urban Development

Throughout the interviews with the various governmental organisations concerned with the built environment, it was clear that there is a high dependency on foreign knowledge, workforce and consultancy. This dependency takes shape in different ways, varying from the employment of expats in governmental organisations, to hiring foreign consulting companies to design and construct governmental projects, and adapting the laws and regulations of other regions of the world.

7.3.1 Foreign Knowledge and Workforce in the Practice of Architectural Education in Bahrain

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[717] University of Bahrain, 'College Programs', 2014
<http://www.uob.edu.bh/english/pages.aspx?module=pages&id=1866&SID=481> [accessed 16 February 2014].

Dependency on external knowledge at the DoA is evident in the way changes have been adopted to the existing curriculum. Changes have been associated with the requirements of the NAAB[718] accreditation programme. E/AP/1.1, who works in the NAAB accreditation committee at the DoA, highlighted how "we are trying to get **accreditation** from the **NAAB**, so there has been a **continued program,** to **change the curriculum** … we have been **re-examining** our **course curriculum** … Done quite **a degree of changes, rewriting the description**, **redefining the objectives** … and **streamlining** the **entire system** of **delivery** of material and **assessment**, particularly to be **in line** with the **NAAB requirements**". This raises concerns about the cultural sustainability of the architecture programme that will be discussed further in the coming sections.

Another form of dependency on foreign knowledge in the department seemed to be the employment of many international staff, while most of the students are Bahrainis. (Table 7-2) shows that foreign staff at the department hold most of the higher-level academic positions whilst Bahrainis hold the majority of junior academic posts or are on scholarship leave. This was acknowledged by L/CID/1.2: "**most** of the **staff are not Bahrainis.**" The dominance of foreign academic staff raises concerns about the cultural sustainability of the architectural programme, given that non-locals decide most changes to the curriculum. It is important to note here that this structure has existed since the establishment of the department in 1990, due to structural reasons. The most notable of those are the relatively low salaries of masters- and PhD-holders at the UoB compared to those employed in other organisations and the better working conditions offered by other governmental organisations where working hours do not extend past two-thirty in the afternoon, which makes it easier specifically for married women (L/CID/1.2). This eventually resulted in the continuous transfer of the Bahraini staff to those organisations, once they returned with their higher studies degree, leaving academic posts to be occupied by mostly expats. Anecdotal evidence from the Head of the Department of Civil Engineering and Architecture in 2010 showed that they were trying to solve this issue by explaining the financial penalties and debts to the newly recruited TAs. Ideally, a TA is awarded a scholarship to study abroad, and would have to serve double the time spent abroad working at the University to repay the scholarship debt (for example 1–2 years to obtain a masters degree from abroad means serving 2–4 years at the University). However, the head of department explained that since he himself was a TA, the "runaways" continued to leave the university for nother governmental organisations upon requests from decision makers, or in some cases they joined the private sector to open an architectural office, which is more financially rewarding than an academic post at the University. This raises concerns about the effects of this lack of local faculty on the decisions taken by the DoA and the social and cultural sustainability of the programme; these will be further highlighted later.

The cultural change brought by foreign staff was acknowledged by E/AP/1.1: "**Architectural education** itself has a specific way of **teaching** and **learning**, which **isn't** part of the **Bahraini original cultural practice** … this has been **brought from outside** … those of **us** who **came here** have **brought with them cultural habits**, certain ways of **talking,** and **thinking.** I myself am **quite aware of the change**. I remember the way **students were thinking and talking** in the year **2000** … **now** students are **extremely different.**" The effect of foreign knowledge on the language used by students was noted by L/DEO/1.3, who debated that although the Arabic language is part of our culture, we are not specific to it anymore. Furthermore, L/AP/1.5 explained "What I can tell is the **impact of the international faculty**, on the **local people**, **students** started to **compare** and **question** the **different ways of thinking and approaches of foreign faculties.**" The argument above indicates that the employment of foreign staff is causing changes in the local culture, which

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[718] The National Architectural Accrediting Board (NAAB) is the only American agency authorized to accredit US professional degree programs in architecture. It is the American equivalent of the British RIBA.

raises concerns about the influence of this on the overall urban environment in Bahrain, an issue that will be investigated further in the coming chapters.

In addition to the majority of non-Bahraini staff at the department, it was also noted that all of the Bahraini staff were trained and educated abroad. An example of this is the academic journey of L/L/1.6: "I graduated with **BSc in Architecture** from **Riyadh** University and got my **master** degree in **city planning** from the University of **Pennsylvania**. I also took different **diplomas** from the **US** in **demography** and a **housing diploma** from the Arab Institute in **Kuwait**. I also studied **conservation** at **York** University in England." All of the other local staff have similar educational backgrounds. This indicates that changes in the existing culture could also be brought about by local staff who were in contact with foreign practices during their studies abroad. It seemed from the data that the sum of foreign knowledge at the department is imported from other areas of the world. The impact of this will be discussed in the coming sections.

Another example of depending on foreign practices is the employment of external consultants by the engineering office at the university to design and build the university's new facilities, despite the university already employing a sufficient number of faculties specialised in different fields of the built environment. L/DEO/1.3 explained: "We [the engineering office] are responsible for **all the new facilities**, they are ... **influenced by us** through **other consultants**." It was evident that the limited number of staff and the increasing number of students, which will be highlighted in (section 7.4), was behind this dependency on consultants in designing the new facilities.

Position	Bahraini	Foreigner
Professor	0	2
Assoc. Prof	0	2
Assist. Prof	5	4
Lecturer	1	6
TA	7	0
Instructor	1	3
Scholarship	4	0
Adjunct	3	1
Total	21	18

Table 7-2 Number of Bahraini and non-Bahraini staff at the DoA in the first semester of the academic year 2014/2015[719]

7.3.2 Dependency on Foreign Consultancies in Various Governmental Organisations Concerned with the Built Environment

All other interviewees also highlighted the dependency on foreign employment. The situation in MoC is not much different from UoB: there is a high dependency on foreign employees in the fields of architectural conservation and cultural heritage. Of the five interviewees selected from the MoC for this research, three of them, held decision making positions – heads of departments and conservation advisors – and were of foreign origin, while two Bahrainis held junior architect positions. This indicates the dependency on the foreign workforce in the MoC, and the effects of this will be outlined in the coming chapters. In addition, L/A/2.4 explained that there is also a

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[719] Department of Architecture, UoB, 2014

dependency on external consultancy in the design of projects while foreign and local architects and urban planners at the ministry held mostly management roles. (Figure 7-1) shows some of the most recent projects of the MoC and clearly illustrates the dependency on foreign consultants. As L/AE/2.1 explained, "we get the **designs ready** from **consultants** … We, **only have an administrative role, not an actual design role …** we **have input on program** and **requirements,** but in terms of the **final design**, it is **not** up to us[720]". The most recent literature, written by non-locals, argues for the benefits of using foreign consultants to build culturally sensitive projects in Bahrain. Wakefield (2015) argued that "rather than moving away from the earlier vernacular traditions, the new Qal'at al-Bahrain site museum combined these traditions with a Scandinavian sensibility for massing and material"[721]. The potentially converse effects of such a pattern of development on the local culture, are only, as we shall see later, understood by locals.

Bahrain National Theater (2012)
Designed by : Architecture-Studio (French)

Bahrain Fort Museum (2008)
Designed by : Wohlert Arkitekter (Danish)

Permanent Exhibition at Sh. Salman Bin Ahmed Al Fateh Fort (2013)
Designed by: PAD and La Meduse (French)

Al Khamees Visitor's Centre (ongoing)
Designed by: Claus Wohlert in collaboration with PAD (Danish and French)

Tree of Life Visitor's Centre (ongoing)
Designed by: Bielinska & Basmaji in collaboration with Ismail Khunji (Lebanese and Bahraini)
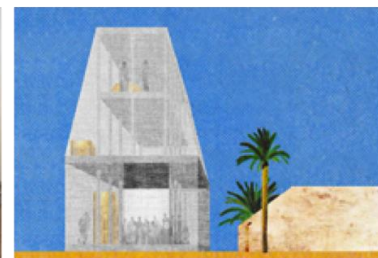
Dar Al Riffa Al Oda (ongoing)
Designed by: OFFICE Kersten Geers David Van Severen in collaboration with Emaar (Belgian and Emaratie)

Figure 7-1 A number of the most recent MoC projects[722]

It was clear throughout the interviews that the MoH is also extremely dependent on external consultancy. Like the MoC and UoB, most of the projects are only managed by in-house architects and planners, but there does seem to be a little involvement in the design and planning, in addition to a comparatively small number of in-house projects. This was highlighted by L/SSP/3.1: "we **manage consultancies** … the MoH used to do **all their designs in-house** and sometimes **design and build**, but they have **started getting consultants** in to **help with the amount of backlog** that we are facing." It is important to note here that only small-scale projects are now designed in-house, while most of the major projects under the jurisdictions of the MoH are contracted to foreign consultants. Those were explained in section 6.7 and one of those projects is in collaboration with the Prince Charles Foundation (PCF), a British organisation invited by the Bahraini government to assist the MoH in planning and designing a new housing project. L/SSP/3.1 explained that "we have **employed PCF** to tell us **what doesn't work** and **how it does not work** and **help us** to **bring the**

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[720] Up to the consultant who is in most cases from overseas
[721] Wakefield.
[722] Ministry of Culture, 'Projects and Achievements', 2013 <http://www.moc.gov.bh/en/ministry/projects/> [accessed 5 March 2014].

project forward." L/HU/3.3 also explained the role of the PCF in implementing sustainable strategies for housing projects: "We are seeking the **help and participation of PCF**, who have a **wide knowledge** and **experience** in the field … Our exercise or project with **PCF** might **add a lot** to the ministry's **experience in sustainability.**" The effectiveness of this participation in elevating the level of sustainability of the MoH projects will be examined in the coming chapters.

More careful attention was evident through the interviews with the MoW to the quality of the employed consultants than other organisations; L/HP/4.1 highlighted: "I am the head of the **prequalification of contractors and consultants**, so whoever wishes to work in the ministry has to **comply** with **certain criteria** and to be **registered here**. I go through their **records, experience,** and **accomplishments**, to decide if they are **fit** to work with the ministry, and **assess** to what **grade** and **level** they are **allowed to work.**" Despite the thorough review of consultants and contractors, the internal workforce of the ministry still mainly holds a managerial role while most of the project work is outsourced, which explains the need for the prequalification department. This raises concerns about the sustainability of this process and the impact of this on the sustainability of developing infrastructure in Bahrain, an issue that will be further discussed later.

Unlike other governmental organisations, E/UDA/5.2 explained that the MoM acknowledges the problem of outsourcing projects, and solutions were put forward. The interviewee explained that foreign landscape architects have been employed to train local employees. Although this indicates that an awareness of the consequences of dependency on consultants exists, the magnitude of the problem is still present, because all of the major projects of the MoM are still being outsourced like all other governmental organisations. In addition, the data from the CSB, as seen in (Table 7-3)**,** showed that still, no Bahraini national occupies any of the landscape architecture posts.

Another mode of outsourcing to foreign consultants in the MoM is through the development of policies, strategies and implementation plans (L/HSU/5.4). The quality of the work of those consultants will be outlined later. It was also evident that this dependency on foreign consultants can cause delays to various projects. L/HSU/5.4 mentioned, "We **need to work** on the **legislation part**, yet we **could not find a consultant** who agrees to work with **urban planning laws only.**" This explains the very weak urban planning legislation in Bahrain, which will be discussed in (section 7.4). Additionally, a lot of the standards that the MoM are working on are imported from outside; L/HB/5.1 highlighted how "we **receive many standards and information from outside**: **US, UK, China** and sometimes from **Europe** … We then **modify those standards**, to **comply** with **our weather circumstances**, like the **high temperature** and **humidity.**" This indicates the amount of imported knowledge in the MoM, which appears to be minimally adapted to the Bahraini context. The influences of this on the urban environment will be highlighted in the coming chapters.

Furthermore, E/CCP/4.4 described his job: "I have been **working In Bahrain for 26 years**. I am **in charge** of the **coordination, planning, implementation** and **protection of all infrastructures, public** and **private, including oil** and **gas** in Bahrain … We are **part of the minister's office** of the MoW, we **report to ministers, cabinet subcommittee** levels and sometimes to the **Crown Prince.**" The length of time the interviewee has spent in Bahrain has made him knowledgeable about the context and its requirements. However, appointing the responsibility of coordinating, planning, implementation and protection of all infrastructures in Bahrain to a foreign hand indicates the vast dependency on foreign services. In a casual talk with a senior local architect at the MoM, during a conference in Copenhagen, he mentioned that this foreign chief of CPO was even more influential than the minister himself. This raises concerns about the sustainability of the

recruitment system and the influence of expats on decision makers. This will be further highlighted in the coming sections.

Moreover, as seen in (Table 7-4), it was evident from the cross-comparison between the two sets of data obtained from CSB and LMRA, that the number of foreign employees in posts related to architecture, urban design, and urban planning is much higher than of local employees. The data also showed that foreign employees hold junior architecture and planning positions while local workers hold management posts such as project leaders, advisors and heads of departments. These workers would normally answer to a foreign advisor or hire an international consultant to achieve the ambitions of the local decision makers (L/A/2.4). Also, the data clarified that there is a complete dependency on the foreign workforce in the field of landscape. The majority of the foreign workforces in those fields come from developing countries, India and the Philippines, followed by employees from Egypt, Lebanon, Jordan and the UK. This relates to the literature and the cheap costs of employing foreign experts in comparison to locals in junior posts[723]. Nevertheless, this raises concerns about the ability of those to relate to contextual and broad social matters when designing, planning or managing projects; this will be explained in the coming section.

In addition to the dependency on foreign knowledge, workforce and consultancy in academia and governmental practices, official statistics showed that the number of university graduates working in the private sector was 59,480 employees, dominated by a total of 43,994 foreign employees (39,444 Diploma and BSc holders + 4,550 Masters and Ph.D. holders), and only 15,846 Bahraini employees, comprising of only 36% of the total employment in the private sector[724]. In 1981, Bahraini nationals occupied 33% of the private sector workforce[725] although the private sector is beyond the scope of this research. However, this shows that both the private and governmental sectors in Bahrain are highly dominated by foreign employees while the literature showed that foreign employment in the private sector dominated jobs that are lower in the power hierarchy[726]. This study shows that foreign employees and consultants in the public sector are "sandwiched" between the local decision makers and the local junior architects and planners.

Nationality	Position	Number
Bahraini	Agricultural extension specialist	1
	Agricultural Economist	1
	Agricultural Technician	2
	ASST U/Secretary, Agricultural Affairs	2
	Director, Agriculture Engineering & Water Resources	1
	Senior Agricultural Engineer	1
	Senior Agricultural Technician	11
Expats	Landscape Architect	5

Table 7-3 Number of Bahraini and non-Bahraini employees at the relevant governmental organisations in posts related to Landscape Architecture[727]

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[723] Mellahi and Al-Hinai.

[724] Alayaam Foundation For Press and Publication, 'Forign Labour Dominates the Educated Larbour Market', *Alayam News Paper* (Manama, 24 August 2014).

[725] Louer; Franklin.

[726] Kamrava and Babar, *Migrant Labor in the Persian Gulf*.

[727] The Civil Service Bureau (CSB) and the Labour Market Regulatory Authority (LMRA), 2014

Occupation	Number of Bahrainis	Number of Expats
Architect	0	135
Senior Architect	1	22
Architectural Engineer	4	228
Architectural draftsman and technician	0	65
Senior Architectural Technician	0	8
Architectural Photographer	0	1
Urban Designer	0	1
Landscape Architect	0	5
Senior Urban Planning	3	1
Senior Urban Planning Technician	3	0
Chief of Urban Design/Planning	3	0
Head of Department (Architectural and Planning)	3	0
Consultant/Advisor Planning	5	0
Urban Planning Project leader	2	0
Urban Studies Specialist	1	0
Total	25	466

Table 7-4 Number of Bahraini and non-Bahraini employees at the relevant governmental organisations in posts related to the design, management and planning of the urban environment

7.3.4 Criticism of the quality of foreign consultancies employed by the Bahraini government

There was an acknowledgement within the MoM of the unsustainable appointment of foreign consultants to local projects that surprisingly came from foreign interviewees. E/UDA/5.2 discussed how "… people [Decision makers] **like** it, because **ATKINS did it** … When **Lord Atkins** made that building with three fans [BWTC, Figure 6-22B], I **objected** right from the beginning. I told them they are **tricky**, and they are **stealing your money**. They want to **try** something that they **wish to make in their home** … those **foreigners**, are **crooks**, and they do **what they like.**" The interviewee justified the reason behind the continued appointment of foreign consultants in Bahrain, and explained the effects of this on the local culture: "**foreigners** [consultants] here say that they **appreciate the culture** and **heritage** … However, they just **copy** what they **like to do** in the **west,** and people, especially **decision makers, like it**, because they **love to be westernized** … We [advisors] told them that this was **done in Europe, Japan** and **China** and **failed**, but they [decision makers] s**till insisted on doing it …** they follow their **self-interest** and **not the public interest.**"

L/CCP/4.4 also criticised and questioned the quality of the consultancies that Bahrain is employing today. The interviewee's opinion about the PCF contrasted with that of the MoH mentioned earlier: "**PCF does not respect the experience of the people here**[728]. I have **worked** in **many places** before, and I can tell you that the **architects and planners** I met **in Bahrain** are some of the **finest** … Why should we bring **PCF** to Bahrain? **We should go to PCF** in the UK and **show them** how a **good sustainable housing project could be done**. They come with all of those **washy ideas** that **sound** good and **delay projects**, while **what is important in Bahrain politically is to deliver housing units**[729]". Given the lack of local specialised courses and the limited number of Bahrainis educated abroad in those fields, the interviewee's judgment might be exaggerated, but it is most possible that the Bahraini architect and planners were more knowledgeable about the context, culture and environment. The interviewee also criticised the appointment of a foreign head of SPD, who is responsible for the biggest new towns to be planned in Bahrain (which will be explained in chapter 9): "This **head of SPD** at the MoH is **a quantity surveyor**, he is **not an architect**, **planner**, and **not even an engineer.**" This is both a foreign and specialisation issue and raises concerns about the skills of foreign consultants employed in Bahrain. During the interview with the Director of SPD, the interviewee was not able to comment on the social aspects of the projects, despite the importance of the social and cultural matters in public housing projects; E/DSP/3.6 simply stated that they are only focused on the development of the town itself. On the other hand, the local assistant director of SPD was better informed and equipped about social and cultural matters than the foreign director and was able to explain thoroughly the social and cultural differences and connections between other areas of Bahrain and those housing projects, which will be discussed further in Chapter 9. This again raises concerns about the skills and quality of foreign consultants employed in Bahrain, and their ability to grasp complex social and cultural matter in a relatively short time.

E/HEP/8.1 also questioned the reliability of consultants hired by the government: "Consultants … **think only about the economic benefits** of projects and **don't look at other factors** … In **most cases**, we get **decisions** … and they **don't even discuss changing them**, **not** because **decision makers don't want to listen**, but because the **consultants surrounding them don't listen to executive entities."** This is one of the consequences of foreign consultants working between the decision makers and junior local executive entities, which clearly shows a strong

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[728] Referring to the shared surfaces road design of the PCF, and argues that their designs don't respect the experience of those who work in the Roads department at the MoW, this will be further explained in chapter 9
[729] referring to the long waiting list on housing projects, 53,000 applications and raising in 2014

miscommunication (Figure 7-5). The interviewee also highlighted that employing foreign consultants to work on local projects sometimes causes delays: "Those **consulting companies** that I have **dealt with a lot** come with the **mentality and problems of their country**. For them **to understand our problems**, it **takes them time** ... For example, when dealing with **environmental problems** and **doing air modelling**, they have to **understand** what **our problems in Bahrain are**, they might have problems with **wind and rain there**, but **here we have dry and dusty weather.**" E/UDA/5.2 also explained that sometimes decision makers are misled by foreign consultancies, which results in the approval of their projects. An example of this is the BWTC project mentioned above[730]. "**Consultants** do projects that are **not related** to the **culture** or **heritage**, and it is **not wise** to **approve** those projects, and work **against our sustainable environment**. The most **significant influence** in this country comes from those **foreign consultants** and the **mistakes they make.**" The argument here shows that extensive dependency on foreign consultants and the lack of local experts in Bahrain causes miscommunication and delays projects (Figure 7-5). The argument also raises concerns about the reliability of awarding projects that require a contextual understanding to foreign consultancies and the consequences of doing that on quality of their work and the cultural, social, environmental and economic sustainability of the urban environment in Bahrain. This will be explained further in the coming chapters.

7.3.5 Shortage of Local Expertise and Qualifications, the Main Driving Force Behind the Dependency on Foreign Consultancies

It was apparent throughout the interviews that there is a lack of specialisation in some governmental organisations, in various fields. L/A/2.4 acknowledged the lack of Bahrainis specialising in cultural heritage. Also, E/HA/2.5 shed light on the lack of qualified Bahraini architects: "the **interest** was to **interact** as much as we can with **local architects** ... but we **did not find** the **level of architecture we were seeking** ... unfortunately, in the **past twenty, thirty years** the **quality of the built fabric really deteriorated** in terms of **construction**, and **design decisions**, which were **taken very loosely.**" This is a worked example of the deterioration of the education system that governs the production of a sustainable urban environment, mainly due to the shortage in academic specialisations and a number of other reasons explained earlier in (section 7.2). Moreover, L/HB/5.1 argued that there is a need for Bahraini specialists in fields related to sustainability and landscape. The interviewee argued that discussing such issues in practice with uninformed employees is difficult. This is evidence that weak and limited education in those areas results in struggles in the working environments of governmental organisations concerned with the built environment, which affects the quality of their working systems and their output projects.

As presented in (Table 7-3) no Bahrainis occupied posts in the landscape field. Those who are working in related fields would be gardeners, agricultural equipment operators, agricultural engineers or agricultural technicians. Meanwhile, the data from the LMRA showed that expats held a number of landscape posts. This raises concerns about the effect of this lack of local expertise on the quality of the landscape in Bahrain, and, in particular, the quality of waterfronts, beaches and open spaces. AL Ansari, 2009, among others recently talked about the deteriorating quality and quantity of public waterfront open spaces in Bahrain, and as a result some policies were put in place to ensure the allocation of at least 5% of the waterfront of any new coastal development for

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[730] A building situated on the most important waterfront in Bahrain, designed to have three wind turbines connecting two towers. The consultants convinced decision makers that the three turbines would generate electricity to run the building, however, because of the limited wind in Bahrain, and other structural reasons causing the two towers to vibrate when the turbines are operated, today, they are solely decorative elements.

the public[731], but the relationship between those challenges and the lack of academic specialisations in Bahrain was almost never established in the literature.

In addition, the latest multidisciplinary report explaining the achievements of Bahrain in sustainable development[732] which was produced in collaboration with a number of governmental organisations concerned with the built environment failed to mention the importance of the link between higher education and the work of those various organisations in developing sustainability, and focused merely on projects to rehabilitate and employ university graduates in order to integrate all unemployed graduates in the labour market in various professional disciplines. While the aim of the national 2030 plan states that "it will also find **an indigenous workforce** with **outstanding business** and **technical skills**"[733], this indicates that local officials still don't realise the essence of the problem despite the existing policies written by foreign consultants.

L/HSU/5.4 also acknowledged the lack of local experts in urban policies, eventually resulting in the dependency on external consultancies: "We **need to revise the policies** … Because of the **lack of qualifications**, we are **trying to bring a new consultant** to work on **updating** and **revising** those **NPDS** and we will **work with them** to come up with something that is **customised, localised** and **suits Bahrain's case.**" This was also evident from the data obtained from the CSB: there are limited posts for locals in urban design and planning in comparison to engineering, and none of them is specifically related to urban policies. Furthermore, there are also no vacancies for jobs related to urban policies or landscape in particular, which indicates that although there is a realisation of the shortage, there are no attempts yet by the government to attract local skills; either that, or there is not acknowledgement that local skills in those fields are almost non-existent. In either case, the development of urban policies in Bahrain is almost entirely dependent on foreign consultations, which is shown by the high number of expats in posts related to Architecture, Urban Planning, Urban Design and especially Landscape. It is clear that the lack of those specialisations in academia is affecting the work of governmental organisations and is one of the leading causes of the employment of foreign consultants.

Similar to all the groups mentioned above, within the SCE, there was also a lack of local experts in the fields of environmental sustainability. E/HEP/8.1 explained that "We have five **stations** in Bahrain to **measure the quality of air**[734]… we had some **technical issues** in those stations, and **until we fix** those issues, we **will not have correct data**. We **don't have national specialists** in **air modelling,** so we **need to do this using a consulting company,** and this **takes time."** The interviewee also acknowledged and showed an understanding of the importance of investing in local skills. Also, policy showed the lack of local experts in environmental sustainability. One report stated: "**implementation** is rather **modest** in **all aspects of environmental management** despite political and institutional commitments … **a major factor** is the **weakness** of environmental institutions in terms of **technical capacity** … **achievements** are **neither comprehensive nor substantial."**[735] Nevertheless, the policy also showed that no measures were taken to overcome this problem by the SCE. Strategies are still being put in place without any attempt to form a body of local skills, and the Council continues to be entirely dependent on foreign consultants in their

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[731] Supreme Council Of The Enviroment, *Bahrain's Achievements in the Field of Sustainable Development*.

[732] Supreme Council Of The Enviroment, *Bahrain's Achievements in the Field of Sustainable Development*.

[733] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.

[734] Ambient air quality monitoring program in Bahrain started in 1986 using a semi-mobile monitoring station, in 1993 three fixed monitoring stations were used and in 2006 the monitoring program was updated to use five mobile stations, one in each governorate to monitor the quality of ambient air round the clock, in respond to the decree (No 10) for the year 2006 concerning the installation of direct monitoring stations for ambient air pollutants. The data was stored automatically and directly in the central computer of the public administration of the environment and wildlife protection, which is now the SCE.

[735] The public commission for the protection of marine resources environment and wildlife, *Bahrain National Assessment Report on Implementation of the Mauritius Strategy (MSI) of the Barbados Program of Action (BPOA)*.

various activities, and also is seeking the certification of international programmes, for example the report prepared by the SCE for the MoW, where the council encouraged more accredited professionals from LEED and QSAS and the certification of buildings in Bahrain using the LEED system[736]. There was no indication of developing a Bahraini certification system in the interviews or policy.

Another apparent reason for the dependency on foreign consultancy and workforce seems to be the shortage of trained Bahraini staff. L/HP/4.1 highlighted how "Bahrain is **not** like **other countries** where the **academic knowledge** is weighted **equally** with the **practical experience** … we go through the **theoretical knowledge**, which **only sometimes** includes **small practical experience** … then students are **pushed to the market to work** … **other countries**, **understand** the **importance of the practical contribution** … **students spend more of their academic time practicing** what they are being taught." E/UDA/5.2 also agreed that the lack of professional expertise in Bahrain is due to the absence of proper training.

Key Findings:

- The argument above demonstrates the almost complete dependency of the government on foreign knowledge, workforce and consultancy which challenges the development of a sustainable urban environment in Bahrain.
- This dependency is mostly due to the lack of national expertise.
- The shortage of local experts and qualifications is due to the limitations of education, and also to the lack of training.

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[736] Supreme Council Of The Enviroment, *Bahrain Initiative to Energy Efficiency, an Approach towards Sustainable Green Building: Ministry of Works* (Manama, 2012).

Shortage of Skilled and qualified Bahrainis

Dependency on foreign knowledge, workforce and consultancy

Dependency on foreign knowledge, workforce and consultancy in governmental organizations concerned with the built enviroment

- Intensive employment of foreign specialist and professionals
- Bahraini decision makers and junior employees, and a majority of foreign senior employees in direct contact with decision makers
- employees merely manage foreign external consultants and most of the work is outsourced

Dependency on foreign knowledge, workforce and consultancy in the architectural education practice

- Changes in the Curriculum depending on the requirements of a foreign accreditation agency
- Intensive employment of international faculties
- Bahraini faculty are trained and educated abroad
- Employing foreign consultants to develop the university's new facilities.

Consequences of Depending on foreign knowledge, workforce and consultancy

Delays in the development of projects, policies, laws and regulations.
- Economically driven projects with little understanding of contextual issues and consideration of current cultural mandates
- Projects are created through an unsustainable design, management and construction processes

- An architectural program that is not tailored to tackle contextual needs and requirements
- The diminishing of the local identity
- The import and adaptation of foreign cultural behaviors and practices
- Bahraini faculty lacking the practical experience.
- Graduates influenced by foreign ideologies

Unsustainable Urban Enviroment

Figure 7-2 The consequences of the shortage in local experts and qualified skills in Bahrain

7.4 Deficiencies of Working Environments, Processes and Internal Systems

It was clear through the interviews that there were also serious problems in the internal systems of those organisations and deficiencies in their working environments. The most apparent shortcoming (Figure 7-5) was miscommunication between different levels of operational hierarchy, and the failure of the top-down management approach, which segregates local decision makers and junior employees by a layer of foreign consultants.

Interviews with the UoB showed that there are a number of administrative and managerial reasons behind the weakening of the architectural programme at the UoB, which is affecting the quality of graduates feeding into other organisations; those are outlined in (Figure 7-4). Most of these related to the miscommunication between the department and the higher management at the University, which could be attributed to the engineering domination that was explained in (section 7.2). An example of this miscommunication is that today, Architecture and Interior Architecture are separated from Civil Engineering into their own department. However, it was noted during the interviews with lecturers and professors that most of them did not even acknowledge the separation between the Civil Engineering and Architecture Departments and have only heard about it, despite the importance of this separation to grant power to the growing Architecture Department. For example, E/AP/1.1 among others explained that "there is **no DoA still**. I would think that we are w**orking almost like a department,** except for the fact that **we do not have that complete independence."** The effects of this merger on the architecture programme were outlined in (section 7.2).

Another example is the miscommunication between the FMO and the DoA, related to the growing number of students (Figure 7-5) and the failure of the university's facilities to cater for this increase. L/DEO/1.3 seemed to think that there was no need to create additional space: "we were **producing** and **building projects so quickly**, without realizing that we **don't need extra space**, we **need to manage the existing space."** This contradicts what all other interviewees from the inside of the DoA, for example E/AP/1.1 among others, explained: "we are **tightly cornered**, because the **student's numbers have increased**, so we are under **pressure from the inside** of the classrooms **to expand** and from the **outside to squeeze ourselves**… we **do not** seem to have **much room to manoeuvre**. We are having **difficulty in organizing classes**, **juries** and **various classroom activities."** This shows that there is an apparent lack of coordination between the FMO and the DoA, which is affecting the quality of teaching at the department by disrupting the comfort of the faculty and students, given that architecture students, unlike other disciplines, need larger study spaces and, therefore, larger studios.

L/DEO/1.3 from the FMO did not recognise this lack of coordination. However, the opinions of the rest of the faculty at the DoA confirmed the lack of coordination; for example, E/AP/1.1 highlighted the very minimal influence they have on the design and management of facilities, and L/TA/1.4 had a very strict contribution to this: "there is **always a limit** to make **any change** in the university, it is **not so easy** … in **the way of teaching**, **changing venues** or **anything related to the teaching environment**, so I **don't** think we can **do any changes** in that regard." All other interviewees from the department had very similar answers. This raises concerns about the effects of this lack of coordination and communication on the quality of teaching architecture and eventually the proficiency of architecture graduates, who will be feeding into different governmental organisations. More about this will be highlighted later. L/AP/1.5 contributed to this argument by blaming the restrictions of change on the lengthy bureaucratic process: "**authorising tasks takes months**, and sometimes the **need** to make those changes becomes **outdated** … they **provide** you with the **right to change** whatever you want but at the same time the **bureaucratic process**

becomes **so tough** that you **would not want to bother.**" This also raises some concerns about the efficiency of the internal system and the effects of that on the architectural sum of knowledge and quality of teaching architecture in Bahrain.

(Section 7.3.1) argued that there is a good number of foreign faculties in the DoA, in addition to an increasing number of Bahrainis who are now employed by the UoB and are pursuing their higher degrees in foreign countries; however, because of the rapid increase in admissions (Table 7-5), the limited existing number of staff is not sufficient to control the increasing number of enrolled students. Consequently, academics in the department today carry out many administrative tasks besides their usual teaching roles. Also, they are on many occasions forced to teach courses that are not within their area of specialisation, for example, L/TA/1.4. The increasing number of admissions also led to the standardisation of course contents by each course committee. L/AP/1.5 among others argued that they didn't have the freedom of delivery that they used to enjoy when the number of students was limited, and when one staff member was responsible for each course. The argument above explains the various deficiencies of the working environment and internal system of the UoB in general and the DoA in particular. The implications of this on the sustainability of the urban environment will be discussed in the coming chapters.

	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014
No. Students Admitted	53	85	99	101	102	98
No. Students Transferred	3	3	23	6	10	7
No Students Graduated	33	22	21	16	29	
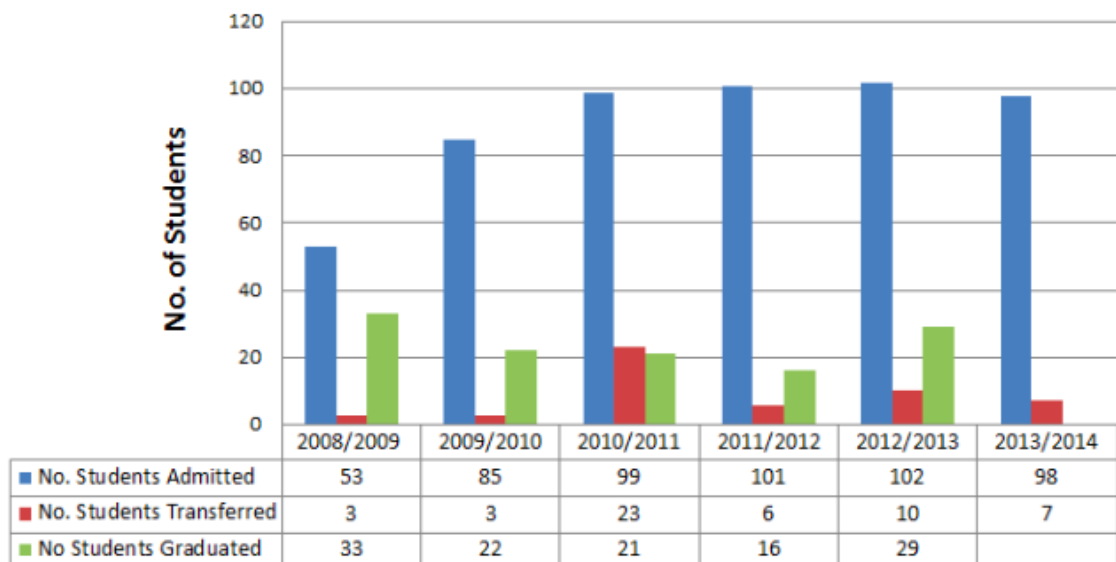
Figure 7-3 The total number of students admitted, transferred and graduated in the architecture programme[737]

[737] Accreditation and Assessment Office University of Bahrain, 'Program Statistics', 2014 <http://aao.uob.edu.bh/Programs/Statistics/eca.aspx> [accessed 16 February 2014].
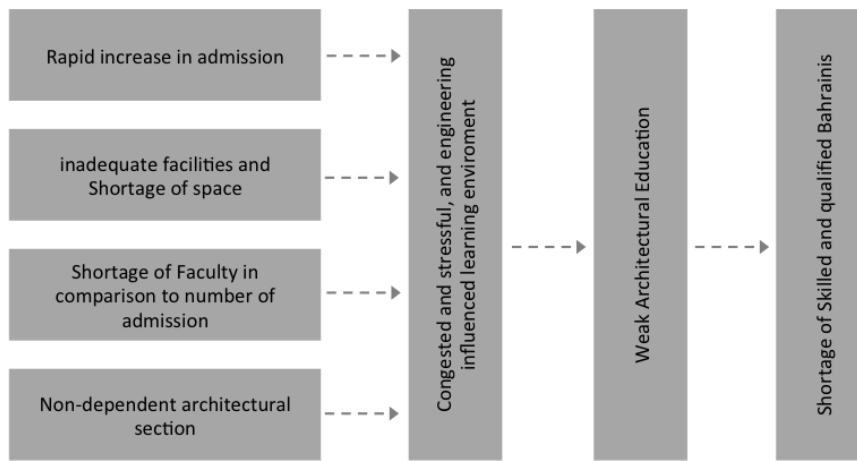
Figure 7-4 Explaining the causes and consequences of decline of architectural education

Academic Year		Enrolment Year					Total Undergrad	Degree Awarded
		1st	2nd	3rd	4th	5th		
2013/2014	FT	98	93	87	99	100	477	43
	PT	-	-	-	-	-	-	
2012/2013	FT	102	91	100	75	66	434	29
	PT	-	-	-	-	-	-	
2011/2012	FT	101	99	80	50	31	361	16
	PT	-	-	-	-	-	-	
2010/2011	FT	99	81	52	19	33	284	21
	PT	-	-	-	-	-	-	
2009/2010	FT	85	52	20	22	35	214	22
	PT	-	-	-	-	-	-	

Table 7-5 The total number of students and degrees awarded in the DoA (2009–2014)[738]

The deficiency of the working environment at the MoC is very much related to the dependency on a foreign workforce and consultants (section 7.3.2) and is also an issue of miscommunication. Originally, the job of the Architectural Affairs Department at the MoC was to manage the ministry's facilities and buildings; however, the scope of work of this department has expanded a lot in the last few years to include national participations, exhibitions, building new large-scale cultural projects and being responsible for the architectural and urban cultural heritage of Bahrain. E/HA.2.5 explained: "the title I have now [Head of Architectural Affairs] … was mainly **preserved for overseeing the facilities of the Ministry**, **its heritage** and **archeologically sites**. We are very much **expanding the scope** of influence of the ministry." Given that most of the people working at the department are of a foreign origin, as shown in (section 7.3.2), this expansion of the scope of work raises concerns about the sustainability of the internal system that allows a majority of non-Bahrainis to work with the sensitive local cultural heritage.

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[738] Accreditation and Assessment Office University of Bahrain.

As an example of the different points of view, L/A/2.4 stressed that Bahraini architects do not understand the decisions of the foreign specialised conservation architects, and sometimes don't agree with them. Assuring that there is miscommunication between different managerial levels, L/A/2.4 stated: "… we think that **some buildings should be demolished**, because the **options** they [foreign conservation specialists] propose are **more costly** in terms of **time**, and **price**. There is **definitely a lack of communication** between the **top management** and the **middle management … higher management** gets **involved** in the **smallest details**, so **we do not have any power.**" E/HCS/2.2 meanwhile discussed his role in managing the physical environment: "not only **built assets** but also **any other heritage assets** that the ministry possesses … **of course, I do have a say** … Also in **identifying buildings that need to be purchased** or are **about to be lost.**" The lack of Bahrainis specialised in cultural heritage and the deteriorating condition of heritage in Bahrain indicates that this is an issue of miscommunication rather than disagreement. L/A/2.4 mentioned earlier the need to send Bahraini junior architects to learn more about this field. Nevertheless, apparent miscommunication is evident, for the decisions of the foreign consultant are not being explained thoroughly to the local junior architects.

The rising number of housing applications is the most overriding problem of the ministry that is affecting the ministry's work and the quality of its output; this was explained by L/A/3.4: "there is **no time to do any extra studies** … People are **demanding houses** and with the **stress of the deadlines** and the **long waiting list**, which just **keeps on piling up** … we are **under pressure** that **limits us from providing a sustainable urban layout.**" The consequences of this process on the sustainability of the urban environment in Bahrain raises concerns and will be discussed further in Chapter 9. The increasing housing applications also resulted in the fast expansion of the ministry's directorates and the placement of the new SPD into another building due to a shortage of space in the main facility. The consequences of this separation are now evident in the lack of communication between the different directorates, which adds to the miscommunication that results from employing expats as discussed earlier. L/SSP/3.1 explained: "We are **supposed to be working as one** but **realistically we are not**. We **do not communicate enough** with them [MoH] …I feel like we are an **entity separate** to the ministry." The interviewee further explained the shortfall of the top-down management process: "**Management** is like a **pyramid:** when **everybody** on that pyramid is **on the same page as the top man**, we will see **change happening faster**, but this **doesn't happen** here. The **top man** gives it to the **four-man** who give it to the **next ten-man** who gives it to the **next fifty-man**, but **the message doesn't always get carried through.** It's like **Chinese whispers.**"
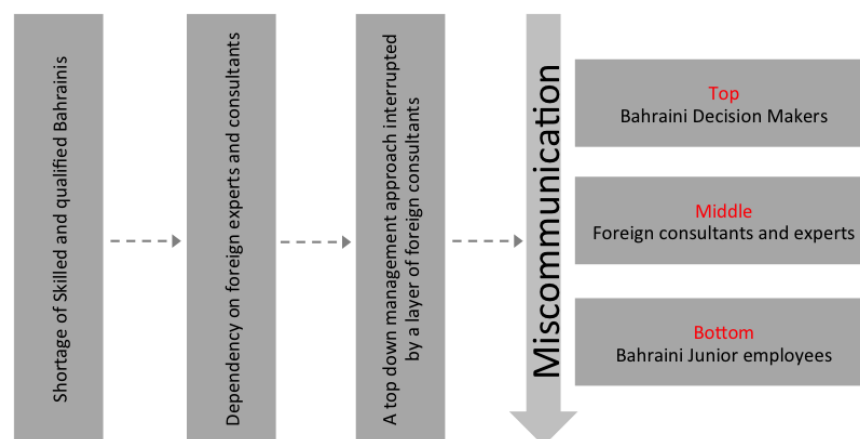
Figure 7-5 Causes and failure of the top-down management approach

Similar to previous organisations, there was evidence of a struggle and miscommunication between the top and middle management at the MoM (L/HSU/5.4). It is clear from the argument above that there is a relationship between the shortage of local experts and the inefficient top-down management process (Figure 7-5). Another deficiency of the internal system that arose during the interviews with the MoM was the concentration of the inadequate workforce. This was explained by E/UDA/5.2: "the **MoM** was like the **governmental trash for employees**, every person who is **unable to do anything** in the government would be **sent here** ... we **made a survey** and **diagnosed the problem four years ago,** we found that **... 80% of heads of sections did not have a bachelor degree** ... We **could not fire** those people, so we **gave them an early retirement,** and we also made a **very important training Centre** to **train employees."** Moreover, the policy showed that CSB has made some achievements in human resource development in the public sector through the development of the capabilities programme. A total of 5,368 workers from various governmental organisations benefited from this programme that included local and overseas training, in addition to scholarships. This relates to the literature explained in (section 6.3) and the problems associated with channelling local employment to the public sector to avoid political uprisings regardless of their know-how and capabilities.

On the other hand, and unlike other organisations, an overriding problem in the working structure of the SCE is that there is no real representation for the Council at the PMC, which reduces the organisation's ability to enforce their decisions on other governmental bodies. E/HEP/8.1 explained: "There is **no real system** that the **PMC can listen to**, because of this, they have **established a board of directors** ... but so far **it has not worked** as it should... **Still, we are not effective and other ministries don't understand the essence of our work."** This indicates the disregard of environmental considerations and the decrease of the environmental sensitivity of governmental projects in Bahrain, an issue that will be further highlighted in chapter 9.

Key findings:

- There is a relationship between the shortage of local experts and the inefficient top-down management process in governmental organisations concerned with the built environment.
- This, in addition to other problems, seems to affect the social, cultural, environmental and economic sustainability of governmental urban and architectural projects in Bahrain. This is illustrated in (Figure 7-6).
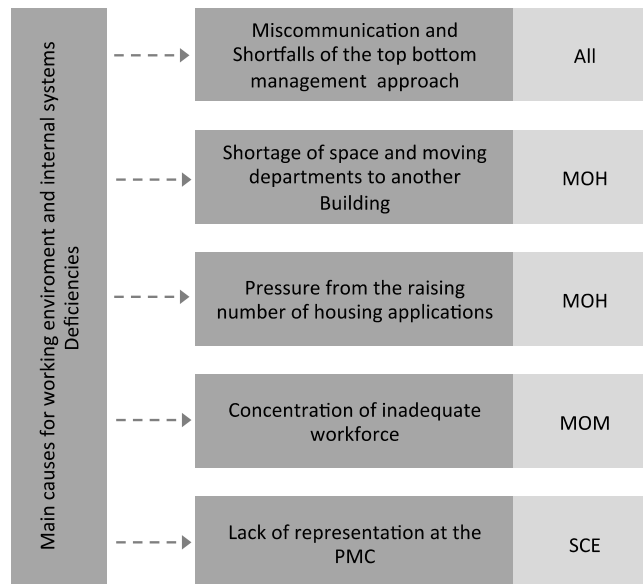
Figure 7-6 The main causes for the deficiency of the internal systems and working environments

7.5 Deficits and Scarcity of Policies, Laws and Regulations

The research showed that there is a lack of laws and regulations in different sectors concerning the built environment, in addition to the deficiencies in the programme of architectural education in Bahrain, which was explained earlier. Throughout the interviews it was also evident that employees of various organisations struggled to update and develop the existing regulations due to a number of reasons; these are discussed and set out in this section.

7.5.1 Shortage of Laws and Regulations

There seemed to be an overall lack of adequate policies on cultural heritage and conservation in Bahrain, which is related to the argument set out in (sections 7.3.2 and 7.3.5). L/A/2.4 highlighted that because those laws don't exist, decisions of cultural heritage and conservation were based on the opinion of one foreign specialist, who was known for his fluctuating opinions, which appeared to be causing a lot of problems with the locals. "We **don't** have an **influence on policies** at the moment, and those **policies don't exist**, there are **no regulations**, **no laws** [of conservation]... The **MoC** and **MoM** now **ban the demolition of some houses**, but **without any power** ... which means, if the person with the **banned property**[739] went to the **court**, he would **win the case.**" This will be elaborated on in Chapter 8. L/HB/5.1 also stressed the lack of regulations and guidelines in designing sustainable gardens. In addition, there was also a lack of policies and regulations concerning other aspects of building infrastructure in Bahrain, as E/CCP/4.4 explained: "we **don't have policies**, **regulations**, **consumer protection**, [or] the **rules** of how **private infrastructures** can **survive in the public world.**" The only thing that materialised in terms of laws and regulations is the implementation of laws that ensure the efficiency of building materials. E/UCS/2.3 among others highlighted: "there was recently **a law** voted and **applied** by a ministerial decree through **EWA**, it only regards the **environment** and **enforces the selection** of **double walls** and **glazing**, it included around five points, so that's how far it goes, **environmental sustainability.**" Those will be discussed in (section 9.5).

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[739] The interviewee here is referring to the recent attempts of the MoC to ban the demolishing of historic buildings in protected areas in the old parts of Muharraq.

It was also evident throughout the interviews with the SCE that there is a scarcity of sustainability regulations and laws in Bahrain, in addition to limitations in implementing the existing ones. This is linked to the argument set out in (section 7.3.5). E/HEP/8.1 said: "we **try hard to make changes** in the **existing policies** of Bahrain with all the **tools** that we acquire from our **legal mandate** to **enforce sustainability**; nevertheless, because we are **not represented at the PMC**, we **didn't achieve the goals we attained."** This has also been discussed by L/ES/8.2, and E/CCP/4.4 who added "we have **structures**, **processes**, and **environmental issues** that **need to be processed through the SCE** ... they are **responsible** for bringing the **argument of sustainability** into the **decision making process**. However, are these **strong enough**? **No**. Clear enough? Probably **not**. Well **integrated** with the **decision making** process? **Not** really. They **need to do more**, **get more integrated** into the **earlier stages of decisions** rather than **dealing with already designed projects**, they need to **get into the policy and resource management area."** This indicates that the deficiencies in the internal system of the SCE, in addition to the lack of representation, affect the development and employment of its regulations and laws. The implications of this on the environmental sustainability of the urban environment will be discussed later.

7.5.2   Out-dated Laws and Regulations and Development Challenges

In addition to the limited managerial role of the MoC employees, which was presented in (section 7.3.5), their contribution to the existing policies that guides the ministry's projects seemed also to be minimal and almost non-existent. This was argued by E/HCS/2.2 and E/UCS/2.3 who added "it is **tricky,** because **we never get what we want fully**, I **don't** know if it is the **lawlessness** of the **whole system**, or the fact that i**t is not going to happen** at all." Other foreign interviewees argued that change to the existing policies was mostly possible due to the expansion of the role of the MoC, which was discussed in (section 7.3.5), from being responsible merely for Architectural Conservation, to include Urban Conservation upon the introduction of the PTP, presented in (Section 6.6.2). E/HCS/2.2 explained, "The current **law** of the **MoC tackles only buildings** or the **built assets**, and it is the first time that the **MoC** is facing **an urban context**. So more **socio-economic matters**, and **interactions with other ministries** in the government ... our **experience** in the **PTP** is in fact highlighting **the lack of laws** and **policies** to the ministry, and we are **modifying our internal systems** to **allow that** constantly." E/HA/2.5 added, "**influencing the policies** is something that we are **starting on** now, **only in specific fields**, **urban heritage preservation**, [and] **beautification projects**[740], and we try to **cooperate with the MoM** to **enforce certain construction guidelines** in specific areas." The above not only indicates the vast lack of laws, regulations and policies in different fields in Bahrain, but also supports the findings in (section 7.3.2), because all of those interviewees who claimed to be working on modifying and developing the existing policies are expats who were employed by the MoC to work on the cultural heritage of Bahrain, and also the findings in (Sections 7.3.5 and 7.2), because the main reason for employing those expats to work on the development of regulation is the lack of local experts in those fields due to the deficiency of the architectural programme in UoB and the lack of urban specialisations.

This was also the case for the MoW: foreign employees declared and were confident that they were able to develop the policies of the ministry while other Bahraini employees stated that they mainly follow existing regulations. As an example of this E/CCP/4.4 claimed, "We actually **generate policies**, we **write policies."** This was not the case for L/CD/4.2 and L/CR/4.3, who affirmed, "no

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[740] The MoC is now heading the Bahrain beautification committee which is an inter-ministerial body, that is responsible for implementing a number of afforestation and beautification projects in different areas to improve the urban front and increase green cover for example overseeing projects related to public planning policies, landscaping projects, public art projects, façade regulations, but it still hasn't been activated to its full extent,

we **cannot change the policies,** we **can only propose a change to policy.**" Within the MoW, it was also evident throughout the interviews that the process of updating and developing policies and standards concerned with designing infrastructure was very slow, and L/CR/4.3 highlighted this. This issue was also evident in the MoM: L/HSU/5.4 acknowledged the need to update the existing laws of urban planning, which were explained in (section 6.4), arguing, "Our **urban planning law** was **issued in 1984**[741] and got **updated in 2004**[742]. It consists of **only two pages**[743] and **nobody has touched it since then** ... we have **a vague legislation**, which can be **interpreted in different ways.**" L/UDA/5.2 also highlighted the need for policies to preserve the local identity: "... they [MoM] **should make** some **regulations in cooperation with the MoC**, to **preserve the identity**, and **lead architects** and **developers to do things wisely.**" Furthermore, the literature showed the limitations of the policy concerned with the protection of cultural heritage in Bahrain[744], some of which were addressed by the interviewees of the MoC above.

One of the challenges that keeps the MoM from updating the existing regulations or introducing new policies seems to be the lengthy approval process: L/UDA/5.2 explained that "we had to **introduce a new building code** to **insulate buildings** then send it to the **parliament to be issued**, this process is **taking a long time**, the **law was drafted last year**, but **not all articles were enforced.**" It is important to note here that some of those articles were stated to have been enforced by other interviewees. This was highlighted in the previous section. Respectively, when asked about the possibility of developing the existing regulations, L/HD/5.6 argued that they are not entitled to change the policies and regulations, and that this was the job of the UPD, and other stakeholders. Similarly, the contribution of MoH interviewees in updating and changing the existing laws and policies of housing remains minimal; as L/HU/3.3 explained, "we have to **follow very strict policy** and **regulations** from other **stakeholders like the MoW** and **EWA**, so we **submit our plans**, **seek their feedback** and **negotiate** with them if there is **an area of negotiation.**" L/PA/3.2 also agreed with this.

Throughout the interviews with the MoH, it was evident that the current specifications and policies of the ministry are out-dated and don't completely comply with the current work of the ministry. Despite the fact that there seemed to be an indication of flexibility in the proposed designs as a result of this, the consequences of not having clear regulations and standards also had its effects on the ministry's output. L/PA /3.2 argued, "We have our **ministry book of specifications and standards,** which **we follow**, and there are the **MoM guidelines** that **we can follow** but they **don't completely apply to housing projects**, so **as a guideline** we could **go through that**, but if we find that we **need to change things**, it is always **flexible.**" L/A/3.4 also highlighted this flexibility. Similar to the situation in the UoB, which was explained earlier, employees of the MoH felt that changing the approach to projects is easier than changing the existing regulations. L/SSP/3.1 further argued, "we are working hard to **change** the way we **work with other authorities** and **bring new ideas** into other ministries, of course, there is **always a struggle**, we all have **different set of ideas and ideologies,** and we **want to stick with them.**" The interviewee also pointed out

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[741] Policy showed that the first law for urban planning in Bahrain dates back to 1994; the law was drafted based on earlier Legislative decrees concerned with; acquisition of land for public benefits, regulation of advertising, building regulations and public health. This was outlined in section 6.4.2.

[742] Referring to Legislative Law (No. 6) of the year 2005 with respect to amending certain provisions of legislative decrees with respect to acquisition of land for the public benefit, organization of buildings, constructional planning and division of land intended for construction, development and public road works and prime ministerial edict (No. 27) of the year 2005 with respect to determination of zoning regulations for construction in various parts of the kingdom, as amended by edict (No 71) of 2006. Those were all updated and amended with prime ministerial edict (No. 28) of the year 2009 with respect to determination of zoning regulations for construction in various areas of the kingdom.

[743] Refer to planning system in Bahrain, section 6.4

[744] Fay Al Khalifa, 'An Urban Healing Agenda for Reform in Bahrain: Where the Dweller Falls into the Urban Gap and the Sailing Boat Hits the Skyscraper.'; Al-Khalifa, 'An Urban Healing Agenda for Reform in Bahrain: Where the Dweller Falls into the Urban Gap and the Sailing Boat Hits the Skyscraper.'

the possibility of developing new areas and implement them, even if they were not part of the existing set of policies and laws, which is yet another indication of the out-date of policies and "loose" regulations of the ministry.

Despite the argument set out above, it is worth mentioning that there still seemed to be a practice of development in housing policies, regardless of the rigour and speed of that process. For example, L/PA/3.2 highlighted: "I am now **directing a project called "Masaken"** which consists of **buildings planned in different governorates** [Figure 6-2] in Bahrain, to **shelter Bahraini women** who are **divorced, widowed and non-married**. Originally, in our **regulations**, those [groups] **do not benefit from social housing services**, so we **needed to change the policy to accommodate them**[745]". Moreover, the policy analysis showed that the government is also working on renovating and rebuilding the houses of the limited income population including divorced, widowed and non-married, orphans and senior citizens[746]. This tolerance to changing the rules and regulations of the MoH is not only slow, but is also new and have been brought with the arrival of new foreign ideas to the public housing profession in Bahrain, L/PA/3.2. This shows that, in general, there is an urgent need to develop housing policies, laws and regulations in Bahrain to solve the large demand for public housing projects. More of that will be explained in chapter 9.

7.6 The Connection between Governmental Organisations Concerned with the Built Environment

Interviewees were asked about the relationship their organisation has with other bodies concerned with the built environment in Bahrain. This relationship between different organisations is essential for the understanding of the decision making process. The responses were incorporated into (Figure 7-7), and the main findings of the responses are outlined below.

All interviewees from the UoB and other governmental organisations concerned with the built environment agreed that the link between academia and practice in Bahrain should be bridged. Relationships between the DoA and other organisations have been described as "limited", "shallow", "naïve", and in a few instances "non-existent". The interviewees discussed how the relationship between academia and practice was limited to events, projects, short courses and competitions rather than long-term coordination and research. Interviewees called upon a need to "bridge in between" the two and to establish "a real institution to maintain this relationship in the long run". Interviewees from the DoA complained that the current regulations of the university do not allow for such collaboration by "restricting the relationship between academia and practice." There are currently a few ongoing relationships on the HR level, such as the collaboration with the industrial training[747] programme and recruiting architecture graduates.

Interviewees from the UoB argued that the current communication is based on students' projects and events, which should rather be extended to allow the staff to participate. Interviewees explained that the UoB has highly skilled staff who are experts in different fields and specialisations. Nevertheless, while interviewees from the university thought that other organisations should approach them for advice and consultancy, others believed that it is the university's responsibility to reach out to them because they are always busy doing their own time- and money-consuming work. Interviewees argued that governmental ministries are at the maximum yearly budget given by the government and are therefore not able to propose projects or

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[745] The basis of this modification was a ministerial order (12) for the year 2004 which states the Bahraini women with child custody rights in housing services

[746] Supreme Council Of The Enviroment, *Bahrain's Achievements in the Field of Sustainable Development.*

[747] The industrial training is part of the curriculum at the DoA, students of architecture must undergo a two months summer training program in any organisation, based on openings and availability of places each summer.

programmes that strengthen their relationship with academia, whereas, they argued, it should be easily done by the UoB for it will only require the alteration of the existing curriculum while still working within its capacity. Interviewees argued that it is important to establish a link with the UoB from a "future manpower planning point of view" because if the government is seeking to employ architecture graduates from UoB, they should encourage channelling their expertise to serve their future agendas. Thus, depending on the state's needs, the university should know what skills and expertise to produce and what specialisations to encourage. Interviewees from outside of academia suggested that meetings should be held between academics from UoB and professionals from other governmental sectors to exchange know-how, new knowledge and to stay updated on new theoretical notions and new governmental strategies and plans.

Interviewees argued that the relationship between different governmental bodies in Bahrain is not ideal, because politics and the need to attain "credit" and "public acceptance" results in an unhealthy competitive environment that affects the end products and deliverables of those organisations negatively. Interviewees from the EFO argued that the SCE is not working enough because they do not have the capacity to deal with hazardous waste, an issue that will be further discussed later. Moreover, they also argued, along with others from the DoA, that the relationship between the MoC and the UoB has been fluctuating over the years. The relationship was strong in 2002 and then got weaker before it strengthened again between 2010 and 2013. The relationship between the MoC and the UoB has stopped after few failed attempts by the FEO to get the MoC involved in a joint project. Another troubled relationship is between the MoC and the MoM: interviewees from the MoC argued that officials in the MoM lack coordination while the later argued that the MoC underestimates their authority. A lot about this will be further highlighted in the coming chapters.
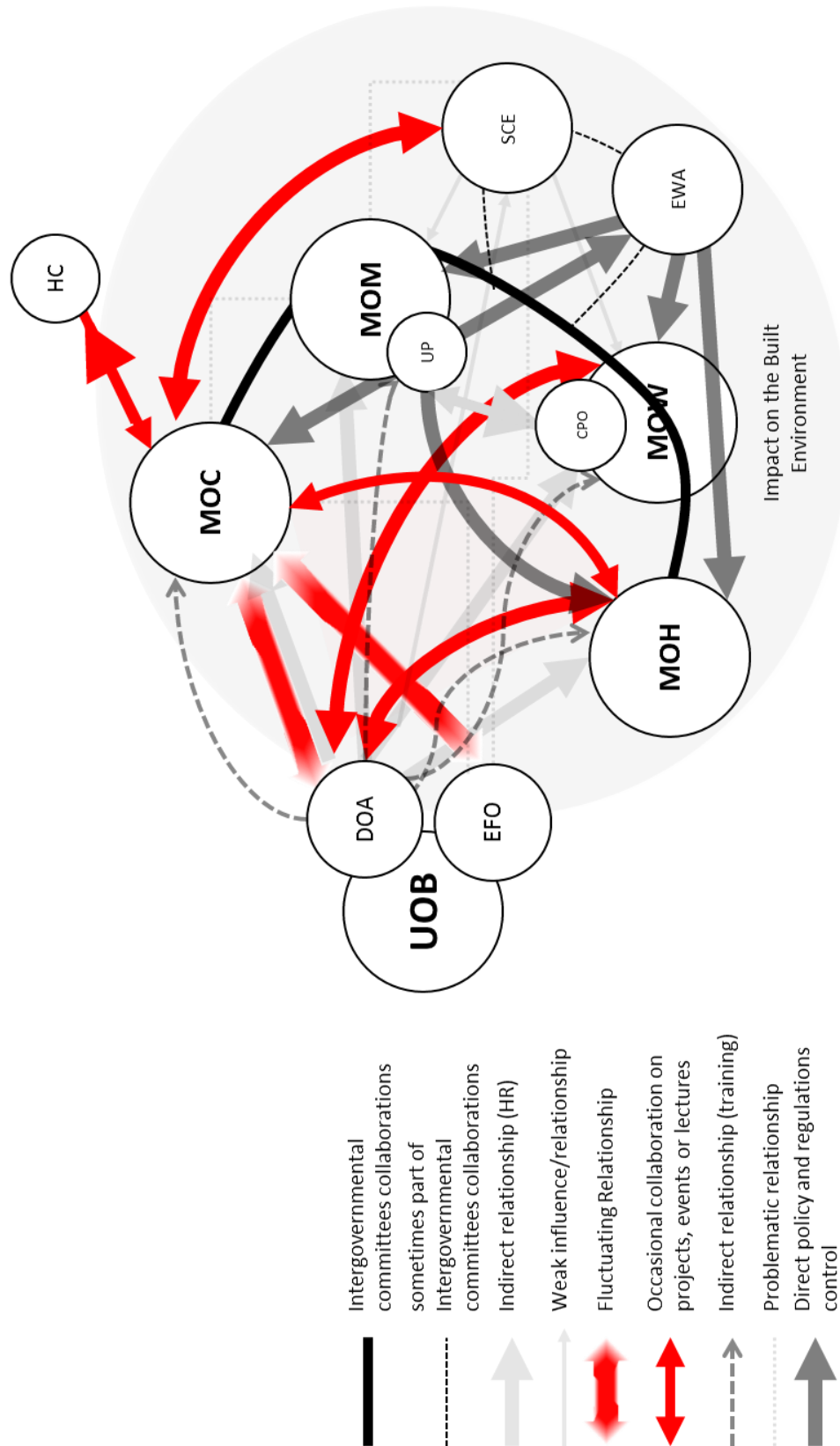
Figure 7-7 The connections between governmental organisations concerned with the built environment in Bahrain, as described by the interviewees[748]

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[748] Should be read alongside the list of abbreviations on page 9

7.7 Conclusion

This chapter clearly illustrates that there is a lack of proper urban and architectural education in Bahrain, which results in a shortage of qualified Bahrainis to work in various organisations concerned with the built environment. The chapter shows that this absence of Bahraini skills is the main reason for the continuation of dependency on foreign workforce, consultancy and knowledge, which not only results in the import of foreign ideas but also the decrease in awareness and sensitivity to the context, culture and environment. This unsustainable process seems to result in unsustainable urban environments, and the lack of sustainable examples in the architecture and urban environments, in its turn, is another cause for the decline of urban studies in Bahrain. It addition, it was clear from this chapter that this lack of local experts resulted in secrecy of policies, law and regulations in Bahrain, which had its negative influences on the sustainability of the urban environment, as illustrated in the chart below. The coming chapter will examine the governmental officials' understanding of cultural change and the degree to which they think the change in our culture has affected the sustainability of the urban environment in Bahrain.
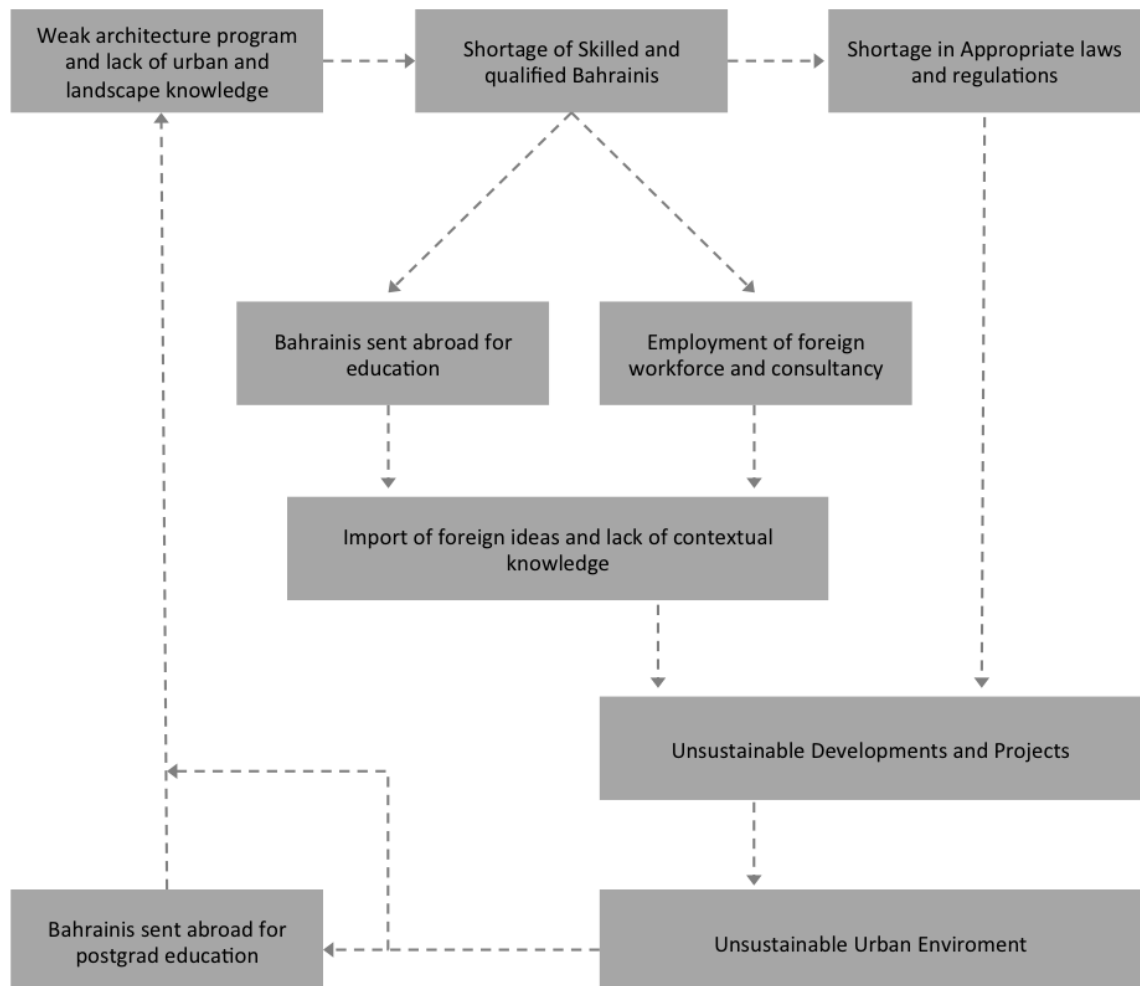
Figure 7-8 Chart summarising the main education and training barriers and deficiencies and their consequences on the urban environment

"If we were cars and not people, Bahrain would be the perfect place to live in, it would be awesome, we would have really good roads and services, so Bahrain is sustainable for cars, but not for people … People are stuck, and cannot go anywhere without having mechanical transport."

L/A/3.4

8.1 Introduction

Cultural change was defined in chapter 3 as the alteration of cultures around the world due to either external or internal forces or sometimes a combination of both. This chapter explains the interviewed officials' degree of understanding of the process of cultural change, and its effects on the urban environment in Bahrain. It starts by examining their understanding of the concept of cultural change, in addition to the degree to which they think this process is understood and addressed in their organisations. The chapter then examines the recognised effects of cultural change on the urban environment in Bahrain and ends by explaining how this change materialised in different urban areas in Bahrain. This will help achieve the second research objective (Section 1.2) by understanding the transforming culture of Bahrain and the role of governmental officials in stimulating or preventing this change.

8.2 Understanding and Addressing Issues and Concepts of Cultural Change

Throughout the interviews with various governmental organisations, it appeared that the process of cultural change was well recognised. However, there was no deep understanding of its concepts or dynamics. Interviewees realised that the Bahraini culture has changed and were able to highlight the causes of that change, and its consequences on the urban fabric. However, there was less realisation and limited understanding of the role of governmental organisations in the continuity of this phenomenon and subsequent consequences on the urban environment in Bahrain today.

8.2.1 Understanding and Addressing Cultural Change in Academia

8.2.1.1 Understanding Cultural Change in Academia

Interviewee	Understanding of Culture	Understanding of Cultural Change
E/AP/1.1	Total **material and non-material production** of a given group of people ... [those] will grow, [and] change with time, age, and getting exposed ... [so] whatever they produce in terms of **ideas, thinking and materials** are constantly in change.	Culture is constantly in change; this is a natural thing ... culture constitutes at least two major components ... the **core** and the **periphery** ... the core is constituted of **the essential values** that a certain group of people or society will hold so dear and, therefore, will not allow [to] change so easily. Whereas periphery is what is likely to come in contact with other cultures on a daily basis and, therefore, has the **flexibility to adapt and change** ... So peripheral culture is **constantly changing** and ... it takes **generations for the core to change** ... This is how I think culture change happens; transformation is **inevitable.**
L/CID/1.2		Cultural change is to reach a point where you call things [which] were happening **10–20 years ago** [different]. You feel they were happening in a completely **different** world.
L/DEO/1.3	Not Given	[in the context of achieving a green campus] Changing cultures **takes time** and sometimes **tough stands**, you need to show people examples and **implement** those on yourself first, then **show others** that it could work. Sometimes the **appreciation** comes immediately, [but] other people take a longer time to appreciate it, and many people [will] **object** to it.
L/TA/1.4		Cultural transformation takes place **through time**, so we witness the change through the different **generations** [by] comparing our **grandfathers'** way of **thinking**, and **living** and how **we** are **living** and **thinking** now. We now **accept** things, which were previously **not accepted**.
L/AP/1.5	It is very **difficult**, [to] define culture, it [has] a very **tricky** and **vague** definition.	Especially in this century you cannot ignore the **external factors** [causing] cultural change. Definitely, we are becoming **villages**, I think definitely **interior and exterior** [factors are causing cultural change].
L/L/1.6	Not Given	Change is one of the **facts** of life, life circumstances always make you **revise** your step and assess what you have done so far, is that what you want, does that lead to your objective? ... life teaches us to **observe** change and make [it] a positive thing,

Table 8-1 The UoB interviewees' understanding of culture and cultural change

Interviewee	Understanding and awareness of Cultural Change
E/AP/1.1	I am **not sure** if there is a real understanding of culture change. Because culture change is **not necessarily a focus of attention** at all ... I would think the faculty would be rather **subconsciously aware** of these changes, but **not necessarily focusing** as such on cultural change.
	We see visible changes that are happening around Bahrain, which culturally sometimes are not compatible with the core culture of Bahraini people and therefore they become **aware** of these changes ... we are also having **various nationalities** working in the department, we are constantly coming in touch with different nationalities, so we suddenly become **aware** of those **cultural differences** and I think the students are also exposed to this ... I am sure there is a great degree of sensitivity and understanding about **the presence** and **differences of culture** but I am **not so sure** whether there is a real understanding of this idea called cultural change and how it happens and its implications and so on.
	I think the general understanding is that culture change is **externally influenced**. Because what are quite visible always are the **externalities** ... The **globalisation** ... And, therefore, you yourself do not know that some of the changes are happening in you, or your own community.
L/CID/1.2	Maybe students' age [18–23] will **not allow them to understand** that there is any change. They have experienced the last ten years, [where] the change is not much ... but [in] the last thirty years, there was **a lot of change** in the **behaviours** [and] **the environment** in general.
L/DEO/1.3	Some [students and staff] **do** and some **don't**, but in general it is an issue that a lot of people **are discussing now**, whether it is **degradation of culture** or the **need to change** the culture, both issues are being tackled at the moment ... [cultural change] **is understood**, especially after the **troubles** that we had in **2011**, this became a very clear issue.
L/TA/1.4	I do not think so, no. There is no such awareness of cultural change.
	In our **environment** in general and the **University** in particular we **don't** want to have this **racism**, we want to be **away from differentiating** among people [so] we **don't focus** on culture issues as much as possible ... we keep those questions for our self; we do not expose them.
L/AP/1.5	I **doubt** that there is an **awareness** of cultural change. I **do not** think that we even **question** it.
L/L/1.6	Not Given

Table 8-2 Understanding and awareness of cultural change among students and other staff of the DoA

(Table 8-1) shows that local interviewees expressed a shallow understanding of cultural change and were having difficulty explaining culture. Cultural change was described as the changing lifestyles adopted by different generations or the willingness to accept and encourage changes in standards of living. This, in addition to the findings in (Table 8-2), indicates that they were aware of the transformation of the Bahraini culture, but were not able to put into words a robust definition of cultural change or explain the dynamics of this process. On the other hand, it is notable that E/AP/1.1, unlike all other local interviewees, gave a deep understanding of culture and the process of cultural change.

Furthermore, (Table 8-2) shows that interviewees acknowledged the limited awareness of the specifics of cultural change between the rest of the staff and students and highlighted that cultural change is not a focus of their attention. A minority believed that there is a rising consciousness about cultural matters in general and related this to the 2011 political events explained in

(section 6.3), the implications of which are beyond the scope of this research. The findings, therefore, indicate that topics of cultural differences and change in the Bahraini culture could also be avoided. This raises questions about the sensitivity of the architecture programme to contextual matters, given that Bahrain is located in one of the fastest transforming regions of the world, and points out the implications of this lack of awareness or avoidance on the continued dependency on foreign knowledge and the adaptation of international programmes, curriculums and course objectives, which was set out in the previous chapter.

8.2.1.2 Addressing Cultural Change in Teaching

It was evident throughout the interviews that although the subject of cultural change is not a focus of the architectural programme, it is an issue that occasionally surfaces, especially in design courses (E/AP/1.1) or whenever a study of a site and its context is required (E/CID/1.2 and L/DEO/1.3). On the other hand, L/AP/1.5 argued that discussing issues of cultural change is a personal choice of students, rather than a prerequisite. The interviewees also mentioned other courses: Theory of Architecture, Indigenous Architecture of Bahrain, Contemporary Architecture, and The Climate for Architecture, in addition to the elective urban design and planning courses. The surfacing of this issue when discussing a local case study and in the variety of the above-mentioned courses is evidence of the strong reality of this phenomenon in Bahrain and raises concerns about the limited understanding of the faculty of the dynamics and specifics of cultural change and the influence of this on their students. Some interviewees claimed that the existing culture was being or should be discussed more often in the courses of contemporary architecture or indigenous architecture rather than the change of culture. However, a review of the course content of these courses showed that there is rather a focus on contemporary foreign architecture, and technical details of the historic indigenous architecture of Bahrain. L/AP/1.5 supported this by saying "we **don't** tackle the existing culture directly, and it's rarely mentioned, because we talk about **technical** issues **more than** we talk about the **culture or social** aspects."

8.2.1.3 Relationship Between Cultural Change and Architectural Education in Bahrain

Throughout the interviews, it appeared that there are relationships between cultural change and the practice of architectural education in Bahrain. One was the effect of foreign knowledge, expertise and language on the local students and culture, which was set out in (section 7.3.1). Other relationships were also discussed. E/AP/1.1 argued that globalisation and the use of technology are influences of cultural change on students of architecture: "**the world** has **changed**. [Students] have access to the **Internet** and **mobile phones** and all those **technologies**. Some of the changes that are happening inside the classrooms **are beyond** our control … so they are in a **global space**." A larger discussion of the relationship between cultural change and technology will be set out in the coming sections. Another consequence of cultural change affecting students of architecture was argued to be their immediate unsustainable environment. L/DEO/1.3 argued that "students of architecture … spend their life **learning** from their **immediate environment**, so they come loaded with **ideas** … we **struggle to change** some of those ideas[749] … and sometimes we **fail to change** them." This relates to the conclusion of the previous chapter and indicates the importance of the immediate environment from which students are influenced, in the understanding of urban sustainability and imagining the quality of a healthy setting. Also, this raises questions about the role of teachers and their understanding of sustainability; this will be discussed in the next chapter. L/AP/1.5 also stressed that the students' environment, along with their backgrounds and context, plays a role in shaping their ideologies.

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[749] The interviewee here was referring to ideas of consumerism and the unsustainable lifestyle of students

While the above showed that cultural change has affected the education of architecture, L/TA/1.4 and L/AP/1.5 also discussed the possibility of architecture students to cause a cultural change in the future because of their architectural education. The interviewees here tell of positive changes in society because of higher levels of education. This relates to the discussion in Chapter 7 about the lack of local experts in fields related to the designing and planning of sustainable urban environments. It is evident from the argument above that there is a relationship between the education of architecture and cultural change. (Figure 8-1) illustrates this relationship and highlights the different influences affecting architecture education in Bahrain.

Key Findings:
1.   Local interviewees expressed a shallow understanding of cultural change while a non-local interviewee showed an in-depth comprehension of the concepts and dynamics.
2.   The understanding of cultural change was mostly related to adopting different lifestyles.
3.   Cultural change is not a focus of attention in the architecture curriculum, and the subject occasionally comes up when discussing local cases, especially in design courses.
4.   Interviewees acknowledged the limited awareness of the dynamics of cultural change between the rest of the staff and students.
5.   Cultural change and the education of architecture in Bahrain have a two-way relationship; the change in the local culture of students was argued to be influenced by the following:
   - Foreign staff and their different cultural backgrounds
   - The adaptation of foreign knowledge, programmes and curriculums
   - Globalisation and technology
   - Immediate uinsustainable environment
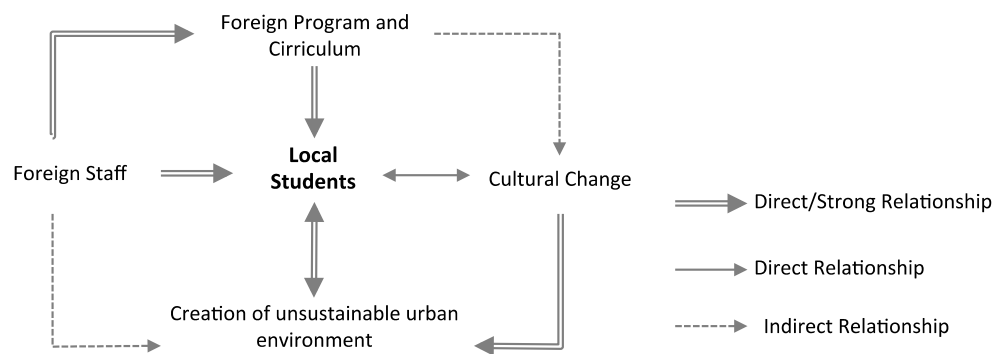
Figure 8-1 The relationship between cultural change and architectural education in Bahrain

8.2.2 Understanding and Addressing Cultural Change in Various Organisations Concerned with the Built Environment

Given that the MoC is the organisation responsible for cultural heritage in Bahrain, unsurprisingly, there appeared to be more understanding of cultural change within the ministry than other organisations, regardless of the depth and complexity of this understanding. Both local and non-local interviewees were able to explain its concepts, for example L/AE/2.1, who described cultural change in the following words: "culture is whatever touches upon people's **beliefs**, everyday **habits**, and **traditions**, so cultural change is how these **habits, customs** or **daily rituals** have changed across generations, either due to **foreign influences** or due to different **lifestyles.**" Similar definitions were recorded from other MoC staff. The data also showed that the interviewees of the MoC are aware of the process of cultural change in Bahrain. For example, L/A/2.4 explained, "I think **everything transformed**, our **language changed**, even the **design of houses** from the 50s, 60s and 70s, all of these **went through this transition** ... and this transformation has **different images** to it, now the **old neighbourhoods** in Muharraq and Manama [Chapter 6] are **an image** of this transformation." Moreover, E/HC/6.1 who is in direct contact with the MoC, also showed that the people of the MoC are well aware of the cultural transformation in the region.

E/HA/2.5 highlighted the intervention of the MoC to protect cultural heritage during the last decade by conserving old buildings and protecting important historical sites: "the opposing cultural changes which **were happening** more or less since the 80s and 90s with such **a dramatic speed** had **reached their paroxysm [apex]** two or three years ago, and we [MoC] **intervened** at the same time." Along the same line of discussion, E/UCS/2.3 explained the magnitude of change in the Bahraini culture: "The big [cultural] **change happened already** ... I am **not sure** if it is now a point to talk about [cultural change]. We can talk about **identity,** and **preserving** a certain **attachment or link** to the **previous culture** or **tradition** of Bahrain ... Today **a lot** of things **changed**, it is **another culture.**" Other interviewees from the MoC had similar inputs. Those explanations raise concerns about the understanding of the MoC of the continuity of cultural change, which will be reflected on later. However, such statements show that there is a realisation of this phenomenon and acknowledgement that the Bahraini culture changed dramatically.

It was also noted that while foreign interviewees claimed that there was a general understanding of cultural change in the MoC, local interviewees thought that this process is not being addressed vigorously in the ministry. As an example of the two opposite opinions, E/HCS/2.2 claimed "there is an **understanding** of cultural change in the ministry, and actually **at various levels**, certainly, **internationalism** as an **external factor** is well **understood**, and for **internal** matters, of course, there are many factors that the MoC is very **aware** of, such as **economic** matters." On the other hand, L/A/2.4 highlighted the lack of awareness of the importance of culture and its protection: "the numbers of **studies** about cultural change at the national level are **limited**, second, we **don't have** an **awareness** of why heritage should be protected ... this **specialisation** is **new** in Bahrain." This relates to the argument in chapter 7 and indicates that there is a relationship between the lack of expertise and the understanding of the process of cultural change, which is recognised by the interviewee.

Moreover, E/UCS/2.3 highlighted that although there is a realisation of cultural change at MoC, culture is mistakenly being limited to iconic objects, saying, "there is a **reaction** [to preserve heritage], but it is often a reaction that only tries to **re-establish** and **freeze icons** of **heritage** rather than **re-establishing** the **link** with the **past**." This was also discussed by L/HSU/5.4 and L/HD/5.6 from the MoM. This indicates a relationship between this shallow understanding of cultural heritage and the change in culture and raises concerns about the consequences of this in the urban setting, which will be discussed in the coming sections.

A simpler understanding of cultural change was found within the MoH, MoM, MoW and SCE similar to that of the UoB and more connected to the changing lifestyles of inhabitants. For example, L/HU/3.3 explained, "cultural change is more related to the **behaviour** of the **citizens**, and the **new trends** and **beliefs** that come with the **new generations**. Culture now is **very different** from **twenty years ago** … it is very **obvious** that it has **changed**." This also relates to the loss of the link to the previous culture as debated above by the interviewee from the MoC and the complete transformation of the Bahraini culture today. All other interviewees had similar understandings.

A number of interviewees from various organisations associated cultural change with external influences; L/SSP/3.1 argued that "Cultural change is the **influences** from **abroad** … from the **Gulf**, or **international influences**, the **good** and the **bad**, and how we **accept** them. It is seen in our **education**, **health, commerce**, and **economy …** we are **struggling** between **keeping** our **identity** and **moving forward** with time." E/CCP/4.4, L/HSU/5.4 and L/SSP/3.1 had similar views. It appears from the findings that the interviewees describe the local culture as "dramatically changed" and stressed the protection of what is unique about the current culture from further changes. This also relates to the perceptions of other westerners who have lived in Bahrain. Costandi (2014) said about Bahrain: "… it is currently struggling to meet the demands of globalisation while guarding its authentic character and not losing its cultural and historical compass"[750].

Most interviewees of MoH doubted that there is a real understanding of cultural change in the ministry; for example, as L/SSP/3.1 highlighted, "I would say **80%** of the employees **don't** understand it, and **20% do**." L/PA/3.2 added, "there is **not much** understanding of cultural change, but it's **improving** … We **gain** knowledge about cultural change when we are **exposed** to other **cultures abroad** while studying, and then we **import** those ideas here, and that is a **new** thing." Other similar responses were recorded. This highlights that the understanding of cultural change is also a form of external knowledge, and indicates that only recently, people in Bahrain started to look and reflect on the dramatic cultural change that Bahrain went and is still going through, which will be discussed in the coming sections.

Within the MoM, it appeared that the understanding of cultural change was very particular to the nature of the work. For example, L/HB/5.1 explained cultural change from a landscape perspective, saying "Cultural change in **landscape** relates to changing the **old-fashioned designs** of **gardens** and **parks** to a **new, modern** approach to **designing**." E/UPA/5.5 related cultural change to urban planning, saying "it's quite **important** that we talk about cultural change from an **urban development perspective**. … to guarantee that we make a **balance** between the **cultural aspects**, **aspirations**, as well as the **planning considerations**." Opposite opinions were also recorded: L/CU/5.3, a young architect working in a planning post, claimed that their work was not connected to cultural change at all. This refers to the argument in chapter 7 and highlights the quality of young graduates, their understanding of cultural matters and eventually their influence on the urban environment in Bahrain. L/HSU/5.4 explained "it's all to **cope** with the **international trend**, and [the] need to increase the **awareness** of people to **accept** the **international change**, because we started to **look** at what **other countries** have and try to **improve** in different sectors here." This indicates that cultural change is encouraged in the MoM and that practices of other cultures are being adopted in an attempt to improve the local performances. Similar findings were also found in the MoH, and a worked example of this will be illustrated in Chapter 9.

It is worth noting here that while most foreign interviewees thought that Bahrain is doing a good job in preserving its local identity, local interviewees were convinced that this was not the case. As

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[750] Costandi.

an example of this opposing debate, E/CCP/4.4 highlighted that "**Bahrain** is doing a **very good job** in walking the **tightrope** and making the **balance** between **living in the world** ... [and] **protecting** the **values** of the country, the **religion**, the **family structure**, all of those things are part of **holding on.**" Inversely, LSSP/3.1 told how "a lot of the **newer generation** have **lost** their cultural **identity** ... There are **lots** of things they are **missing out on,** which were **good** about ... [the] **previous culture**."

Key findings:

- There is a comprehension of the reality of the phenomenon of cultural change in Bahrain. However, there is also a lack of understanding of the concepts, dynamics and implications of this phenomenon. Greater understanding of this process was evident at the MoC than other organisations; however, the MoC view of cultural change was that it is a process that happened in the past and does not continue to happen today in the same dramatic sense or to the same extent.

- Mostly foreign employees of the MoC believed that there is a general understanding of the concepts of cultural change at the ministry while local interviewees held the opposite opinion. This highlights the different levels of awareness about the dynamics of cultural change and could be an indication of a lack of communication. Ideas of cultural sensitivity are not being discussed by the majority of foreign staff with junior local employees who appeared to be less aware of the implications of cultural change and the direct influence on their work.

- Some interviewees criticised the government's attempts to preserve the remaining cultural heritage as superficial, and that the iconic and physical representation of culture does not bring back the lost value of the traditional Bahraini culture. They also highlighted the need to establish the lost link with what was referred to as the previous culture.

- Cultural change was defined by most interviewees in relation to internationalism and globalisation and was explained as the change in lifestyles of inhabitants. It was clear through the interviews that cultural change is not a focus of attention in most of the interviewed organisations and that the understanding of this process was limited to, in most cases, the nature of work of the interviewee.

- Local interviewees acknowledged that the local culture of Bahrain has transformed dramatically; however, foreigners expressed an opposing opinion and claimed that Bahrain was able to preserve its cultural identity.

8.2.3 Recognised Images of Cultural Change in the Arabian Gulf

The findings in the previous sections showed that there is a realisation of cultural change and the dramatic transformation that happened in the area in various governmental organisations concerned with the built environment in Bahrain. Interviewees acknowledged the magnitude of cultural change in the region; for example, E/AP/1.1 highlighted how "The **original cultures** that **existed** in this part of the world are **almost not visible** nowadays." L/CID/1.2 added, "**No place** in the world **witnessed** cultural change **more than us** [Arabian Gulf] ... starting from the way we **dress**, **talk**, almost [in] **everything.**" L/AE/2.1 argued that the change in the region was gradual and could be referenced to milestones in history. The depth of this realisation will be further detailed in this section, and the different images, causes and impacts of cultural change in the region will be outlined.

Interviewees described the different models of cultural change in the Arabian Gulf context. L/AE/2.1 explained: "Change is **evident**, in the way people **think**, and **react** with each other, in **relationships** between families, and friends, those **changed a lot** ... also some change in **customs** and **arts.**" E/HCS/2.2 added, "from recent **visits** to some places in **the Gulf**, I can see **very well**, that cultural transformation is quite **radical** and **fast**. The **local identity** is being very much **disfigured**, **not** perhaps in the **look** but in the **essence** of things. There are some **efforts** here and there to **keep** the **looks** of heritage." This relates to the argument in (section8.2.2) of the iconic understanding of heritage and culture. The interviewee added, "**Bahrain** went through **radical transformations** during the **60s**, **70s** and, in particular, **the 80s**, which had **direct implications** for the **built fabric** ... also [on] **human habits** and **human interaction** with their **local heritage** matters." L/DEO/1.3 also highlighted the change in the social relationships in Bahrain, saying, "I look at it [Bahraini society] as **a group of people trapped in a space**, there is **no consistency** between [them], they are not **behaving** as a **society**, there is no one single **objective** ... and the **majority don't** deal with their **environment** as their **bigger home**, they are treating their **houses** like **castles** and they **don't care** about whatever is happening **outside.**" Another image of cultural change was argued to be the change of ideologies and beliefs: as L/TA/1.4 highlighted, "in the **media**, we now see many things, which were **banned before**. So they started to **change** their **cultural acceptance** towards things."

L/CR/4.3 highlighted that cultural change is evident in education: "**Education developed**, now we have many **private schools** ... We were **previously** taught **English** only when we reached **fourth grade**, **now** they are teaching it from **nursery** ... I remember in **governmental schools**, we **used** to solve mathematical problems **without knowing why** .. **Now**, they **show** them **why** ... I **was** one of the **only people** who worked as an **engineer**, **now,** there are **many** ... So there is a cultural change and everything [is] **developed.**" This raises concerns about the understanding of cultural change and the perceptions of it as a positive add-on to society.

Key Findings:

- Interviewees recognised that cultural change in the Gulf has affected language, people's interests, ideologies, lifestyles, relationships, and education.
- This was also reflected in the social structure and urban environment in this area; the latter will be discussed in detail in the coming sections.

8.2.4 Recognized Influences on, and of, Cultural Change in the Arabian Gulf

Interviewees recognised that wealth that materialised after the discovery of oil was the primary facilitator of the development that led to the change of the local culture and urban environment, as E/AP/1.1 highlighted: "the discovery of **oil**, and the increased **wealth** that necessitated **extensive developments** to feed the **aspirations** and **desires** that **grew** up with the increased wealth ... the moment you have got **wealth** in your hand, you have access to **luxury** stuff, [like] **cars** and naturally, to **sustain** them, you need to **build roads** and so on." L/A/2.4 also highlighted how "We started thinking that we **don't** need the **wind tower**[751] ... in the old city of **Muharraq** we have **only two** wind towers left ... People's **ideologies** changed, in general, they **now** believe that **it brings in dirt** ... it is the **growth** and **booming** that happened after the **oil**, which **changed our mentalities** a lot." E/HC/6.1 also added, "**oil** has brought in a lot of **social** and **economic changes**, leaving the question of **heritage aside.**" Many similar responses were recorded, and the above are examples from various organisations.

Few other local and non-local interviewees also argued that the exposure to other cultures is another primary cause of cultural change in the region. E/AP/1.1 highlighted that "The **Gulf** has been able to bring in **technologies**, **know-how**, **understandings** and **knowledge** from **around the world** with **ease**. Therefore, things have **changed.**" This was also highlighted by E/UDA/5.2 and L/CID/1.2. Correspondingly L/A/2.4 argued that the ports of Bahrain were subject to cultural change more than interior villages, because of their exposure to foreign cultures, saying, "In **Manama,** the **dress code** and the **language** changed because of the **flourishing of trade** between India and Bahrain. Some **villages preserved** their **properties**, but **cities** like **Muharraq** and **Manama didn't**, even some of the **words** used were either **Persian** or **Indian**, this is also part of cultural transformation." It is clear here and from previous arguments that the economic and exterior influences associated with cultural change are highly understood. Meanwhile, the interior influences such as the lack of local skills and expertise were not much addressed. This explains the continuity of cultural change and the reality of its damaging consequences.

Another influence of change mentioned was the use of technologies for mobility and communication (L/AP/1.5). This was a consequence of the excessive wealth which materialised after the discovery of oil (E/UCS/2.3). Furthermore, L/DEO/1.3 argued that the use of the car and the dependency on housemaids[752] to do housework have influenced our culture negatively: "the two biggest **destructive forces** in our **society**, if we **remove** them out of the formula, we would have a **better society** ... **future generations** would be in an even **worse** condition." This also relates to the discussion about migrants (Table 6-11). Other interviewees mentioned technology in general and the car specifically as the main driver for cultural change; E/HA/2.5 added, " I would say things **changed largely** at the time of **introduction** of the **car,** because that really **changed the scale** of the **urban fabric.**" E/HC/6.1 supported this.

Key Findings:

- Interviewees were able to highlight the different influences of, and on, cultural change.
- Interviewees identified the same forces of change to both the culture and the sustainability of the urban environment.

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[751] A wind tower is a feature of the indigenous architecture in the Arabian Gulf. Towers have been used historically to catch cool wind breeze and direct it downwards to cool spaces. This is today replaced with the contemporary air conditioning system.

[752] The dependency on cheap workforce to perform house chores is considered one sign of consumerism in the Arabian Gulf society. This has been established in literature and is common knowledge in the region.

- Most interviewees identified oil, and the consequent sudden wealth, in addition to the exposure to foreign cultures and the adaptation of advanced technologies, as the main forces of change to both Bahrain's culture and the sustainability of the urban environment. This, in addition to the lack of local expertise which was illustrated in (section7.3.5), resulted in the import of foreign skills and knowledge and facilitated the adaptation of new technologies which eventually resulted in the change of the urban environment. This process is illustrated in (Figure 8-2).
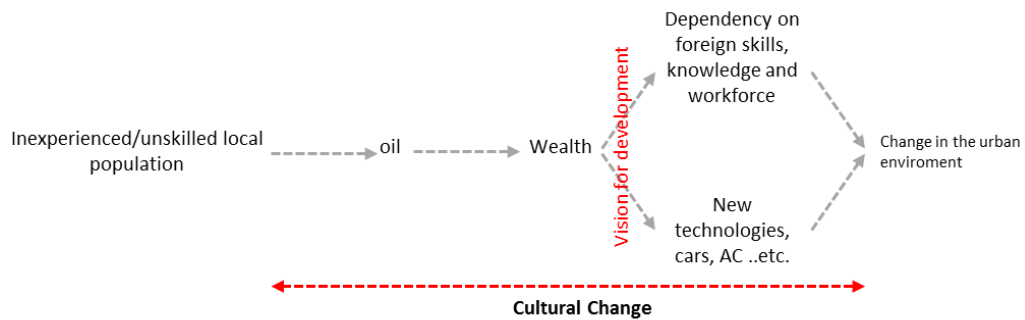
Figure 8-2 The process of cultural change and its effect on the urban environment

8.2.5 Perceptions of Public Understanding of Cultural Change and the Role of Governmental Organisations in Promoting this Understanding

Interviewees described the phenomenon of cultural change as apparent to the general public and that most inhabitants of the islands (like all interviewed officials) realise the dramatic changes Bahrain has been through. For example, E/HA/2.5 said "yes, the **public understands** this [cultural change], increasingly." Nevertheless, interviewees also debated that although the public realise that culture is changing, there doesn't seem to be a reaction against those changes: L/AE/2.1 pointed out "**there is** an **understanding,** but there **isn't** the **will to do anything** about it." E/HCS/2.2 added, "they [the public] **cherish** the heritage and the **past** ... in terms of **memory** ... **some** people **do not understand** the **assets** [and] **benefits** of what they **had** in hand **before,** and maybe **ignored them willingly**, but the public **do understand** that there is cultural transformation happening **very clearly**." This raises concerns about the percieved lack of public understanding of the value of culture, and subsequently the role of the MoC as the governmental organisation responsible for spreading awareness about the importance of preserving the cultural heritage of Bahrain, and the consequences of not doing this in the urban environment. This will be discussed further in the coming sections. Also, this raises concerns about what contribution the public may feel it can or cannot make to the decision making process. This is beyond the scope of this study and was addressed in the research limitations section in chapter 4.

The role of the MoC in spreading awareness about cultural change was discussed with interviewees from the ministry. Foreign interviewees argued that culture or cultural change is not an issue that the ministry is focused on spreading awareness about; rather, it is underlying in their projects and activities. For example, E/HCS/2.2 highlighted, "I **don't** think that culture is a matter that you **teach** or **do public awareness** for ... the **MoC** can **only assess** the situation and **enhance or activate** some **mechanism**, to **highlight** aspects that needs to be **enforced** in the **current culture** of people,

or needs to be **revived** in their **lifestyles.**" E/HA/2.5 supported this. Also, foreign interviewees claimed that there is an increase in public awareness about the importance of culture as a result of the ministry's work. E/HA/2.5 highlighted, "People are starting to **understand** the **breadth** of what culture is, and it is **not** only a **superficial understanding** of organising events … the **connections** between **culture, social changes** and the **social sense** on a wider scale are **starting** to become clearer." Other foreign interviewees had similar inputs. Conversely, L/A/2.4 argued that there is an obvious miscommunication between the ministry and the public, saying that "In the pearling project [PTP], we **do not** have a **communications** team. So this **involvement** with the **community** is **not** happening, and maybe **more communication** could help." L/AE/2.1 highlighted the lack of public understanding to the role of the MoC in promoting and preserving culture and heritage: "**Not** the **majority**, there is I think a **particular group** of people who are **aware** of the **role of the ministry**, our culture and our events, but to the **general population** culture is either **a side issue** or **a luxury** that we may **not afford** at the moment." This relates to the argument set out in previous sections and indicates the improper employment of a foreign workforce and consultancy to work with the local culture and the consequences of that for the public understanding and awareness of the importance of culture. Although foreign interviewees claimed that there was no need to focus directly on the understanding of culture, E/HCS/2.2 attributed the lack of understanding among the general public to the importance of culture and the role of the MoC: "they [public] **don't understand** our **role** …. **Heritage** is behind in [their] considerations … From all the permits I have reviewed, around **600-700** permits and maybe more[753], I can sight **three or four** examples of people who really **understood** the **value of heritage**, and **willingly adopted** the **recommendations**" The interviewee also referred to cultural events: "if they [Bahrainis] **do not** get **a free ticket** to go to [cultural events[754]], I **do not** think that the general **public** is **interested**, still." This suggests that Bahrainis are still not aware of the importance of culture in Bahrain, which highlights the limited efficiency of the MoC in spreading awareness, and the impact of foreign consultancy and workforce in this process.

This lack of public understanding of the role of the MoC and the importance of their decisions may result in bigger problems. This was highlighted by L/A/2.4 who was not very convinced of the ministry's decisions, saying, "**everyone** is **questioning** and **accusing** us [MoC] of **delaying** the interests of citizens … they feel that the MoC is **spending** the public money, because of the **expensive events** … We give **recommendations**[755], but … people who implement them [local architecture and construction firms] **don't** know what **conservation** is, and **we ourselves** [local architects at MoC] **don't understand.** The rules [of the foreign conservation architect] **change** daily." This relates to the argument in previous sections: there appears to be a domination of foreign architects in the MoC dealing with the conservation of local heritage, external who consultants don't understand the need and importance of communicating with the locals, to educate them on the importance of the local cultural heritage and the consequences of dramatic cultural transformations on the urban environment. This lack of communication is causing clashes and problems between the ministry and the general public in Bahrain. Furthermore, the argument above is yet more evidence of the shortage of local skills and expertise in cultural heritage conservation and the implications of that on the incorrect protection of the existing heritage.

As an example, E/UDA/5.2 commented on one of the projects of the MoC, saying, "The most **expensive** public building in Bahrain is the new [2012] **national theatre** … [the] building **doesn't mean anything**, to the culture or heritage … They commissioned a [foreign] **consultant** and they [decision makers and foreign employees of MoC] **like** it … when you talk to those consultants about

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[753] Demolishing permits, within protected areas in Muharraq, which are reviewed by the MoC
[754] MoC annual cultural events: Bahrain summer, spring of culture, Ta'a Al Shabab, heritage festival, the annual fine art exhibition …etc
[755] MoC recommendations on application for demolishing or construction within protected areas in Muharraq

sustainability, **heritage** or **culture** they will **never stop** talking about it, but look at what they have **produced.**" Also, the lack of public understanding of the decisions of the MoC seems to result in passing over the regulations; L/A/2.4 argued, "they **banned** the **diving for pearls** in some locations [protected areas]; however, there are **many** people who **still go to dive** for pearls [there] … if we make people **understand why** we are **preserving** those, no one will." This echoes the public opinion. A newspaper article stated "… **one concert** at the National Theatre, which is **forbidden** for Bahrainis [performers], cost 200 thousand dinars[756]. Is this **reasonable** or **acceptable**? … It is **understandable** for countries like the UAE and Qatar to do that, but we [Bahrainis] **shouldn't** throw those concerts without **a return** to the state's general **budget**"[757]. This indicates the public criticism of the MoC's expenses, which was pointed out by the interviewees above and also shows the general disappointment of the nature of events organised by the MoC. Those events seem to attract foreign performances, which isn't appealing to the local public. Other newspaper articles showed public outrage caused by the nature of those performances which sometimes go against the local culture, beliefs and religion. The specifics of this are beyond the scope of this study. However, the findings indicate a clear miscommunication between the ministry and the Bahrainis.

Key Findings:

- There is miscommunication between foreign and local employees in the MoC, which relates to the argument illustrated in chapter 7.
- There are different opinions of foreign and local interviewees about the understanding of cultural change and the need to broadcast awareness among the general public. Those varying opinions are illustrated in (Figure 8-3).
- The interviews showed that there is an acknowledgement of the process of cultural change among the general public and governmental organisations concerned with the built environment. This will be further illustrated in the following section. Almost all interviewees realize that our culture has changed dramatically; however, very few realise the continuity of this phenomenon and its negative consequences on our urban environments and therefore this issue is not being addressed much in projects and events of governmental organisations concerned with the built environment. The effects of this lack of understanding on the sustainability of the urban environment in Bahrain today will be discussed in the coming sections.
- There is miscommunication between the local public in Bahrain and the MoC, which is exacerbated by foreign employment and attracting international performances and events.

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[756] The equivalent of around 350 thousand British pounds
[757] Hesham Alzayani, 'Two Responsibilities on the Government and the House of Representatives', *Alwatan News Paper* (Manama, 5 January 2015).
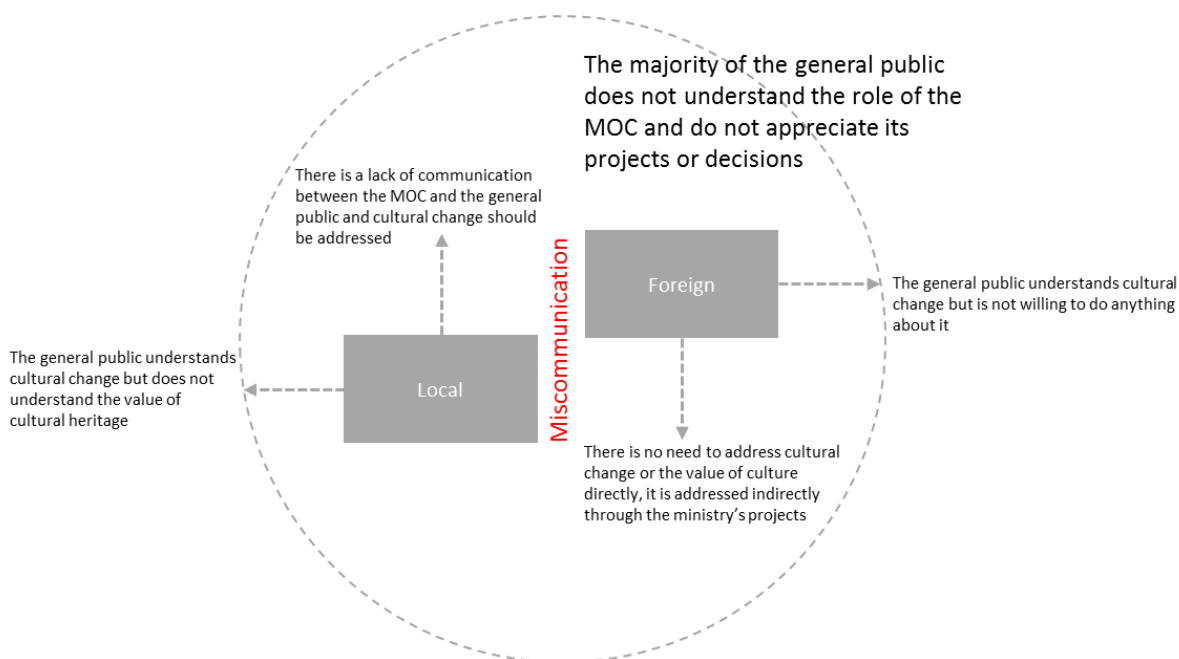
Figure 8-3 Explaining the different perceptions of local and foreign officials from the MoC about the public's understanding of cultural change and their appreciation of the role of the MoC

8.3 Effects of Cultural Change on the Urban Environment of Bahrain

The effects of cultural change on the urban fabric of Bahrain were discussed with the interviewees, and the answers showed that there is not only a realisation of the phenomenon of cultural change, but also recognition of its effects on the urban social, legislative and physical environment. L/HP/4.1 highlighted the effects of cultural change on the overall policy and needs of the community: "we are doing **projects** with the **public** (our clients) in mind, subsequently, if the **culture changed**, the **needs** will **change** and therefore we will also **change** our **policies** to **meet** the **needs** of the public." E/HCS/2.2 explained the effects of different phases of change in the urban setting of Bahrain, which are tabulated in (Table 8-3**)**, saying, "there are **three phases of urbanism** in Bahrain: the first is the **heritage phase**, of course, it was **quite sustainable** … Then comes the **transitional phase** … this phase **benefited from both**, the **modern lifestyle** of that time, and also the **sustainability of the heritage** …. The **transitional phase** in Bahrain was a **genius** and is a much more **valuable** phase in the history of **the Gulf** because it was a **prevailing phase**… Then the **radical change or transformation phase** … where **everything** was **totally disfigured** and **ignored** … that was so **unsustainable**." Moreover, policy also showed that future strategies of Bahrain encourage the adaptation of more change: "in the future the world would find in Bahrain high productivity and a **culture able to rapidly respond to rising demand** and the **seismic economic and technological change** that will define the 21st century[758]." The discussed effects of cultural change on the urban fabric of Bahrain are outlined in the following sections.

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[758] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.

Phase	Period	Overall Sustainability	Urban Features (described by the interviewee)
Heritage Phase	1950s and before	Sustainable at the time but unsustainable inherited urban environment	Local materials and resources
			Ecological designs
			Buildings were not conserved or studied
			Buildings require a high level of maintenance
Transitional Phase	1960s–80s	Sustainable at the time and in the long term	Foreign materials and resources
			Ecological designs
			Buildings were conserved and studied
			Buildings require less maintenance
Radical Transformation phase	1980s–90s	Unsustainable	Previous systems were ignored
			Everything was disfigured
			Focused on creating new areas by reclamation
			Disfigured country borders
			A new type of architecture and urbanism
			Overall unsustainable designs with only a few good examples

Table 8-3 Summary of the three phases of urbanism by the MoC, conservation advisor

8.3.1 Incoherent Society

An effect of cultural change on the urban environment discussed by a number of interviewees from various organisations is the fragmentation of society and the loss of social coherence. L/DEO/1.3 argued that people are not aware that the overall urban fabric or setup is their larger home, and the focus is only on the residential unit: "This is my **castle**, and this is what **I care** about ... whatever happens **outside** is somehow **beyond** them ... they **don't understand** what would happen when they **damage** public property, and how this will eventually **affect** their **lives**". L/SSP/3.1 highlighted the lack of social coherence: "**Today**, you **don't** know who **your neighbours** are. Kids **don't play** in the **streets** anymore and ... **single** men from the **working class** [foreign workers] live next to **middle class** [local] **families**, so having **kids unaccompanied** in the **streets** gives some sort of **fear**". Interviewees recognised directly that the fragmentation of society is a consequence of the change in planning system. L/HD/5.6 argued, "The way the **urban fabric** has been set now, in **new** neighbourhoods, gives the feeling that this is **your house**, and that's it, you **don't** have to **interact.**" Other similar answers were also recorded, explicitly recognising that neighbours today do not know each other. L/A/3.4 attributed the fragmentation of society to the loss of mixed-used neighbourhoods where educational, health, and commercial facilities are within proximity of residential areas. Furthermore, L/DEO/1.3 argued that, unlike today, and because society was more compact in the past, people considered the impact of the changes they make even within their properties on their neighbours.

L/HU/3.3 talked about the consequences of the fragmentation of the society: "we **suffer** from **vandalism** ... **young** people **demolish** the **shops, toilets,** and they **break windows** because they **do not** have a **sense of belonging**, or the **understanding** that this is a **public property.**" This was also supported by E/UDA/5.2. The fragmentation of society and loss of sense of belonging are consequences of the change in the urban layout which followed the increased wealth in Bahrain.

This adverse affect of development is threatening the social sustainability of society in Bahrain. The implications of this will be discussed further in the next chapter.

8.3.2   Change in Household Structure and Dwellings Type

Another discussed effect of cultural change on the urban environment in Bahrain was the change in household structures and dwelling types. This was highlighted by a number of interviewees: L/CID/1.2 argued, "**earlier**, almost **no** one would **accept** to live in an **apartment**. **Now**, **almost everybody** would be **happy** to have an apartment ... The way **families** used to **live together** in one single house **changed**. Now, **couples** can live alone, and there are cases of even **single** people **living on their own**. This was **not accepted** earlier, so the **types of houses**, **buildings,** and of course **materials** were **affected** by this **change**." This indicates that because of the changing circumstances of the society, the household structure changed, and that had its effects on dwelling types, the urban setting and the culture, in general; this, in addition to earlier evidence, is illustrated in (Figure 8-4). E/UPA/5.5 pointed out the implications of this on the housing provision in Bahrain "**no one** wants to own **a flat in a high-rise building**. That is **not** a good news for **urban planning**, especially that we are living in a country where **land is very limited,** and we are **rapidly reclaiming** land to **expand** and make **more lots available** ... **densification**, at least at a **reasonable** level is very **important**, to have a **sustainable urban development** ... We have made quite **a lot of progress**, **a lot** of the **MoH projects** now consist of **high-rise**, **dense developments.**" This was also supported by L/HU/3.3 and raises concerns about the effects of this change of dwelling types and household structures in the urban setting and real-estate market in Bahrain. (Table 8-4) shows the different household types in Bahrain and supports the actuality of the increasing private single occupancy that was argued above.
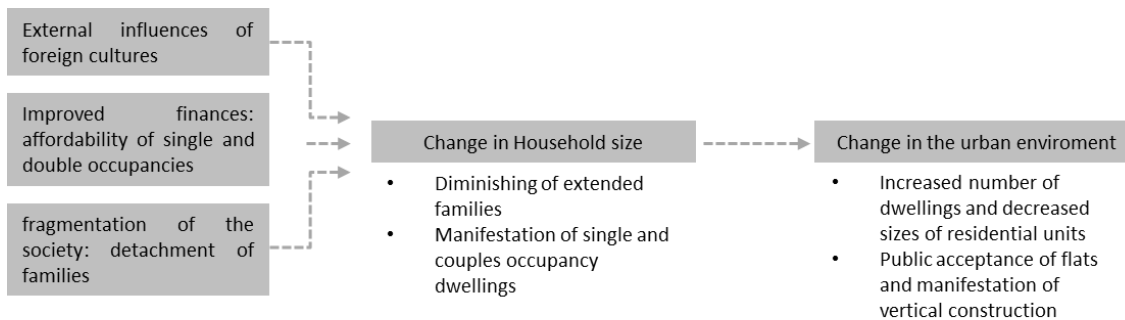
Figure 8-4 The claimed associations and consequences of the change of the household size

Household by type					
Governorate	Nuclear*	Extended**	Composite***	Single individual	Single individual with servant
Southern	11,182	4,209	674	1037	142
Northern	32,521	9,954	1,257	2,311	169
Central	35,803	14,587	1,655	2,576	271
Capital	40,023	14,448	7,565	12,254	390
Muharraq	22,617	9,298	1,576	2,448	301
Total	142,146	52,496	12,727	20,626	1,273
Total number of Households in Bahrain					**229,268**

*A pair of adults and their children **Two or more nuclear families *** Nuclear and single Combined

Table 8-4 Number of the different household types in Bahrain[759]

8.3.3 Abandonment of the Inner City

One more effect of cultural change on the urban environment is the evacuation of the locals from the inner city and the spread of urban sprawl. As L/CID/1.2 highlighted, "in so many areas in **Muharraq** … almost **none** or just a **few elderly** locals are living there. The rest are **expatriates** because the **old houses** are rented to [foreign] **labourers**." L/AP/1.5 elaborated on the effects of foreign workers on those neighbourhoods: "**expatriates** are **transforming** the neighbourhoods which **used** to be full of [cultural] **richness** and life into **dull** places [lacking social interaction]. I am sure the **locals** moved for some reason, maybe it is because there are other **attractions** elsewhere that suit the **new lifestyles** of **their generation**." This relates to cultural change and its implications for the local lifestyles that were presented in the previous section. L/SSP/3.1 attributed the move of local inhabitants from the inner city to the need to use the car. The old neighbourhoods are still not accessible to cars, and the majority of locals have them. This was also supported by L/HU/3.3 and L/A3.4, who further added that new neighbourhoods provide bigger spaces and more privacy. The interviewees argued that the evacuation of the inner cities of Muharraq and Manama was only possible because of the new developments that were constructed around the island at that time. Locals had other places to go, and those were appealing because of their spacious sizes and modern infrastructures. It seems that at that time, those were more pressing challenges than the social coherence and cultural richness that are now being missed L/AP/1.5. This research is focused on the sustainability of the urban built environment; therefore, the details of this change in interests are beyond the scope of this study. However, investigating this change is a good starting point for further research to study the development of sociologies of Bahraini society.

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[759] The source of this information is michael Bauer Research, presented by ArcGIS® software by Esri. ArcGIS® and ArcMap™ are the intellectual property of Esri and are used herein under license. Copyright © Esri. All rights reserved. For more information about Esri® software, please visit www.esri.com.

8.3.4 The Adverse Effects of Adopting New Technologies

It appeared from the argument above that the dependency on the car was one of the main reasons for the local inhabitants to move out of the old inner cities into more remote areas. L/PA/3.2 talked about the adaptation of the contemporary urban environment to the new cultural mandates: "Having **car access**, in **old neighbourhoods** is **difficult**, but it is **a reality**, because of the **new** living **lifestyles** ... **a Bahraini** has **strong ownership** of his **car**. You will never **convince** a [local] to **park far away** from **home**." L/SSP/3.1 also talked about the implications of using the car on the urban fabric: "The **restrictions** put by the **MoW to introduce wider roads** resulted in **speeding up and down** the **highways** ... The **vegetable man**, the **grocers**, the **Barbers** ... there are still some of that **left** in **some** of the areas, but in **most areas, no.**" Those amenities are today located away from the residential units, which requires the inhabitants to use their cars to run any errands. L/AE/2.1 talked about the destructive influence of roads on the indigenous urban setting: "take **the road**, which was **built around the old city** of **Muharraq** for example, and **examine** its **impact** on the city. It completely **ruined** the **relationship** between the **inhabitants** and the **sea.**" An increasing amount of scholars, artists and performers are now focusing on this deteriorating relationship with the sea[760].

E/UDA/5.2 talked about walkability in Bahrain and the influence of the car on the planning system: "**Everywhere** except for this region ... The first element in **planning** is to have an **urban structure** that comprises at least the **basic components** of a **primary school** and a **garden**[761]. This is **not** the case here in **Bahrain** ... now things have **changed.**" This also links to other arguments in the literature about the sustainability of the neighbourhood outlined earlier in (section 2.2.2). L/L/1.6 added, "People **now use** their car for their **entire daily needs** ... **We became slaves for the car**, and this is a **negative** change that happened in our culture. We **need** to **limit our usage** and give **other** modes of **transport** an opportunity." Nevertheless, L/SSP/3.1 among others, argued that even if one wanted to consider alternative modes of transportation, the urban layout, the contemporary planning with the lack of shading and pedestrian pathways, and the complexity of traffic, would not allow such a thing to happen.

It was also clear from the interviews that the domination of the car and the consequent change in the urban layout has affected the social relationships of the community, which was discussed earlier. E/UDA/5.2 explained the parallel negative social behaviours that are associated with the dependency on cars, saying, "A person would sit in his **air-conditioned car** ... and call **somebody** [foreign worker] to bring him this or that, sometimes they **don't** even notice how much **traffic jam** they are causing **behind** ... our **roads** became **full** of them [cars] and also full of **garages**. Some people have **two cars**[762] **...** they buy **a large one, without thinking** where they would **park** it ... our **transportation** is a **complete mess.**" Statistics showed that there are 545,000 registered cars in Bahrain; 423,000 of them are private, and there is an increase of 22,000 cars per year. That is 3–4 cars per household and a car for every two people living on the islands[763]. The interviewee claimed that the current development of road network far exceeds the required usage. This is a result of the governmental efforts to reduce potential car congestions and traffic delays. However,

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[760] See for example; Fay Al Khalifa, 'An Urban Healing Agenda for Reform in Bahrain: Where the Dweller Falls into the Urban Gap and the Sailing Boat Hits the Skyscraper.'; Al Ansari; Ministry of Culture, *RECLAIM: Kingdom of Bahrain National Participation in Venice Biennale 2010*.

[761] Garden in this research as well as in the Bahraini context refer to a small public open space, shared by two or more neighbourhoods and usually includes a small area of green cover with seating in addition to a kids play ground. Occasionally it also includes an area dedicated to sports: football, basketball and/or volleyball. Community gardens and their associated facilities vary from one location to another depending on land area constraints.

[762] Relates to the free tax policies on roads and cars in Bahrain, people will only have to afford the initial and operational costs in addition to minimal annual registration fees for their cars.

[763] Alayaam Foundation For Press and Publication, 'One Car for Every Two People and Three Car's Per Household in Bahrain', *Alayam News Paper* (Manama, 10 November 2014).

the development of massive highways and the consequent automobile comfort raises the question of the consequences of this in the urban setting and on the social attitudes, and questions the seriousness of the government in trying to provide more sustainable solutions for mobility.

The effects of adapting to new technologies on our urban environment were also highlighted by E/UCS/2.3: "today you **do not** want a **courtyard**, and instead you want **closed rooms** with **AC** and **parking**. That, of course, **affected architecture**, the way people **live** and **react** to each other, and also the **social coherence** of the society." Moreover L/L/1.6 talked about the diminishing use of boats in Bahrain saying, "we live on **an island** and are **surrounded** by **water** but we **don't** use **boats for transportation**. I believe that **mobility** through **walking, biking** and **boating** will create an **active society**, **increase** the **public health, happiness and satisfaction.**" The interviews showed that there is a realisation of the adverse effects of new technology in general, and the car specifically on the urban environment of Bahrain. None of the interviewees related any positive effects of technology on the culture or the urban environment, except for a number of interviewees from the UoB who highlighted the effects of technologies in teaching, which were discussed in (section 8.2.1).

8.3.5   Change in the Planning System

Interviewees argued that one effect of cultural change on the urban environment was the change of the planning system, this is very much connected to the argument in (chapter 7). It was argued that the adaptation of the American grid system in planning changed our urban environment dramatically; for example, L/SSP/3.1 explained that "**now** we have the **grid system,** and we **lost** the **identity completely.**" L/HU/3.3 added, "**now** our **planning** is very **modern**; in the **past**, it used to be more **organic** and **related to people**… **nowadays** it's more like **straight lines** and **geometric shapes**. We **didn't** have this in **the past.**" This is also linked to the introduction of the car that was debated in the previous section. L/A/3.4 argued that the change in the planning system and adapting a foreign planning scheme without respecting the culture and how things used to be in the past in its turn caused more cultural change. L/HD/5.6 also talked about the effects of adapting foreign planning systems to our urban environment: "if we **compare** a **neighbourhood** that was **recently planned** to an **old one** we would notice that it **lacks** the **cluster settings** and **central areas** where people used to **gather,** and **activities** used to happen." Interestingly L/CR/4.3 claimed that this process of cultural change and the dependency on foreign models still exists in Bahrain and that there are people who honestly think that it is good practice.

Another mentioned parameter of the change relating to the planning process was the exclusion of the public opinion from the planning process. L/AP/1.5 discussed this: "some **countries engage the community** in **taking decisions**, **unlike here** … we have the **parliament**, but I **do not** think that **they care** about these issues." A comparison between the past and present in relation to public engagement will be given later. L/A/3.4 also highlighted that the change in planning and building regulations affected the urban environment in Bahrain. L/HU/3.3 added, "**now** we have **a lot of regulations** for buildings, like the **openings** and **setbacks** [recessions]; in the past, we **didn't.** One was able to **build the full plot area** and have **all the openings inside** the court, so those **changes happened** because the **law forced them** and this **affected the urban fabric.**" Policy showed that regulations in Bahrain for residential houses require at least 3 metres' recession between the front of the house and the edge of the land, and 2 metres from the back of the house to the rear side of the land. In some areas houses are connected on their back side, but in other areas zoning regulations require another 2 metres' recession from the rear side[764]. This indicates that changing

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[764] Prime Ministerial Edict (No. 28) of the year 2009 with respect to determination of zoning regulations for construction in various areas of the kingdom

building regulations in Bahrain is causing a waste in land of an already small country with high density. It is clear from the interviews above that cultural change has affected the urban environment in Bahrain; this process that was illustrated in (Figure 8-2). The detailed effects of those aspects on the urban environment are illustrated in (Figure 8-5).

Image of cultural change	Effect on the urban environment	Loss of local identity and unsustainable urban environment
Use of new technologies Cars	Wider roads to accommodate cars	
Air conditioning	Closed rooms and disappearance of the courtyard and wind tower	
Adaptation of foreign planning systems Grid layout	Geometric rather than organic urban environment	
Setback law	Waste of land because of the non-used setback space	

Figure 8-5 The effects of technology and foreign systems on the urban environment

8.3.6   Loss of Identity

The loss of identity has also been identified as another effect of cultural change on our urban environment. L/HP/4.1 argued, "We are **witnessing high-rise, modern** buildings **without** a **personality** … built just **to meet a certain function** … also **wide highways**, and **modern** solutions for **traffic** … the **road movement** in Bahrain is **similar** to **Europe** or the **USA.**" L/HP/4.1 also argued that the unique features that differentiate our society from another don't exist anymore or cannot be seen broadly. E/UDA/5.2 highlighted: "some of our projects look **modernised** and have all the **important facilities**; however, they are buildings of **row houses**, which could be **anywhere in the world**, and some of those buildings are **a disaster**, because we are **losing our identity.**" Other similar answers were also recorded, all explaining the loss of identity mostly due to the change in the urban layout and architectural language. Furthermore, L/HSU/5.4 talked about the MoW's unsuccessful attempts to revitalise villages in Bahrain, which lead to the loss of identity of those villages: "they only **revitalised the infrastructure** … regardless of the **urban perspective**, which relates to the **identity** of that **particular village**, or the **homogeneity** with the **surroundings …** Those acts cause us **problems**, rather than **solve problems** in those villages." This also indicates a problem in communication between the different governmental organisations concerned with the built environment and relates to the understanding of the importance and consequences of cultural heritage as discussed in (Section 8.2.2).

8.3.7   Consumerism

Consumerism is a consequence of cultural change and is connected to the unsustainability of our urban environment. Although consumerism does not directly affect the urban setting, it has

significant influences on the lifestyles of people who inhabit the urban fabric, and, therefore, affects the quality of life in the urban environment in general. L/SSP/3.1 highlighted, "**Consumption** is happening at a **fast rate.**" E/HEP/8.1 added, "We tend to **consume**, in all aspects of our life in an **unsustainable manner**, **abusing** the **environment**, the **available resources** and **facilities**, without looking into the **future generation needs** and **requirements.**" The spread of consumerism is a worldwide phenomenon and is not limited to Bahrain or the Gulf. However, the sudden growth of wealth and the consequent sudden cultural change caused consumerism to spread in a much faster and more dramatic manner than most regions of the world. Today the consumer society resembles another image of cultural change that challenges the adaptation of sustainability in Bahrain; L/DEO/1.3 argued that one of the challenges they face in teaching sustainability to students is their consumer mentalities: "Students **don't understand** that it's **unsustainable behaviour** and that it **cannot continue** forever. This is the **biggest** problem we face with students." This also relates to the argument in (section 8.2.1.3). It appears from the interviews that there is a strong relationship between the students' environments and their architectural education and this raises concerns about the consequences of this on the sustainability of the urban environment in Bahrain. This will be discussed in chapter 9. E/UDA/5.2 added, "**other societies** are **more sustainable**, they **never waste paper** … never waste **time,** because those things are **important to them**; however, **here everything** is **available,** and **everyone** is **spoiled** and **delighted** … This **affects** the **culture** and also the **urban form.**" This not only indicates that the Bahraini society is a consuming society, but it also relates to the dependency on a foreign workforce. It is clear that cultural change has resulted in a consuming society that depends on exterior resources, as shown in chapter 7.

An interviewee highlighted the effects of consumerism on the urban fabric in Bahrain, arguing, "In **Riffa** [Section 6.6.3] people … **want a large area** of land to **reflect** their **social status** and all the **facilities** … **irrespectively** of whether those are **necessities** … even if they **cannot afford** them, they will **take a loan** from the bank … these **habits** are **not right.**" L/L/1.6 compared this with the past situation "This need for a **certain size** of the **land** is **strange** to the **traditional thinking** in Bahrain. Land used to be **a resource for all** … There was **a common social sense** and **ethics of consumption** …. They also had in mind **future generations** … **regardless** of their **economic condition**; they **all** had **a humble and suitable size that reflects** the **sizes** of **their families**. **Greed** is a **negative change** that **arose** with **development**." This is another influence of cultural change on social attitudes and community behaviour, and raises concerns about the impact of such behaviour, and the consequences of the continuity of this, on the sustainability of the urban environment in Bahrain.

8.3.8   The Formation of the MoC and Protection of the Remaining Cultural Heritage

Although it was acknowledged that there was a massive cultural change, some interviewees also highlighted that there is still another reaction contrasting this, regardless of the depth and effectiveness of this response. L/HD/5.6 argued that "there is **another force** pulling people to go **back**. You see that in the **media**, and the [historic] **names** of **new restaurants** and **cafes**, they take you back to the **indigenous culture** … **indigenous food** dishes are coming **back** heavily, and people are **rushing** to have them … people are in **need** to go **back** to their **cultural roots.**" This was also highlighted by L/L/1.6 and L/TA/1.4. Interviewees of the ministry of culture also highlighted that the formation of the MoC is one influential image for the reaction opposing cultural change. L/AE/2.1argued "our ministry is **fairly new** … the **formation** of it came as a **result** of this **transformation ...** to **preserve, promote** and try to **reintroduce** people to the **existing culture** and **embrace** it, instead of leaving it to **vanish** as it **was.**" E/HCS/2.2 added, "**cultural transformation** … **already had its implications**, either **negative** or **positive**, on the **local urban**

landscape … **many** of the **Bahrainis** are **ready** to **look** at their **heritage more positively**, **accept** and **adopt heritage matters** in their **lifestyle** … they are **readier now** than they used to be in the 60s, 70s and 80s [when] nobody would have looked at that matter **seriously**, it was always **marginalised**, and **icons of heritage representation** were totally **disfigured.**" Although cultural change took hold almost on all the cultural heritage of Bahrain and resulted in the transformation of the local culture and identity, it is also evident from the argument here that there may be a small but significant reaction in Bahrain to rescue the remainder of the local culture. This will be discussed further later.

Key Findings:

- This section outlined the various effects of cultural change on the urban environment in Bahrain; those are illustrated in (Figure 8-1).
- The arguments here affirmed the actuality of cultural change and that raises concerns about the role of the government today in assessing or preventing this phenomenon from continuing to happen in Bahrain today and in the future. This will be out lined in the coming chapters.
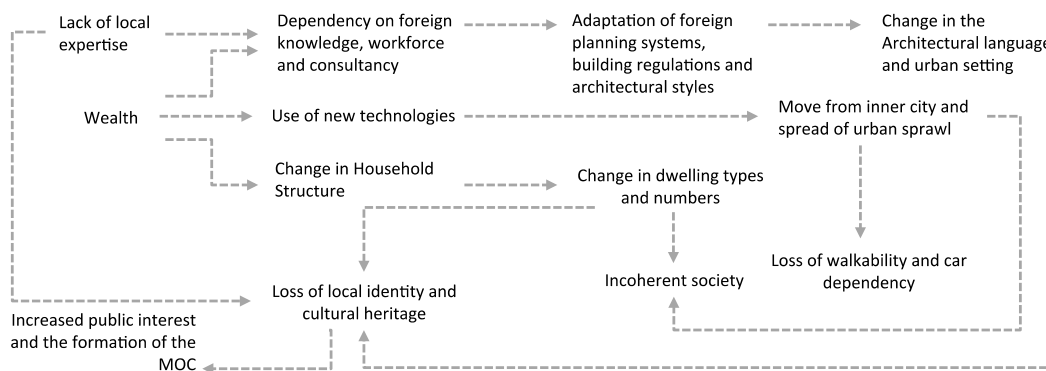
Figure 8-6 Summary of the effects of cultural change on the urban environment

8.4 Urban Transformation Caused by Cultural Change in Bahrain

According to the sample, urban transformation in Bahrain as a result of cultural change is obvious in many places (section 6.6). Some interviewees argued that the whole urban environment was significantly affected by this process. As an example, E/UCS/2.3 explained, "I think **everything was affected**, I **cannot** think of **a place** in **Bahrain** that **wasn't affected**, specifically because it is **so small.**" E/AP/1.1 argued that although the majority of the urban fabric was affected by this process, there is still evidence and traces of the indigenous urban environment. Most interviewees identified the two cities of Manama and Muharraq as the areas most affected by cultural change in Bahrain. For example, L/AP/1.5 explained, "The cultural change had **a huge impact** on them … they **were** both **nice**, [and] there was **never a traffic jam** when **travelling** between the two cities." The following sections provide a detailed discussion of how the different urban areas in Bahrain changed. Those should be read with reference to chapter 6.

8.4.1 Manama

L/CID/1.2 talked about the urban change in Manama, saying, "**Manama** was **affected the most** because there were **more** [villas] **neighbourhoods** in Manama **than other cities**. **Now**, it consists of **apartment buildings**, **businesses,** and **most** of the **population moved out** of the city." E/AP/1.1 also highlighted several parts of Manama, saying, "in **Juffair** [Figure 6-22D] area in **Manama** … there are **huge changes** happening … [Juffair] **does not look like Bahrain** at all; **multiculturalism** has really **taken hold** of **some** parts of the island … Another example is **block 338**, which has been **completely transformed** … in the **1930s**, even immediately after the discovery of oil, **buildings** were **all surrounded by perforated screens** that **prevented heat**; this **doesn't exist** anymore." The interviewee also commented on some of the few remaining touches of cultural heritage in Manama: "… the shops have **stuff** that wouldn't have **existed** ten, fifteen years ago … the **appearances** of things **are changing**. However, a little bit further **inside,** you have the **Mashrabeias**[765], **nooks** and **crannies**, **coffee shops** and the **Bahraini people** enjoying a **drink of coffee**, so those **things still exist.**"

L/AE/2.1 also talked about the affects of cultural change on the urban environment of Manama, saying, "**Manama changed** for sure because of the **land reclamation** projects [Figure 6-22 and Figure 6-23]." E/HCS/2.2 added, "**Manama** was **affected greatly**, it was **totally disfigured**, and its **relationship with the sea was interrupted**. You don't even **feel** the sea in Manama **anymore**, whereas in **Muharraq** you still have a **glimpse** of it here and there." L/A/3.4 also talked about land reclamations and their effects on Manama: "**land reclamations** are becoming **a trend**, and **changed the geography** of Bahrain. If you go to people my age[766] and schools and ask both to draw **a sketch** of how **Bahrain looks like**, you will find **two completely different outlines**. On one hand, you will have a **very organic** Bahrain, and on the other a **very artistic** or I don't know how it looks right now, you would be **surprised** if you looked at it on Google Earth." The consequences of land reclamations on Bahrain were discussed by a number of scholars in the literature, with a particular focus on Manama[767]. L/SSP/3.1 also argued that urban change is witnessed the most in Manama: "**Manama** is the **hub,** the **centre cross point** to all other areas of Bahrain. **In Manama**, you have **foreigners** and **Bahrainis … everything happens there** … it is the **main city centre** where **most commercial activities** happen. So, it is **the place** that **changed the most** because **people congregate** in this area … also, **most** of the **high-rises** are happening there … Manama

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[765] A privacy feature of old Islamic architecture, A mashrabia is a projected window enclosure, usually carved wood latticework lined with stained glass and is usually located on the top floors of buildings.
[766] Interviewee was in his early thirties
[767] See for example; Al Ansari; Ministry of Culture, *RECLAIM: Kingdom of Bahrain National Participation in Venice Biennale 2010.*

changed the most because of the **high-rise** and **mixed developments.**" This also relates to the argument made in chapter 2. Manama is sometimes referred to as "the city centre", rather than being a city on its own, which indicates that some view Bahrain as a single city, and this could be attributed to the fact that although Bahrain has areas with different characters, explained in chapter 6, they do not function autonomously.

8.4.2 Muharraq

In addition to Manama, Muharraq was also discussed. L/AE/2.1 talked about the transformation of the urban environment in Muharraq: "the main reasons for the **transformation** of the city [Muharraq] are the **change of the lifestyle**, and the **social status** of the families living there, in addition to the **new advances in technology** ... these caused a lot of the **transformation** to the **urban fabric.**" The interviewee explained some of the features of the city of Muharraq which completely disappeared. "One example [is the] **Al-Halat**[768]; they had certain **characteristics** that made them **special**, but unfortunately they **vanished.**" It is worth noting here that E/HCS/2.2 and L/TA/1.4 highlighted that some "pockets" in Muharraq were not significantly affected by the cultural change and have been relatively well preserved. Moreover, a few interviewees recognised that because cultural change did not completely swamp Muharraq, it is now one of the most sustainable places on the island. For example, L/SSP/3.1 highlighted: "**In Muharraq,** you can actually **walk** in the street **during a hot day** in August, because you **always find shade** somewhere. It is **hot but manageable** ... you **slow down** your **car unconsciously** because there is **always someone coming off the road** at a given point." E/UDA/5.2 added, "I was asking students to study the **old towns** of **Manama** and **Muharraq** ... to choose one **case study, a house**, and pick two or three of its **characteristics**; **privacy**, **health** and **hygiene**, or **sun** and **wind**, because you would **never find a bad example** in terms of **sustainability** in those areas." The argument above confirms that according to the interviewees there is a relationship between cultural change and the sustainability of the urban environment in Bahrain, which will be discussed further in Chapter 9.

8.4.3 Hamad and Isa Town

Interviewees also talked about the two planned towns, Hamad and Isa Town. L/CID/1.2 reflected on both cities. "People in **Isa and Hamad town** were brought **from different areas** of Bahrain ... However, they **could not melt in those pots** ... people came from different **backgrounds**, so trying to **force** them to **socialise** and **live together** was **wrong ...** In **Hamad Town,** every family is **living inside their box** ... [families are] **not socialising.**" This was previously not the case as there were more extended families and strong social ties in the neighbourhoods. The argument here relates to (section 8.3.1) and raises concerns about the social sustainability of housing projects built by the MoH, and the consequences of that on the overall urban sustainability of the islands, which will be discussed further in Chapter 9. L/DEO/1.3 also talked about these two towns: "they were **not designed** to **accommodate the change** in **a lawful, acceptable** or in **an environmentally sustainable way** and **their change** was not **regulated**. Because of that, **people living** in those places and **people providing services** to those places are **suffering**. When you design a place with a **certain density** ... [and] allow it to **change without regulation**, all of [the] systems will start **failing** ... when I drive through **Isa and Hamad town**, I see how **negative** it is." This indicates the unsustainability of the existing inherited urban setting, which is one of the challenges to sustainability in Bahrain today. This will be discussed in chapter 9. On the other hand, L/AP/1.5 argued that the urban problems of Hamad Town did not exist in Isa Town: "**Hamad town** is **a basket, full of urban problems** ... **social**, **economic**, **vandalism ...** **Isa town** is **interesting** ...

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[768] Al Halat; Plural for Al Halah, and is the catchphrase given by the people of the Arabia Gulf to any small island.

older and is now **growing spontaneously** … Somehow, it is **sustainable,** and the **community** is **strong.**"

8.4.4 Northern and Southern Villages

It was argued throughout the interviews that villages in Bahrain witnessed less change than larger urban areas. This was also evident in (section 8.2.4). L/A/2.4 highlighted, "The villages **preserved** some of their **properties**, and **kept their agriculture practice**, because they **didn't** have any **other resources**, unlike the people of **Muharraq** and **Manama** who had **collapsing trades** [pearling]; consequently, when the **oil boom** happened, they **left** their previous **jobs** and **readjusted** [to] the **industry**." L/AP/1.5 supported this: "there is a **huge impac**t in every area … **the least** I would say happened in the **northern region**[769], maybe because of **the green belt**, it **slowed down urban development**. Also, they are **contained** in **very small communities**, and they have **no** [limited] **relationship** with their **surroundings** … **segregated**, so they became **strong communities**." This is assumed to be the unpublished findings of the interviewee's Ph.D., which was focused on the villages in Bahrain. L/A/2.4 further added "**the irrigation channels** in Bahrain are **part of sustainability** … our **green belt shrunk** … **Bahrain** was **famous** for **water springs** and **irrigation channels**, and now, **no one knows about them** anymore. They used to **connect water** between **villages** … like **tunnels**[770]**, unfortunately, those do not exist anymore.**" This relates to the role of the MoC, which was discussed in (section 8.2.5) and indicates that loss of some of the local cultural heritage was due to cultural transformation. Nevertheless, from an environmental perspective, policy showed that a number of procedures were proposed to reduce the pressure on groundwater in general. This includes enforcing laws to reduce the use of groundwater for agriculture and increasing the efficiency of its use, in addition to using grey scale water in landscaping and setting some public awareness campaigns to reduce consumption[771]. This will be further discussed in Chapter 9. Furthermore, L/SSP/3.1 compared Manama with the southern villages Jaw, Askar and Al Dur: "There is **a huge difference**, even in their **inhabitants**. They are **back in the dark** [ages]… Now that those **villages are growing**[772], the inhabitants of those villages **don't want outsiders** to come in, because they **don't** want their **kids' ethics** and **values to change** with the **arrival of new people** and their **associated ideologies.**" L/AE/2.1 argued that the new plans of the government would eventually have an effect on the villages in Bahrain: "Referring to the **strategic plan** that EDB has promoted, there should be **further land reclamations** in **Jaw** and **Askar**; if this happened, those **villages would lose a lot** of their **cultural and environmental characteristics** … the **impact** of those **developments** will **severely damage them.**"

8.4.5 New Developments

Interviewees also talked about the new developments in Bahrain. L/L/1.6 had aspirations for those new areas: "Maybe sometimes, the **sustainability** of those projects is **still on the surface**, but hopefully we can achieve **real sustainability.**" L/AP/1.5 questioned the effect of those areas on our culture. "I did not expect lately that **Amwaj** would be a good example. I thought it will be an **isolated**, **gated community,** but **it was not** … It became **public …** that happened because of the **number of commercial activities** there, open for **everyone,** not just those **living there.** Whether it was **planned** through the **design** to have this **integration** or not, it is happening.**" This indicates the success of some of those new man-made islands and developments. "We **should not** be **harsh**

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[769] The Northern Governorate is where most of Bahrain's villages are located
[770] One or two meters wide and around two kilos in length
[771] The public commission for the protection of marine resources environment and wildlife, *Bahrain National Assessment Report on Implementation of the Mauritius Strategy (MSI) of the Barbados Program of Action (BPOA)*.
[772] By the MOH projects in the Southern governorate, those will be discussed in chapter 10.

on those manmade islands … **Durrat al-Bahrain** is also a nice **environment**, but what will the future of those people be? Would they really **belong**? Some people feel that whoever is in **Amwaj** is **not Bahraini**, mostly because **a lot** of f**oreigners live there.**" It is worth noting here that while Amwaj is open for the general population, Durrat Al Bahrain is exclusive to the residents, which raises concerns about the future of these two development. This research is focused on the work of the government; therefore the in-depth investigation of those developments is beyond the scope. This, however, marks a real potential for further research on this topic.

Key Findings:

- All interviewees believed that cultural change has affected most of the urban environment in Bahrain.
- Change was argued to be more evident in the cities of Manama and Muharraq than other areas, and least visible in the rural northern and southern villages. However, it was also believed that future development plans threaten the remaining cultural heritage in those villages. Relatively new proposed areas like Hamad and Isa Town were also argued to be affected by cultural change. In addition, interviewees questioned the future effects of cultural change on the even more contemporary developments like Amwaj, Durrat Al Bahrain and Riffa Views.

8.5 Conclusion

This chapter clearly identified that officials and academics well recognise the process of cultural change in Bahrain; however, the argument above also showed that there is a simple understanding of the process of cultural change, its dynamics and consequences. Furthermore, interviewees were able to identify some of the causes and major effects of cultural change on the urban environment in Bahrain and were able to spot locations of urban change influenced by the change in the Bahraini culture; however, it was also evident that there is limited realisation of the continuity of this problem and no focus on this issue in most of the governmental projects in academia and practice.

CHAPTER 9   URBAN SUSTAINABILITY IN BAHRAIN: UNDERSTANDING THE CONCEPTS, CHALLENGES, POTENTIALS AND CONSTRAINTS

"The Zen of it is not to care. Look, I am not living here. This is my best shot. I bring them up to a sophisticated level of understanding these things. If they are well educated and sense that is up to them, they will generally make the best decision"[773] Andres Duany – Consultant working on the implementation of Al Ain 2030 plan.

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[773] Todd Reisz, 'Will the Last Consultant Please Turn on the Light? A Meeting with Andres Duany in Al Ain, UAE', in *Al Manakh II*, ed. by Rem Koolhaas and others (Netherlands: Stichting Archis, 2010).

9.1 Introduction

This chapter illustrates the interviewed officials' understanding of the concepts of sustainability in general and urban sustainability in particular. It starts by examining their understanding of sustainability, and the degree of which sustainability is addressed in academia and professional, governmental practices. The chapter then illustrates the interviewees' realisation of the current unsustainable condition of the urban environment and further compares it with the endogenous urban environment. Then, their discussion of the challenges to implement sustainability in Bahrain is set out, and finally the sustainability of the working environments and projects of the interviewed organisations is highlighted.

9.2 Understanding and Addressing Sustainability in Bahrain

This chapter is linked to the argument in chapter 2. The interviewees were asked to define sustainability and urban sustainability and elaborate on them. Their explanations were then compared with the definitions and understandings set forward in the first chapter to indicate the level of understanding among the interviewed governmental officials of sustainability in general and urban sustainability in particular.

9.2.1 Understanding and Addressing Issues and Concepts of Sustainability in Academia

As seen in (Table 9-1), some interviewees had a very simple definition of what sustainability is; for example, the definitions from L/TA/1.4 and L/L/1.6 were mostly concerned with prolonging lifespan, which relates to Lahmann (1999) explanation of sustainablility outlined in chapter 2. All other interviewees explained sustainability in relation to sustainable development. It is also evident that two interviewees were able to elaborate on their understanding of sustainability; L/AP/1.5 described sustainability in relation to social influences and economic concerns, which relates to earlier arguments by Repetto (1985) and Bertolini (2005). L/DEO/1.3 explained how the process of sustainability should be tackled in the built environment. All interviewees except for L/L/1.6 were able to elaborate on urban sustainability. The concept was related to having an independent urban system by E/AP/1.1 and L/TA/1.4. Moreover, L/DEO/1.3 limited urban sustainability to environmental conservation, an issue which appeared in literature, explaining the limited understanding of sustainability to environmental considerations. The arguments put forward by L/CID/1.2 and E/AP/1.1 are related to the findings of the previous chapter. It is clear that some images of cultural change, such as the dependency on mechanical systems, e.g. the car, and the fragmentation of society, are also seen as indicators of an unsustainable environment. This indicates that there is a relationship between cultural change and urban sustainability in Bahrain.

L/AP/1.5 questioned the depth of their understanding of this issue. (Table 9-2) shows that most of the interviewees doubted that there is an understanding of urban sustainability in the department among staff and students. This relates to the argument presented in chapter 5 by Ephgrave (2011) about the lack of sustainability knowledge in the Gulf higher education systems. L/CID/1.2 debated that although some of the broader aims of sustainability are acknowledged, there is a lack of understanding of how to implement them. This is related to the lack of implementation knowledge to the NPDS 1 strategy by the government, explained in chapter 6, and the need to draft another implementation tool/policy by the consultant. It is alarming here that this was the answer of an interviewee who was teaching the only design course in the architecture programme with an environmental focus, and it raises questions about the influence of this lack of understanding on students. L/DEO/1.3 and L/AP/1.5, who were able to discuss urban sustainability more thoroughly, highlighted the limitations of the knowledge in the department, while L/L/1.6, who had a narrower understanding of urban sustainability, claimed that staff and students of the department understand the concepts of sustainability increasingly. This raises concerns about the profundity of those ideas among the faculty and the impact of that on students. Also, the interviewee argued that the focus on those issues is a consequence of having to follow foreign accreditation programmes. This links to the argument in chapter 7, and further questions the influence of international accreditation programmes on the local teaching environment and the body of knowledge about sustainability in Bahrain.

Nevertheless, a few other answers showed that there is rather an interest from students to know more about these matters. For example, L/AP/1.5 argued that there is a limited focus on urban or

sustainability concerns in the architecture curriculum but students are eager to know more. This interest was also evident in the extra-curricula activities run by students, as seen from the answers of L/CID/1.2 and E/AP/1.1 in (Table 9-2). Moreover, the participation of students with the AIA also links to the argument in previous sections and underlines the influence of foreign knowledge and programmes on the local students. The lack of understanding of urban sustainability was sourced back to the limited focus on this issue in the architectural curriculum; this was highlighted by L/AP/1.5, L/TA/1.4 and L/CID/1.2. Nevertheless, the data also shows that although urban sustainability was not a focus of any course, it was an issue that was tackled in some of the courses; E/AP/1.1 argued this.

Interviewee	Understanding of Sustainability	Understanding of Urban Sustainability
E/AP/1.1	"Sustainability is to try and **live** our **present** life with the **least impact** on the **surrounding environment** in which we live."	"Urban sustainability would be to try and **bring back a** certain degree of **connection** to the **ground** … **reduce** the **effects** of **industrialised mechanical systems** on the **environment** … Try and **connect** ourselves with the **possibilities of production.**"
L/CID/1.2	"Sustainability is to **keep things running**, **without exhausting** the **resources**, and to **keep something** for the **future generations.**"	"It is cities and towns that **respect** people and the **human scale** … it **should not** be an environment of a **car** … it **should provide** all the **necessities** they **require** … a place to **satisfy** people **without exaggeration**, or having extensive roads and bridges **…** a place where you **reach** another point with **ease …** A place where people **know** and **care** about each other, if something happened to the **neighbour,** they **should know.**"
L/DEO/1.3	"It is **living comfortably now** while allowing **future generations** to **live comfortably** too in **a healthy environment.**"	"Urban sustainability focuses on being **positive towards the environment**, **reducing consumption** of **fossil fuels** as much as possible, to **reduce consumption of land**, for building purposes and **allow for green, open spaces** to have a portion of the city."
L/DEO/1.3	"Sometimes **sustainability** is thought as **preserving whatever is there** … Sustainability is **preserving some**, **rebuilding some**, **upgrading some** and then also **building new buildings**. It **does not** indicate that we stop doing that."	
L/TA/1.4	"Something that **lasts** and **stays as it** is for **a long time.**"	"Urban sustainability is that [the] **urban fabric** can exist for **a long time without external resources …** it can **rely on itself,** [to] **generate energy** or **dispose waste, without depending on external resources** or **extra efforts** or **budget,** it becomes **sustainable by itself.**"
L/AP/1.5	"There are different **layers and phases** for **sustainability** … it is **to understand** your **resources**, and the ways you can **benefit** and **reuse** them to **save time** and **energy** … Sustainability is **timeless productivity** with **economical savings**, and then **the environment** is also **involved** with that, in addition to considering **social influences** and maybe **saving money.**"	"[The] urban system is **a very complex** system … the **social, cultural,** [and] **economics …** whatever we do, will somehow have an **impact,** on the **community** … [and] the **economics** so **sustainability in** [the] **urban** system is **different,** we need to be **concerned** about it … stop for a while and **understand** our **urban needs** … if we **mess** up … it will need **two-three times** the **effort** to **sort it out.** Especially when we **ignore** a lot about **the social relationships** between **parts** and **wholes …** we are **ignoring** how to **enhance the macroeconomics** for the area … It is **creating a balance between these factors.**"
L/L/1.6	"It is to give a **longer lifetime** using this sustainability."	Not given

Table 9-1 Understanding of Sustainability and Urban Sustainability according to interviewed faculty of Architecture at UoB

Interviewee	Understanding of and Awareness of Urban Sustainability
E/AP/1.1	"I **do not** think that **anyone understands** what **urban sustainability** means … Sustainability is being **limited** to thinking about **saving energy** and **water**, **recycling** and **waste** … **outcomes** of **sustainable existence**, but **not exactly sustainability** … There is **a huge confusion** about that in the department between the **faculties** and the **students** … looking at the **understanding of students** in a project about **sustainable housing,** and I can say that it is rather **superficial**. I **do not** think that people are **interested** or **thinking** about this aspect of the future, I think they are **more interested** in what happens **now.**"
L/CID/1.2	"There **might** be an **understanding** of the **goals,** but I **doubt** that there is **an understanding** of **how to apply them**. **I doubt** that there is a **real understanding** of **how** to **make and keep things sustainable**. Moreover, currently, to be frank, **I do not know how to do it myself**. So, students are **not much informed** about the **importance of sustainability** or **urban sustainability.**"
L/DEO/1.3	"You would **expect** people working in the **university** to have **a higher level** of **awareness** of the **environment**, but unfortunately **it is not there**, those concepts are **not understood** by the department. I **struggle** with some of **our faculty**. Some **students** have **more awareness** than their **instructors**, but I **cannot** say, it **does not** exist, **some** instructors **do understand it** and **some shockingly don't.**"
L/TA/1.4	"There is **no understanding** of **urban sustainability** in the department **at all.**"
L/AP/1.5	"I know people have **achieved greener environments**, and **saved energy**, but I **do not** know if this is **what sustainability is about?**"
L/L/1.6	"I think students have **a great awareness** about **sustainability** and **urban sustainability**, they are doing various activities from time to time and trying to bring about **awareness** of this issue. So students are **conscious,** especially with the **climate course**, they are being **exposed** to it and they are **challenged** to do things. I also think, **design III** is always dealing with the issue of **sustainability.**" "Yes I believe the **faculty are aware** of this, because our **programs** are accredited by **NAAB** or other **systems of evaluation**, also the **quality** of **education** requires universities to be **committed** to such issues as **sustainability.**"

Table 9-2 Interviewees' perceptions of the understanding and awareness of Urban Sustainability among faculty and students of Architecture at UoB

Interviewee	Addressing Urban Sustainability
E/AP/1.1	"We have the **green week**, every year, which the **AIAS student body**[774] organises, and last year, we had a lot of **workshops** that meant to bring **awareness**. I had **a class lecture** talking about **sustainability** to some of the students, so **there are programmes** like that" "**Sustainability** eventually **comes into the picture** when teaching **design** so that we will be talking about them in the **classrooms** but **not** necessarily **teach it as a separate thing.**"
L/CID/1.2	"There are some **student activities**, but we [staff] are **not involved**, they **celebrate green days** and things like that." "I **do not teach** anything related to **urban sustainability** in my courses"
L/DEO/1.3	Not Discussed
L/TA/1.4	"Urban sustainability is **not** a subject that **comes up** in **any course** along the variety of courses I teach. … We were **not taught urban sustainability** when we were students[775]. So I am **not sure** if there is a **change** in the **courses or Curriculum.**"
L/AP/1.5	"Urban sustainability is **not being tackled,** and there is **no course for urban studies** yet … this is **sad** to say, we have **only one elective course**. There is **a huge gap** in our **programme of architecture,** and we need to **fix it urgently**. I have a lot of students **questioning** the **urban environment,** and they would really like to **gain** more **knowledge**, but there **are no channels** for this, our channels are **very naïve** so I would say there is **no understanding** of these issues."
L/L/1.6	Not Discussed

Table 9-3 Addressing Urban Sustainability with students in the DoA at UoB

Interviewee	Evaluation of Urban Sustainability
E/AP/1.1	"I think in **design III**, it is the main focus and is being **evaluated to a great extent**. So I would think **80% of design III** is judged on the basis of how **sustainability** is being **understood** and **addressed** through the design. However, in **other designs** it is addressed **very superficially.**"
L/CID/1.2	"In some cases, in **design courses** it might be **5–10 %** of their mark."
L/DEO/1.3	"**Not much**, I **would not** even say a **5%** to be frank. If the **focus** is **sustainable designs**, they will be **evaluated heavily** on that, but if it is **part of the overall** design I am **not** going to say it affects the **grade greatly.**"
L/TA/1.4	N/A
L/AP/1.5	"It **depends** on the **criteria**. If the design **focuses on sustainability,** then **they will consider it**. If **not**, it will **not** be **considered in their grade at all.**"
L/L/1.6	N/A

Table 9-4 Evaluation of Urban Sustainability in the Architectural Projects of Student at UoB

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[775] The interviewee here is referring to the Bahrain section of the American Institute of Architecture Students.

It was also clear from the interviews that the sustainability of student's projects does not seriously affect their evaluation (Table 9-4). This clearly indicates that issues of sustainability are not a primary focus in the architectural education at the DOA. Some interviewees claimed that more focus on the sustainability of the design was given in design III, because of its environmental focus. This raises concerns about the depth of understanding of the staff of the different pillars of sustainability outlined in chapters 2 and 3, and indicates that the understanding of sustainability in the DoA is mostly limited to the environmental efficiency of projects, as indicated by the definition of L/DEO/1.3 in (Table 9-1). This limited understanding seems to have reflected the overall attitudes and environment in the department; E/AP/1.1 argued, "The **general culture** of the island at the moment is **not towards sustainability.**" This confirms earlier arguments presented in chapter 5 (sections 5.6 and 5.7) regarding the lack of sustainability awareness in the Arabian Gulf. L/TA/1.4 added, "The department is **not a very good example for sustainability**, **not** even in terms of **educating the students.**" This raises concerns about the effects of the unsustainable learning environment on students. E/AP/1.1 highlighted that electricity is being heavily wasted in the department. L/DEO/1.3 further explained "we are **changing that**. We influenced the MoF to **force all governmental organisations** to **switch to LED** light … this has become **a law** for **all governmental buildings**[776]. However, they **didn't** take care our **old lights,** especially the **fluorescent** ones, which **cannot be just thrown** because they **contain mercury.**" This relates to the argument in (section 7.4) and is evidence of the limited influence of the SCE and its very limited role in protecting the environment in Bahrain.

Despite the above, it is also worth noting here that there are plans put down by the engineering office to make the campus of the UoB more sustainable, which corresponds to the NPDS I; however, like the governmental strategy, most of those plans are not yet implemented, which explains the argument of the rest of the faculty. L/DEO/ 1.3 claimed "We have 2,000 employees, and 18,000 students. If we **educate all** of them that means we have **educated 20,000 households**. **Spreading awareness** will **change the behaviours** and subsequently will **affect the buildings positively** … we are going to have **the first LEED certified building**, for the **newly designed buildings,** and then we will also **work on the old buildings to make them LEED certified**. However, now our **main constraint** is the **budget,** and that's why we are **focused** on the issue of awareness." Although this indicates that there is an awareness of the need to be more sustainable, it also points to the ongoing and considerable dependency on foreign knowledge and accreditation programmes (sections 7.3.1and 7.3.2), which relates to earlier discussions in the literature regarding the lack of local sustainability assesstment systems and models (section 5.8) and raises concerns about the sustainability of this process of certification and its influence on the learning environment. This will be further discussed later. In addition, those plans and strategies which concern the engineering office were not realised by any of the faculty of architecture, which also raises questions about the strength of communication between the DoA and the FMO and the reality of those plans in spreading awareness, and this relates to the argument illustrated in (Section 7.4). L/AP/1.5 explained, "we **only sometimes hear** that they are doing something about **sustainability.**" It is clear from the argument above that the learning environment at the DoA is not sustainable. This in addition to the limited understanding of the faculties, and the limited evaluation of students' projects seem to result in the limited understanding of students of the importance of sustainability, which is illustrated in (Figure 9-1).

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[776] A project implemented by EWA in coordination with MoF and the support of the World Bank, it aims at replacing the inefficient incandescent lamps with efficient compact fluorescent lamps (CFLs) in the short term and with the more efficient light-emitting diode (LED) lamps in the medium term. Currently is only implemented in some public buildings but the project aims to also include residential and commercial buildings in Bahrain.
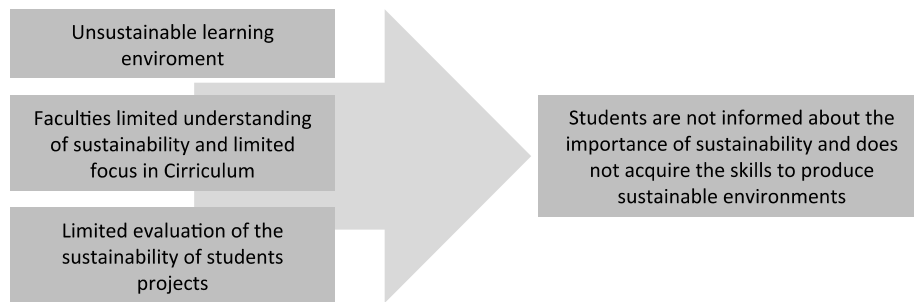
Figure 9-1 The different influences on students' understanding of sustainability

Key Findings:

- There is generally a limited understanding of sustainability and urban sustainability. Few interviewees were able to express a deep understanding of sustainability while, for the majority, sustainability was limited to environmental sensitivity.
- Interviews showed that those who were able to express a deeper understanding of sustainability debated that there is a shallow understanding of these concepts in the department between faculties and students, while an interviewee who expressed a narrower understanding of the concepts of sustainability and urban sustainability claimed that this issue was well understood and addressed in the department.
- This lack of knowledge is reflected in the focus of sustainability in course contents, and the evaluation of students' projects.
- There are limited attempts by the FMO to spread awareness of sustainability between the staff and students in UoB.

9.2.2 Understanding Sustainability in the Various Governmental Organisations Concerned with the Built Environment

It was agreed throughout the interviews that sustainability is a new topic in Bahrain, and that was argued to be the driving force behind the existing limited understanding. This relates to Ulrichsen (2011) explanation of the missing establishment of a sense of awareness of the emerging climate security threats in the region. E/HEP/8.1 explained "**Environmental awareness** in the **Arab world** started in the **80s or early 90s**, and we only started to **understand** the **importance** of **the environment** … in the late **90s**." Policy showed that the first official committee concerned with the environment was established in 1980. This committee developed until the declaration of the law of the environment in 1996 and the many implementation decisions that followed. In 2002, a royal decree was issued for the establishment of the general authority for the protection of marine resources, environment and wildlife[777], which was renamed the supreme council of the environment in late December 2012. L/HP/4.1 added, "**Sustainability** is a word that was **recently introduced** to Bahrain **ten years ago** … mainly, how to **maintain the environment**, make a

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[777] Supreme Council Of The Enviroment, *Bahrain's Achievements in the Field of Sustainable Development*.

project **last**, or **leave** a **positive impact** on the **environment** in general." E/UPA/5.5 and E/CCP/4.4 also supported this. E/CCP/4.4 compared between the understanding of sustainability in Bahrain with the UK "these **arguments** took a **hundred years** in the **UK** of **mistakes** and is **still not resolved** … We [British] started **planning cities** since **100 years ago**, yet, we only have those **debates** in the **UK now,** and **everybody** is so **passionate** about that. So it is **unfair** that one would **expect little Bahrain** to **be part** of that **debate instantly**, we [Bahrainis] **haven't** gone through all of those stages." It is interesting here to see how the British interviewee relates himself to both Bahrain and the UK; this is another input to the discussion in Chapter 7. This also relates to the developing debates about sustainability in western societies which are discussed in chapter 3. More models of sustainability are still being introduced, one of which is the model by James (2015) which indicates that even in western societies, sustainability is still under investigation.

Most of the interviewees expressed a limited understanding of sustainability. For example, L/HU/3.3 argued, "sustainability is a **wide** title, it includes **energy** and how we can **prolong the life** of an **area** or **a project** … maybe **smart houses**, are somehow towards **sustainability.**" L/A/3.4 argued, "[sustainability] is something that could **withstand the test of time**, and also be **good for the environment.**" E/UDA/5.2 added, "sustainability means first **not to waste the resources**, and in architecture, it means that you **create a better environment** for example by **orientation**. It is that every **house**, **room**, and **every space**, gets **sunlight** and **wind.**" L/A/2.4 explained, "sustainability is **good planning**"; in addition, L/CR/4.3 related sustainability merely to financial profit: "My **understanding** of **sustainability** is that **it brings in money** … to make sure that this thing you are doing will be **sustained**, there will be **profit coming out of it.**" Similar to the situation in academia, practitioners in the government associated sustainability with sustainable development. For example, L/AE/2.1 explained "It is the **efficient use** of **resources** so that **we and later generations** can **enjoy** it." Other interviewees had similar responses. This corresponds to Repetto (1985) understanding of sustainability which was discussed in chapter 2.

It is worth noting here that few other interviewees were able to elaborate and explain the different pillars of sustainability. For example, L/ES/8.2 highlighted "there is **social sustainability**, **economic sustainability**, **environmental sustainability**, **health sustainability** so the subject is very **huge**, and in general it is the **preservation of the environment.**" This indicates that although there is a focus on environmental sustainability in the SCE, there is also an understanding of the bigger picture of sustainability and the different pillars influencing it. This was also the case with E/HCS/2.2: "Sustainability, is about **preserving the environment**, **heritage**, **economy** and also **lifestyle**". L/PA/3.2 argued that "there are **four pillars** that make sustainability**; Environmental**, **social** and **economic**, and what the other one is? I didn't talk **academically** for so long." This indicates that although some interviewees were able to express an understanding of the concepts of sustainability, the issue seems to be regarded merely as an academic argument and debate, rather than a practical solution or a challenge. The limited implementation of those concepts will be discussed further later.

The understanding of urban sustainability, like sustainability, was also very much linked to sustainable development in most of the organisations interviewed, which proves the argument set forward in chapter 2. for example, L/AE/2.1 argued, "**Urban Sustainability** is **planning our cities** in a way that will **not only accommodate the present generations** but also **future generation needs.**" L/A/3.4 added "to have **greenery**, **roads, accessibility**, and to **withstand the test of time.**" L/HU/3.3 explained urban sustainability in relation to housing: "**urban sustainability** is allowing **housing projects** to **last** for a **long time** without **any external forces.**" The latter definition also relates to earlier ones by academics, shown in (Table 9-1). This was also seen in policy; as the national 2030 plan states, "the **ultimate goal** is to **meet** the **United Nations**

definition of **sustainable development** as **growth that meets the needs of the present generation without compromising the ability of future generations to meet their needs.**"[778] Four other, mostly foreign, interviewees were also able to identify different pillars when explaining urban sustainability. This shows that some of the interviewees understand that sustainability goes beyond environmental considerations to include other aspects of the urban environment. Urban sustainability was sometimes also explained merely in relation to the focus of the interviewees' work. For example E/HCS/2.2 related urban sustainability to urban conservation and L/HP/4.1 related urban sustainability to the sustainable process of construction. This goes against some of the arguments in the literature. For example, James (2015) in chapter 2 highlighted the importance of viewing sustainability holistically, rather than focusing on one aspect or field of sustainability.

Interviewees were also asked about their perception of the strength of understanding of those concepts in their organisations. Most of the interviewees argued that there was a lack of understanding of the concepts of sustainability and urban sustainability in different ministries concerned with the built environment in Bahrain, which confirms the debates in chapter 5 regarding the lack of sustainability awareness in the Arabian Gulf. For example, E/HA/2.5 highlighted "the **ministry** and its **workforce** are **not really sustainable** ... we are just **slowly understanding** what **sustainability** is, and I think that we are **far behind** other regions of the world." Other very similar answers were recorded. Moreover, some interviewees argued that even if there was an understanding of the concepts of urban sustainability, there is a lack of concern and limited implementation of those concepts. L/CU/5.3 highlighted "they **do understand** it but as long as they **don't have the tools for implementing sustainability** in their work, their **understanding** will have **no role** in any way; they **don't** have **the means to take another step** in **sustainability.**" E/UPA/5.5 added, "they **don't** know **how to apply it**, and even if they did, they **don't have the authority** to **change the policy** of the ministry to **implement** that." L/A/2.4 also supported this. The argument here relates to the one in chapter 7 regarding the lack of local experties in the field and explains the need to draft the NPDS II documents by the government.

Key Findings:

- Similar to the situation in academia, the understanding of sustainability in general and urban sustainability in particular was limited in various governmental organisations concerned with the built environment.
- Most interviewees explained sustainability and urban sustainability in relation to the sustainable development or limited it to environmental sensitivity.
- Few interviewees were able to identify the different pillars when explaining sustainability and urban sustainability.
- The data indicates that the understandings of those concepts are merely theoretical. This relates to the argument in (section 7.3.1) and suggests that there is a relationship between the understanding of sustainability in academia and practice; this relationship and its influence on the urban environment are illustrated in (Figure 9-2).

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[778] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.
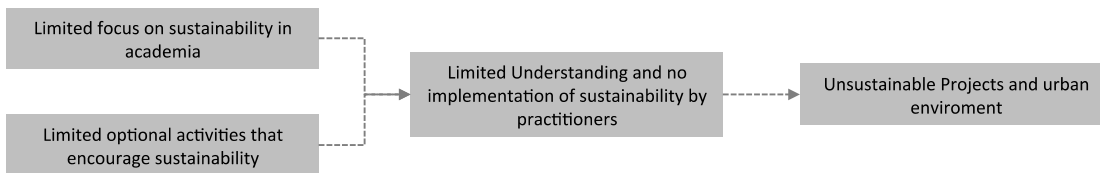
Figure 9-2 The relationship between the limitations of the educational system and practice and the effect of that on the urban environment

9.2.3 The Role of Governmental Organisations in Increasing Awareness of Sustainability between the General Public

Most interviewees argued that there was a limited understanding among the general public of the importance of sustainability, which confirms the argument in the literature of (section 5.2.2). For example, E/HEP/8.1 explained, "The **general public** in Bahrain **doesn't understand** those **concepts of sustainability** and **urban sustainability.** There is an **urgent need** for more **sustainable practices** and **lifestyles.**" One of the outcomes of the lack of understanding of sustainability among governmental officials, which was explained earlier, seemed to be the limited role of the government in spreading awareness among the general public. There are limited efforts in spreading awareness of the importance of sustainability and the benefits of living in a sustainable urban environment. Mostly, activities and programmes of the interviewed organisation were focused on environmental awareness, which is the primary responsibility of the SCE, this relates to the limitations of their understanding. It is important to note here that there is no one organisation responsible for urban sustainability, and as seen from the list of abbreviations different organisations handle different things. L/AE/2.1 explained the contribution of the MoC in spreading awareness about sustainability "two years ago … we had **many activities**, **promoting the sustainable use of the environment**, [like] **Beach cleaning** … Last year … there was also **a month for environmental tourism** … we **moderated** the first phase of the **tree of life**[779] [Figure 7-1 and Figure 9-3] exhibition and visitor centre, which is a project **aimed** at **preserving this tree**, and **promoting the sustainable use of the area** … So we do have events **targeting sustainability**, but again it is **not one of our main goals.**" The argument here also clearly indicates that the understanding of sustainability is limited to environmental considerations, which relates to earlier understandings of sustainability outlined in chapter 2. Moreover, L/A/2.4 explained that the projects of the MoC are not always successful in promoting sustainable awareness, saying, "the **face-lifting project** that they did in Muharraq was **supposed to increase the awareness** of people …. They **claim** that this is **part of sustainability** … however, they **didn't inform people**, which means **90% was not achieved**, they **only addressed the surface** of this matter but **not the core problem.**" This shows that the local interviewee understands the limited role of the ministry and is in favour of spreading awareness of the general public,

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[779] The Tree of Life is one of Bahrain's tourist attractions. Located in the southern desert, 2 km away from Bahrain's highest hill, and stands alone on top of a sandy hill. The 400 years old tree is famous for its beautiful landscape scenery, its age and adaptability to the arid environment surrounding it.

Figure 9-3 The Tree of Life Project by the MoC[780]

L/HP/4.1 also questioned the effectiveness of the MoW in promoting awareness of sustainability to the general public: "in coordination with the **BSE**[781]**,** we **contribute with many seminars** and **present** some of **our knowledge**, but … we **should emphasise** on **sustainability more**, to **raise the public awareness**, because there are **even some architects** who **do not understand** it." L/HD/5.6 also highlighted the need for the MoM to spread awareness of sustainability to the public to achieve change in the policy and ensure real implementation. One way of reaching the general public was argued to be through the municipal councils that are part of the council of representatives[782]. E/UDA/5.2 highlighted that "**our contribution** [in spreading awareness] is **very little**, and we **rely on the municipal councils**, because they are **supposed** to be **close to the people**, the **minister** himself also **visits every community** and **listens to them**, in the **Majales**[783]." L/HSU/5.4 added, "We **made a presentation** last year, to **each municipal council explaining** to them what is happening, and what is yet to come in the next five to ten years in their area; we were **expecting to receive feedback** from them, but we **didn't.**" E/UPA/5.5 also supported this. The argument here raises concerns about the effectiveness of reaching the public through municipal councils, and the degree of communication between those official public representatives and governmental organisations. This will be highlighted in the coming sections.

Interviewees of the SCE argued that there are a number of programmes and events by the council to spread awareness of environmental sustainability between the general public; E/HEP/8.1 highlighted that "**Initiatives** are **available**, **few** have been **conducted**, and **recently programmes** are **on the way to being implemented**." L/ES//8.3 added, "the **department of environmental education** and the **department of environmental relations and media** [in SCE], are **responsible** for that; they **participate in exhibitions**, **organise conferences** and **some events** like the **national environmental day** and the **Gulf environmental week**. They also organise **competitions** and **walking festivals**, but to what extent is this **effective**, I am **not sure.**" The interviewees did not comment on any form of monitoring. This shows that Bahrain is far behind some of its neighbouring countries in the sustainability agenda. Literature in (sections 5.7 and 5.8)

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[781] The Bahrain Society of Engineers (BSE) is a Professional engineering association focusing on the industrial development and modernization of Bahrain, architecture, landscape architecture, urban design and urban planning specializations are all part of the BSE, along with engineering disciplines.

[782] The country is governed by the parliament of the kingdom of Bahrain, which is a bi-cameral legislature, and is administrated by two councils; the first is the Consultative Council (upper), assigned by the King and the second is the council of representatives (Lower), which is directly elected by the people.

[783] Majales is plural for "Majles" and refers to the reception area where a man received his business colleagues and male guests; the term refers both to the reception hall and the gathering held in it. It is also referred to as "Dewaween" plural for "Dewaniya" in Bahrain and other areas of the Gulf.

showed the different sustainability projects and programs in the region. This will be discussed further in later sections.

Key Findings:

- The relationship between the practitioners' understanding of sustainability and academia, in addition to the role of practitioners in various governmental organisations in spreading awareness of sustainability between the general public in Bahrain is shown in (Figure 9-2).
- The data indicates that the limited focus in academia has resulted in a narrow understanding between practitioners, and limited the role of governmental organisations in spreading awareness of the general public.
- Mostly, governmental organisations are concerned with spreading environmental sustainability indirectly through their projects, building materials and events. In addition, governmental organisations seem to shy away from direct contact with municipal councils that the former considered to be uncooperative.
- The above seem to lead to the ignorance of the general public of the importance and benefits of sustainability.

9.3 Sustainability of Bahrain's Urbanism: Past and Present Conditions

Regardless of the depth of understanding of interviewees of the concepts of sustainability and urban sustainability, mostly it was agreed that the urban environment in Bahrain is not sustainable. This confirms the literature discussed in sections 5.3 and 5.4 and calls into question the relationship between the unsustainable conditions of the contemporary urban environment and the process of cultural change discussed in chapter 8. Interviewees believed that the urban environment in Bahrain was more sustainable in the past and that the older generation was more knowledgable about sustainability, an issue which was discussed by Khalaf (2002) and Looney (2007) among others. Interviewees reflected on the different images of the sustainable lifestyle that used to exist in Bahrain, and how things have changed today, as summarised and presented in (Table 9-5). L/AP/1.5 argued that the sustainability of the historic urban environment in Bahrain was due to the engagement of the society in planning, "there was **not much interference by urban designers** … **tiny houses** were built **spontaneously next to each other**, whenever they **needed** a road they **expanded** … it is the **opposite now**, the **infrastructures are laid out before the buildings are constructed,** and the **whole area would have been planned already.**" L/HB/5.1 highlighted that the lack of awareness was the reason behind the unsustainable urban situation in Bahrain, "I would say our **urban environment** is **only 10–20% sustainable**, because **those who are knowledgeable are very few.**" This relates to the argument in previous sections and raises questions about the influence of the unsustainable urban environment on the knowledge and experiences of students in the architecture programme. Also, this stresses that although there might be an understanding of the concepts of sustainability, there is a definite lack of implementation; this will be further illustrated later. The argument here also raises concerns about how the current large population can be accommodated in a sustainable environment and whether adapting indigenous norms of planning can produce a sustainable urban environment in Bahrain today. This issue will be discussed further in the coming sections.

Key Findings:

- The urban environment in Bahrain has changed dramatically over time, from sustainable to unsustainable.

- It was clear that the process of cultural change, discussed in chapter 8, was the driver of this transformation.
- The different images of change in the urban environment are illustrated in (Table 9-5). This raises concerns about the role of the government today in preventing or stimulating the unsustainable conditions of the urban environment in Bahrain. This will be discussed further in the coming sections.

category	Past	Present
Resources and Materials	Locally harvested materials and resources	Imported materials and resources
	Building depended on local materials	Building depending on imported resources
Size of urban settlements	Dense	Spread Out
Development of settlements	Growing slowly at a steady rate	Growing fast at a fluctuating rate
	Spontaneous, growing according to the need	Aggressive, growing in anticipation of future need
	Planned by society	Planned by urban planners and designers
Architectural features	Internal courtyards	Outdoor unusable gardens
	Thick walls that protect the interior environment from heat/cold	Thin inefficient walls
	Use of natural cooling	Dependency on mechanical cooling systems
	Buildings and spaces adapted to different functions and uses	Buildings and spaces have a single function or use
	Efficient utilisation of land	Inefficient utilisation of land
Roads and Walkability	Streets are shaded	Streets are exposed
	Narrow roads	Wide roads
	Pedestrian and bicycle friendly roads and streets	Roads and streets are not pedestrian and bicycle friendly
	Depending on walking and bicycling	Depending on the car for transport
	Roads not suitable for the use of cars	Roads are planned only for the use of cars
Public/private spaces relationship	Good hierarchy between public, semi-public and private spaces	Spaces are 100% private or public, lack of hierarchy
	Good distribution of public spaces	Lack of public spaces
social organization of urban form	Socially intact neighbourhoods: Clustered by relationships	Socially fragmented neighbourhoods: Random allocation
	Strong social relationships: Spread of extended families	Weak social relationships: Spread of single occupancy
	Strong sense of belonging	Weak sense of belonging
	Limited acts of vandalism to public properties	Spread of acts of vandalism to public properties

Table 9-5 Comparisons between the past and present features of the urban environment in Bahrain according to the interviewees

9.4 Other Main Challenges to Urban Sustainability in Bahrain

While explaining the sustainability of the contemporary urban environment, governmental officials discussed a number of challenges to achieving urban sustainability in Bahrain today; those describe in detail the unsustainable conditions of the urban environment in Bahrain which were illustrated in (section 9.3). The challenges discussed here are also linked to the argument in (section 8.3) and put forward the question of the relationship between cultural change and urban sustainability in Bahrain. It is also important to note here that the main challenge facing the implementation of sustainability in Bahrain was already illustrated in chapter 7 and underlined the discussions in most of the previous sections and is linked to some of the challenges which will be discussed in this section.

9.4.1 Unsustainable Growth of Population

Interviewees identified the sudden increase in population, which was highlighted in (section 6.3), as one of the main challenges to achieving sustainability in Bahrain. This is also linked to the importance of density in the global definition of the urban, presented in (sections 2.2.1) and the role of the ongoing increase in the world's population in changing our lives and the environment, (section 2.3). E/AP/1.1 argued, "Inhabiting an **island** like that and trying to **build upon it**, with **a huge population**, is **unbelievably unsustainable** … Bahrain's **population** has **doubled between 2000 and 2013**. The **number of cars** also **doubled**, and that is **the rate in which it seems to be growing.**" The Literature showed that the dramatic increase in population due to migration results in financial burdens rather than returns, expatriates in most cases invest in their home countries, which channels the money away from Bahrain, while at the same time enjoying many of the public subsidised services that the government is offering at the expense of the national budget. L/DEO/1.2 highlighted that the consequences of the unplanned increase in densities "will have **serious problems** in the **future** …we will start having some of the **diseases** that [were] **eradicated in the 18th and 17th centuries**, **building codes** and **density regulations** are all **kept for reasons**, and most of them are **health, fire** and **safety** issues. It is not all about the **city being beautiful** … we need **fresh air**, **sunlight** and to **access buildings** when there is a **fire.**" This, among the many consequences of the sudden increase in population, raises questions about the effects of this fast and dramatic growth of population on the local demographics and its role in changing the local culture. It also relates to the argument in previous sections about the import of foreign knowledge and skilled workforce and raises the question of the consequences of this increase on the sustainability of the urban environment in Bahrain. The interviewees highlighted that the increase in population could result in a parallel growth in the economy of the country; this is linked to the argument in (section 9.4.5) and questions the possibilities of the economy to grow with the widespread subsidisation.

9.4.2 Inefficient Urban Planning Department

Governmental officials highlighted that one of the barriers to having a sustainable urban environment in Bahrain was the lack of a strategy on the national level, which ensures the implementation of sustainable solutions. This raises questions about the effectiveness of the Bahrain 2030 strategy, NPDS I and II, and then also questions the strength of coordination between governmental organisations, an issue that was outlined in (Section 7.6). L/A/3.4 highlighted, "We noticed that things were **done randomly** around Bahrain … there is no **realisation** of why there is a **hospital next to a stadium** or **a factory next to a housing area** … We have **sustainability guidelines** and **requirements** for **material selections**, **lighting** and **electricity usage** and so on, but for **urban planning**, we need to set down and **agree** on something.**"** E/HA/2.5 added, "if our **heritage policies** are **not integrated** with the **wider policies** that have to do with **public**

transportation, **increasing the density** or the **built construction**, at the end what we can do is **quite limited**. In Muharraq, we have **introduced** a lot of **new urban public spaces**, but the problem is that **those are not connected to bigger plans** for **multi-storey car parking** facilities or **public transport.**" Babikir (2014) criticised the design of those public spaces by foreign consultants hired by the MoC. The author questioned the introduction of new materials in a local neighbourhood which made one of the latest public spaces created by MoC, and part of 18 spaces to be introduced in the PTP, "intimidating to those living around it". Babikir emphasised that the open space was no longer used by the locals, who previously considered the space "an extension of their homes." Babikir also questioned some of the materials used such as the "stick-like looking Indian almond trees" which were "bought on eBay" and pointed out that "only with some explanation from the designers can the design and the trees truly be appreciated". The author questioned whether the design decisions of the MoC would change in the remaining 17 open spaces, given the public and local professionals disapproval of the first design[784].

Figure 9-4 Open public space in Muharraq used in an event organised by the MoC to explain the project to local professionals and academics[785]

Other interviewees also criticised the work of the MoM in general and the UPD in particular. L/DEO/1.3: "it is **not people to people anymore**, it is now **people to a central body**, and although in the **past** there was also a central body, however **planning issues** were **managed in a better way.**" This relates to the argument by James (2015) and Zhang (2013) that discussed the need to inlude political support as a fifth pillar for sustainability in (section 3.5). L/AP/1.5 highlighted the

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[784] Suha Babikir, 'Public Space of Bahrain Series - 1: Muharraq – The Old, the New and the Avant-Garde?', 2014 <http://www.suhababikir.com/blog/2014/3/22/public-space-of-bahrain-series-1-muharraq-the-old-the-new-and-the-avant-garde> [accessed 9 April 2015].
[785] Babikir.

lack of community engagement in the planning mechanism that relates to the argument in (section 9.3) and indicates that the previous planning system in Bahrain was more efficient than today. This supports the argument in (section 6.7) of the change in the sustainability of the planning system in Bahrain. Moreover, this raises questions about whether the indigenous planning system would work with the challenge of an increase in population, which was explained in (section 9.4.1). L/AP/1.5 also highlighted the weaknesses of the UPD, saying "the **UPD** is more concerned with **zoning** and **categorising** than considering and paying attention to the **relationship between the global and local structures**. We have many **successful** [completed] projects but we have **plenty of urban problems** in terms of **sustainability** … we have some **good examples** in Muharraq for **urban design**[786], but not **urban planning.**" L/HSU/5.4 from the UPD highlighted that the downfall of the economic situation in Bahrain affects the work of the department because of its influence on their ability to hire consultants. This relates to the argument in previous sections and is another consequence of the lack of local experts and the resulting dependency on foreign consultants which was explained in chapter 7.

Policy showed that the government has adopted the concept of integrated management of the coastal and marine environments in the urban planning chapter of the strategic 2030 plans of Bahrain[787]. However, E/HEP/8.1 highlighted that environmental matters were not carefully considered from the beginning when making the strategic 2030 plans of Bahrain, and criticised the work of the UPD: "it was **very weak in environmental aspects** … **urban planning lacks the vision of the future** … they **allocated some marine environments in protected areas** however they **violated that and reclaimed them** … so even if we had **a role** in those **strategies**, it is only **secondary**, they look for us in the **final stages** of **project development**, so that we **publish the EIA report**." This also relates to the lack of representation and the weakness of the SCE that was highlighted in (section 7.4) and is an evidence that the recommendations of the SCE are being overlooked because of the lack of legal power of the organisation. It is important to note here that there was evidence in policy for a number of laws that governs the protection of the environment; however, much of those seem to be overlooked when planning projects. For example, article 9-h of the Constitution states that "the state shall take the **necessary measures** for the **protection** of the **environment** and the **conservation of wildlife.**" This will be further illustrated later.

Interviewees from the UPD at the MoM also seemed to agree with the criticism of other organisations. L/HSU/5.4 explained, "we **do not** have **clear objectives** yet … we have **strategies,** and we have **policies** that are **not related to those strategies** and **contradict** the **strategies** of **other governmental agencies.**" This refers to the lack of communication between various governmental organisations that was outlined in (Section 7.6). E/CCP/4.4 stated the need for integration in Bahrain, saying "Bahrain needs **three** things: one, **integration**, two, **integration** and three, **integration.**" L/L/1.6 also supported the need for integration and a national strategy: "what we need, in this journey to **achieve sustainability,** is the **endorsement of all the people in the private and public sectors** to make this trip an **active** one." The national plan also stated "Building a **sustainable kingdom** required **integration** of all **agencies**, **directorates** and **ministries** to **collaborate, think differently**, **be creative** and **combine their efforts.**"[788] In this regard, integration, in addition to signing up to policies in a meaningful way, should assist the government in implementing its sustainable strategies.

Key Findings:

[786] The interviewee is referring to the open public spaces done by the MoC, which were discussed earlier.
[787] Supreme Council Of The Enviroment, *Bahrain's Achievements in the Field of Sustainable Development*.
[788] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.

- Despite their responsibility for making planning decisions, the UPD at the MoM is not taking a leading role. This points at the relationship between the inefficiency of the UPD and the deficiencies of the educational system.
- The argument above indicates the negative influences of this on the effectiveness of the UPD in Bahrain and the decisions they make. This relationship is illustrated in (Figure 9-5).
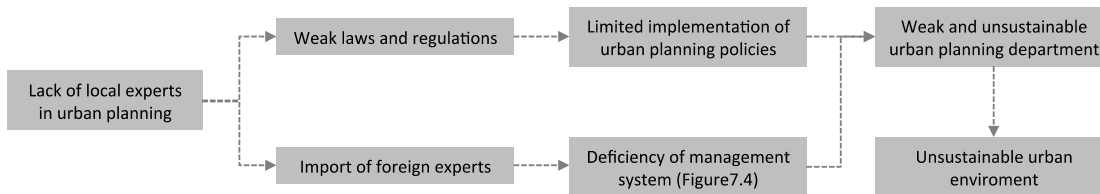
Figure 9-5 The influences of the lack of local experts in urban planning on the UPD at the MoM and the consequences of this on the urban environment

9.4.3   Lack of Public Awareness

Interviewees also highlighted that one of the challenges to achieving sustainability is the need to increase the awareness of the public, which relates to the argument in the literature of (section5.5.2) and also the argument in (section 9.2.3). Despite the limited understanding of sustainability, however, it is clear that some of the interviewees understand that government planning decisions on their own will not guarantee a sustainable urban environment. L/CID/1.2 argued, "It will all **depend** on the **behaviour** of the **people**, **not only** the **planning** … because **what makes it sustainable** is the **interaction between what is designed and the users.**" L/SSP/3.1 also touched upon this: "If we **don't educate the people**, we are **not going to go forward.**" L/HP/4.1 added, "**Pioneers of design**, **engineering**, and **urban planning** … **should broadcast** their **point of view** to make the **public understand** that although **sustainability might cost more in the beginning**, but, in **the long run**, we will **harvest the benefits** of these decisions." This relates to the argument in (section9.2) and questions the government's understanding of the core problem. It is clear that the unavailability of specialisation in academia has resulted in the general lack of awareness among practitioners, and this was reflected in the general public understanding of those issues. It is evident here that although there appears to be a realisation of the problem, there doesn't seem to be an understanding of its roots; these relationships are illustrated in (Figure 9-6). Also, the argument here indicates that the interviewee does not realise the impacts of subsidies, another challenge facing sustainability that will be discussed in (section 9.5.5).
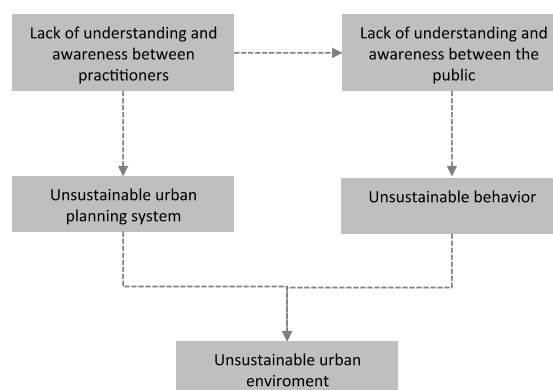
Figure 9-6 The consequences of the lack of understanding and awareness of sustainability and urban sustainability between practitioners

Another issue that relates to this is the deficiency of the public representation system, which also relates to the importance of political support explained by James (2015) and Zhang (2013) in (section 3.5). Some of the problems of the municipal council were discussed in previous sections; however, it is important to note here that one of the reasons for the deficiency of municipal councils is the uneducated elected representatives, which relates to the argument in chapter 7. L/DEO/1.3 highlighted "when those **uneducated representatives** become **decision makers**, they **don't understand** how those **systems** work, and the **importance** of every small **decision they take** … they will take **any decision** because it **does not matter to them** … Two more floors here, two more floors there and then you end up with an **unhealthy jungle of concrete.**" This eventually relates to the awareness of the general public (section 9.2.3) and the lack of consciousness of those who are politically representing the majority of the public. The argument here raises concerns about the sustainability of the decisions taken by the House of Representatives[782], which is illustrated in (Figure 9-7). L/HSU/5.4 gave another example: "Sometimes the **municipal council** of an area would **approve projects without explaining** them to the **people,** and later, they would **ask us to stop** the project when the public **disagreement** to the project **reveals [itself]**[789]; this **costs us financially** and **delays projects.**"
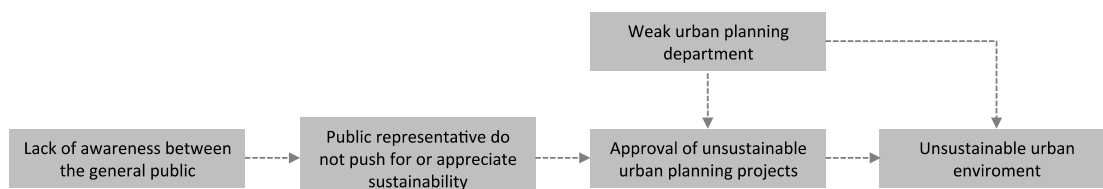
Figure 9-7 The consequences of the lack of understanding and awareness among the general public of the importance of urban sustainability

9.4.4   The Car-Dominated Urban Setting and Car-Attached Community

It was argued in (section 8.3.4) that the adaptation of new technologies in general and the domination of the car in particular had many negative influences on the urban setting and life in Bahrain. The literature in chapter 3 also identified the advances in technology as a cause for cultural change, for example: Madu and Jacob (1999) discussed the role of the internet and Gillespie (1995) looked at the role of television in changing cultures. Interviewees identified the car domination as a challenge to adopting a sustainable urban lifestyle in Bahrain today. L/L/1.6 pointed out, "each student seems to **own a car** today, we see **hundreds of cars** in the car parking lot **every day**, and those **cause excessive heat.**" E/AP/1.1 added "The **construction** of **huge highways** is now **a challenge** … **the road networks are far ahead of our scales of habitation** … This really shouts out the bringing of **unsustainable transportation systems** into the island."[790] E/UDA/5.2 acknowledged the urgent need for a sustainable strategy to solve the problem of car dependency and the challenge of the current car dominated culture: "[MoM] **did not solve the regulations** … People needed to find ways **to park their cars,** and that [has] **affected the types of houses** we have … people are now **using their** [house] **gardens** … **to park their vehicles**, and **this**

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[789] Usually through complaints in newspapers.
[790] 'Assistant Professor,University of Bahrain, 7th January 2014'.

[has] caused environmental problems due to **heat gain.**" This was supported by E/UPA/5.5. It appears here that there is a lack of laws that regulate the use of cars in Bahrain, which results in this widespread mode of mobility and challenges other sustainable alternatives. This relates to the argument in (section 9.4.2) and also raises the question of the environmental impact of the changeover of private gardens to parking lots, and whether reversing this to go back to internal courtyards (section 9.3) would solve the problem. This will be highlighted later. L/L/1.6 discussed the use of carpooling as a solution to reduce the effects of car dependency in Bahrain. This relates to other measures involving cutting down carbon emissions by reducing car usage in movements such as New Urbanism, the Eco-city and Smart Growth, which were outlined in Chapter 2, this was emphasised by Farr (2007) and Oswald and McNeil (2010) and puts forward the question over the relationship between the sustainability of the urban environment and the awareness of both the public and governmental officials, and whether awareness of the government should be spread to the public or the public's desire to live in a sustainable environment should force governmental policies to deliver more sustainable habitation styles.

E/CCP/4.4 debated that the negative influences of car dependency are only theoretical arguments which are discussed among academics in foreign countries, and that in reality Bahrain is kept from implementing more sustainable solutions: "the **biggest problem facing sustainability** in Bahrain is **suburbanisation** and **the use of the car** of course. However, all of those things are **theoretically** being defined **outside** of Bahrain as **negative things**, and **perspectives in Sheffield,** for example, would look at Bahrain and think … everyone **uses the car** … having **wide roads everywhere** and all of this, but let Sheffield have the **summers** we have … **no public transport** … the **issues of ladies wearing Abaya**[791]." This is related to the argument in (section 7.3.2) and raises questions about the influence of foreign employees on the development of sustainability in Bahrain, and their understanding of local cultural issues. The argument above also assures that there is a missing link between importing foreign solutions of urban planning, and the challenges set forward by the local climate and culture and further stresses the need for local experts and skilled professionals which was highlighted in chapter 7. Furthermore, it appeared throughout the interviews that the contemporary car-attached culture in Bahrain is one of the challenges to achieving urban sustainability. There seems to be an awareness of the problem; however, interviewees also agreed that there are no serious attempts yet to solve this problem, which indicates the continuity of this unsustainable culture and urban environment. These relationships are illustrated in (Figure 9-8).

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[791] Abaya is the traditional dress for women in Bahrain and the rest of the Arabian Gulf countries; it consists of a black dress covering all the woman body along with a black scarf to covering women's hair.
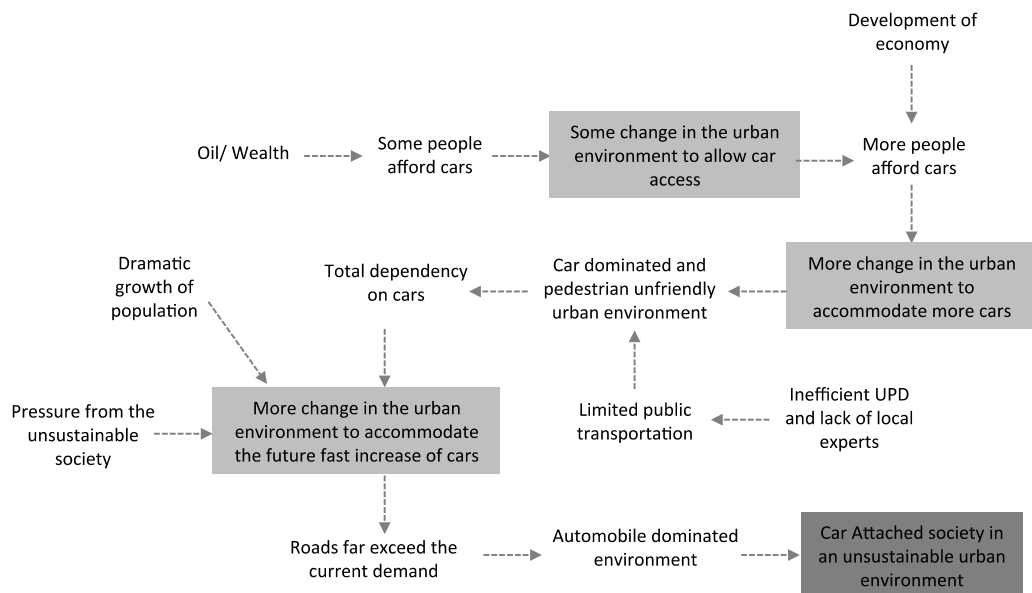
Figure 9-8 The influences behind car attachment and the incremental impact of the car on the urban environment

9.4.5 The Widespread Subsidisation

The spread of the consumer society has been discussed in (section 8.3.7) and is in direct relationship with the subsidising of all the essential services by the government. This was argued to be another challenge facing sustainability in Bahrain. This also relates to the transformation of the Arabian Gulf following the discovery of oil which was explained in (section 5.3). E/CPO/4.4 highlighted "**everyone** is **subsidised irrespective of their ability to pay** … **food, fuel, electricity** and **water.** This is **not sustainable**, but **who is interested**? … If there were an **inefficient building** in Bahrain, **no one** would be **interested in making it efficient**: there are **no penalties**, **no costs**, and the **electricity is virtually free** … there is **no reason** for anyone to want to **spend more money** in making it **efficient** … it is **only through government regulations** because it is the **government** who is **hurt financially.**" L/SSP/3.1 added, "We **do not care**. We are **not paying money** for the **simplest things** like **waste** … **we pay nothing** for our **electricity.** But if we **paid the real value**, it would **hurt us,** and we **would not waste as much**. Instead, we would get a **better quality** of **AC**, **pay that extra** to **insulate** our houses and probably **use grey scale water** to water our plants." The above argument indicates that there is a realisation of the problem. Few interviewees acknowledge the consequences of subsideis on the sustainability of our urban environment. However, there doesn't seem to be any practical solution to solve these problems, which relates to the lack of policies and laws explained in chapter 7. L/DEO/1.3 argued that subsidisation prevented designers from implementing sustainable solutions, because of the increase in cost: "the **architect** [foreign consultant] suggested to **install light shelfs**, and we did a small calculation; however, it appeared that actually **switching the light was cheaper than having the light shelves**, not only in the **initial cost** but **also in the long run** … We **bring many solutions from outside**, but we **understand** them in **our context**, **environmentally, financially, economically, politically.**" This relates to the development of the walefare system in the Gulf as a result of the massive oil capitals explained in (section 5.3) and raises concerns about the possibility of implementing environmental solutions to buildings in Bahrain if they cannot be justified financially and puts forward the question of the appropriateness of decreasing subsidisation or

introducing other solutions by the government which will not burden the inhabitants of the islands. This also relates to the argument in (section 9.4.1) and questions the influences of the unsustainable increase of population on the sustainability of the urban environment in the presence of such subsidies. Those questions will be further addressed later.

In addition, E/CCP/4.4 explained that the government has adopted a financial model that is not sustainable to cover the subsidies it offers for its citizens: "There are **structural reasons** ... Britain has a big history in **screwing up** [messing up] big time on **structure funding** through the **PPP**[792] system. We made the **same mistakes** because **we downloaded the PPP system from the UK,** and they **do not work** in **Bahrain** ... they **do not work in Britain**, so **why would they work in Bahrain**? For example, we [government] **buy electricity** by having **a massive threshold**, AL Dur[793] power station is a **private PPP**, and we **pay** for the electricity **whether we use it or not**, because that is **part of the financial module**, so what is the **incentive** for the **government not to use the electricity**? It is always **the economic model** that will **drive sustainability** issues and **ours is not sustainable.**" Using the British model is also related to the influence of foreign programmes on the sustainability of the urban environment in Bahrain, which was discussed in previous sections, and raises concerns about the possibility of reversing this and coming up with a financial model that suits Bahrain's case, and allow for sustainability to grow and influence the urban environment positively. This will be further discussed later.

It is worth noting here that there was evidence of small initiatives by the government to implement environmental sustainability in Bahrain, despite the challenge discussed above. One of these attempts was highlighted by E/CCP/4.4: "The BFH[794], The BWTC[795] and Al Reef[796] projects are **district cooled**, they have **no separate chiller or AC system**. Instead it is **centralised chiller** ... it is **50% more efficient** than normal cooling, so we **achieved carbon footprint reduction.**" This indicates that there is a realisation of the problem, and attempts to consider sustainable solutions; however it also raises a question of how those systems can survive in the public domain and whether those solutions can compete with the existing unsustainable financial model. It is obvious that the government lacks the holistic strategy to implement sustainability in the urban environment in Bahrain. It is today a question of how the government can diversify the economy and reduce subsidy rather than how can the government continue to cater for the public increasing needs. Louer (2008) explained that "While young Bahrainis no longer benefit from the welfare state as their parents once did, they continue to live in the ethos of the welfare state."[797] It is also a question of how to rehabilitate the public's perceptions of long-term quality living and to make them understand the unsustainability of the welfare system. This will be further discussed later.

9.4.6 Improper Land Use

Another challenge that relates to consumerism, which was highlighted in (section 8.3.7), is land use regulations in Bahrain, which relates to the argument in (section 7.5). It is evident that cultural change has brought in cultural behaviours that do not respect the secrecy of land in Bahrain, and to

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[792] Public Private Partnership (PPP), sometimes also referred to as P3 or P³. Is a government service or private business venture, which is funded and operated through a partnership between the government and one or more private companies

[793] A costal village in the south of Bahrain, section 6.6.7, famous for the location of the declination plant

[794] The Bahrain Financial Harbor (BFH) is a governmental commercial project on reclaimed land that started in 2004 and is still ongoing. The first phase was completed in 2009 and the other phases were delayed because of the economic crises. The project defines the skyline of Manama and is one of the landmarks in the northern shoreline of Bahrain.

[795] The Bahrain World Trade Centre (BWTC) is a twin tower complex, connected via three wind tower turbines and located in Manama overlooking The Financial Harbour and the northern seashore of the mainland Bahrain.

[796] Al Reef Island is a commercial and residential project in close proximity of BFH and located on the north seashore of the mainland Bahrain. Figure 6-22B

[797] Louer.

resolve these issues is a challenge. This was highlighted by Assad (2007), Al Saif (2002), Al Motwa (1996) and others in (section 5.3). E/UDA/5.2 argued, "Our regulations state that the **minimum size** of a **plot is 300 km²**, this is **too much** ... Now they are **allowing** people to **build attached** to their neighbour **on one side**, but **why not use all the land**?[798] It should be **the** [owner], and the **health department responsibility**, to **ensure** that the building is **environmentally wise and healthy** and that **every space is ventilated and well-lit.**" This also relates to the argument in (section 8.3.5 and 9.4.2). It appears that the change in the planning system due to the influence of foreign planners resulted in the change of planning regulations, houses therefore changed their layout from having sustainable multifunctional internal courtyards to unsustainable single-function outdoor setbacks and gardens (section 9.3). These gardens are another challenge to sustainability; for example, the heat gain from using those spaces to park cars which was outlined in (Section 9.4.4) in addition to the waste of land because of the setback regulation which was explained by the interviewee above.

L/HSU/5.4 added, "**each and every land use** here in Bahrain **has its problems**, and the **mixed-use strategy is not sustainable** and **not compatible with the infrastructures** that we build .... We also **don't** have a **clear definition** of **investment** in Bahrain, it's **mixed up** with the **industry** and the **commercial land uses,** we do have an **investment building zoning**, but we **don't** have a **clear strategy**. We are trying to **encourage industrial areas**, but, unfortunately, the ministry of industry and commerce is **not utilising** those industrial areas in an **efficient** way." This also relates to the argument in previous sections about the weakness of the UPD at the MoM, due to the lack of local experts in urban planning, and also relates to the strength of connection between the UPD and other governmental organisations in Bahrain, which was outlined in (Section 7.6).

Another challenge to sustainability in Bahrain, as in many of the Gulf countries, which is related to land use, is the deficiency of the waste disposal system, Janardhan (2011) explained "while the Gulf region has a wealth of resources, it is also a region with a 'wealth' of waste, particularly due to human indifference towards the environment whilst pursuing rapid development."[799] This issue was highlighted by L/DEO/1.3 "our **dump yard** [landfill] is **nearly full**, it reached its **maximum capacity ...** we **signed** a lot of **international agreements[800]** that keeps us from **sending our rubbish outside** ... whatever we have here, will **stay here,** and we need to **find solutions** to **turn waste into other products.**" Moreover, policy showed that waste management is one of the country's main challenges, solid waste in Bahrain has accelerated in volume and reached 1538 kg per capita in 2008, the highest average per capita in the entire Arab region. This in addition to the scarcity of waste-disposal sites due to the limited geographical area and lack of environmentally appropriate tools for the treatment and handling of waste threatens the pollution of soil, water and air in Bahrain[801]. L/SSP/3.1 also related the consumption attitude to subsidisation and highlighted the impact of this on waste production "if **we paid** for the **waste** we produce in our household, we would think about **recycling** our bottles, papers and metals **more seriously**, so that we **pay less.**" E/CCP/4.4 talked about the treatment of sewage water saying, "For **sewage**, we have a **PPP[792] sewage works** in Muharraq, and we **produce treated sewage affluent**, which **could** be used for **irrigation**, but we are **dumping it into the sea**, because there is **no market for it.**" This also related to the issue of subsidy (section 9.4.5) this indicates that the cheap prices of clean water,

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[798] The interviewee here is referring to the setback regulation in Bahrain's planning system. House owners are forced to leave a rear, front and side setback, between their houses, the road and their neighbors, which depends in width, on the area in which the house is being built.

[799] Nada Janaradhan, *Boom and Gloom: The Spirit of Possibility in the 21st Century Gulf* (Reading: Ithaca Press, 2011).

[800] The protocol of controlling transport and disposal of waste across the borders part of the Kuwait regional convention for cooperation in the protection of the marine environment from pollution, Basel convention of 1989 on the control of trans boundary movements of hazardous waste and their disposal, protocol on the control of maritime transport of hazardous and other wastes across boarders and their disposal.

[801] The public commission for the protection of marine resources environment and wildlife, *Bahrain National Assessment Report on Implementation of the Mauritius Strategy (MSI) of the Barbados Program of Action (BPOA)*.

limits the use of treated water that raises questions about the sustainability of this practice and the consequences of its continuity on the sustainability of the urban environment in Bahrain.

This alarming issue raises concerns about the role of the SCE in protecting the environment from the hazards created by this waste, and the seriousness of governmental strategies to find ways to decrease the amount of waste produced in Bahrain by increasing awareness, (Section 9.2.3). This also relates to consumerism as was discussed in (section 8.3.7) and the impact of an unsustainable increase in population highlighted in (section 9.4.1) on the amount of waste produced in Bahrain. This puts forward the question of the possibility of developing the government's role in increasing awareness of the general public about the importance of reducing waste and recycling. A number of measures were taken by the government such as issuing legislative decree No. (4) for the year 2005 to regulate disposal of industrial wastes and legislative decree No. (3) for the year 2006 to regulate disposals of hazardous wastes; this relates to the argument by L/DEO/1.3 in (section 9.2.1) and the actual effectiveness of the SCE in dealing with hazardous waste. This indicates the need for a comprehensive national strategy for waste management which was also highlighted in the policy[802]. This will be discussed further in Chapter 10.

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[802] The public commission for the protection of marine resources environment and wildlife, *Bahrain National Assessment Report on Implementation of the Mauritius Strategy (MSI) of the Barbados Program of Action (BPOA)*.

9.4.7 Unsustainable Existing Developments

Another clear challenge to implementing sustainability appeared to be the existing practice in planning, design and construction in Bahrain. L/HP/4.1 highlighted "we **inherited projects** from previous periods when **sustainability was not a concern** at all **…** We are trying to **come up with solutions** to **turn** those projects at the **lowest cost possible**, to have the **best results.**" The interviewee here does not give a specific example. L/SSP/ explained "we **copied** the **American grid system** in planning, **without testing** it … We are only **getting lessons learned now**, in the last **ten years** … we have **lost a lot** in this process." It is important to note here that the unsustainability of the grid system which was adopted from abroad relates first to the loss of the intact non-planned neighbourhoods which were socially rich (section 8.3.5 and 9.4.2) and second to the large plot sizes and car domination (sections 8.3.4 and 9.4.4). L/PA/3.2 added, "they **listened** to **consultants** who **came** to Bahrain and **proposed** things, and, of course, those **consultants didn't really understand** the **Bahraini culture** and **urban fabric** like the **locals** did". The negative influences of depending on foreign consultants were acknowledged. However, there was no realisation of the continuity of the problem, and no plans to resolve this problem, which relates to (section 7.5). This raises concerns about the consequences of the continuation of this unsustainable process on the urban environment in Bahrain, which will be further discussed later. E/UDA/5.2 and L/SSP/3.1 also supported this.

The unsustainability of the most contemporary urban developments in Bahrain were also discussed as one of the challenges to achieving urban sustainability in Bahrain, some of which were outlined in (section 8.4.5). The more we have of those unsustainable developments, the more effort it will take to correct the situation. L/AE/2.1 highlighted "**modern developments** in Bahrain which were built **10–20 year ago** or **even younger**, like **Amwaj,** [section 6.6.8], require **a lot of maintenance** and **modifications** every now and then. This, in addition to the **environmental** and **cultural impact** of these developments, makes them **unsustainable**… because they **severely damaged** many of our **marine environments** and **natural beaches.**" L/A/2.4 also highlighted the unsustainable materials used in those projects. E/UDA/5.2 highlighted the unsustainability of two recently developed skyscrapers in Bahrain: "what is the **rationale** for building a **high-rise** like BFH[794] … the **architect lacked the shape**. He designed it with **too much glass**, so now the **whole east and south wings are empty**, with **few occupying the western side**[803]… The other is The **BWTC**[795], those **fans cost a lot**, and the **consultant claimed** that it would **save energy**, but it will **never do** … how are we going to **produce energy** from a **turbine** if we **don't have wind**?." Since the consultants of both projects are foreign, this also relates to the argument in chapter 7 about the influence of foreign consultants, and supports the argument that although decision makers are still not aware of the negative impact of those external consultants on the local urban environment, there is a realisation about this among professionals. It is obvious from the above that dealing with the existing urban setting, and trying to reverse its unsustainable condition, is one of the challenges to implementing sustainability; however, it is also evident that there is a realisation of the need to move into a more sustainable practice and acceptance that previous practices were not sustainable; this will be further discussed later. Lack of or insufficient knowledge is emerging again as a problem in this section.

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[803] Bahrain is very hot in the summer and ideally architects should reduce the amount of glass in the south, east and western sides of a building; to reduce the amount of heat gain due to direct sunlight. Having full glazed windows on all the building sides require more energy to cool the inside spaces, which requires the burning of more fossil fuels and increases emissions. Even then, direct sunlight often causes excessive heat inside those spaces, which keeps tenants from renting them.
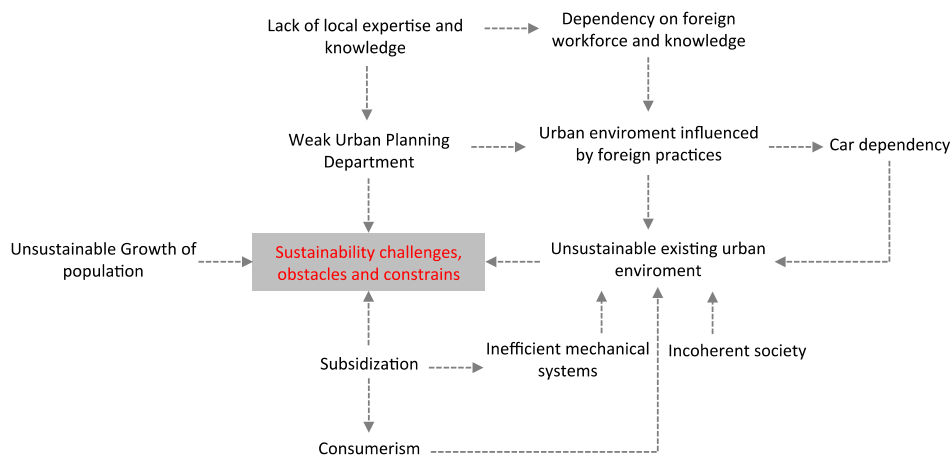
Figure 9-9 The relationship between images of cultural change and challenges to urban sustainability in Bahrain

Key findings:

- There are a number of challenges facing the employment of sustainability in the urban environment of Bahrain today, all of which are connected to the effects of cultural change on the urban environment that were presented in (Section 8.3).
- This clarifies the connection between cultural change and urban sustainability and the role of the government today in preventing or simulating urban sustainability. This will be further explored in the coming sections.

9.5 Sustainability of the Working Environments and Projects of Governmental Organisations Concerned with the Built Environment

Interviews revealed that neither the working environment in the various governmental organisations concerned with the built environment nor their projects were sustainable which confirms the argument in (sections 5.5-5.9) of the unsustainable condition of urbanism in the Gulf. L/CU/5.3 highlighted "generally in Bahrain, **ministries** might be **introducing sustainability** on a **small scale** by providing **workshops or programmes** [section 9.2.3], but I **don't** think that the **working environment** in those ministries is **sustainable.**" E/HA/2.5 added, "there is **hardly any recycling.**" E/UDA/5.2 also criticised the permissions given to unsustainable developmentss saying "we [MoM] give a lot of **planning permission**, and **building permits** for buildings that are **totally not sustainable.**" It should be noted that a foreign interviewee E/HCS/2.2 argued that one of the indicators of the unsustainability of the working environment at the MoC was the extensive dependency on foreign employees: "the **environment** of the ministry is **not yet sustainable:** most of its **influential figures** are **still foreigners**, and one of them is **myself**. We are **trying very hard** to **get Bahrainis** in place to **lead.**" This is related to the argument in (section 7.3.2) and indicates that there is realisation of the unsustainability of this practice between some of the foreign employees themselves.

Few interviewees from the MoC highlighted that the nature of work of the ministry is naturally sustainable. E/HA/2.5 added, "the **most sustainable** thing you could do is to **reuse** the **existing fabric**. However, there are **still so many buildings** from the 60s and 70s that **could be rehabilitated and reused.**" This was supported by L/AE/2.1 and relates to the argument in (section 9.2.2). It is important to note here that those arguments of the interviewees about the sustainability of the working environment and the outputs of their organisation are driven by their understanding of sustainability and urban sustainability which were discussed in (section 9.2.2); this will be further discussed later. E/HCS/2.2 highlighted the MoC attempts in economic sustainability: "one little **cafe** that opened in Qaisareyah[804] in 2012, has now **five other branches**, so this is not only **a heritage example**, but also an **economic** one ... There are a similar **6–7 projects coming up** in the next year or two ... We are also very much **pro cultural tourism**, to **generate revenues for the country.**" However the interviewee among others argued that not all of the ministry's projects are economically sustainable. The relationship between the economy and sustainability in outlined in the literature of chapters 2 and 3. Moreover, those arguments about encouraging tourism in Bahrain are also linked to cultural change. Tourism has a strong influence on changing the cultures of island communities[805]. E/HCS/2.2 continued "there is a **tendency to give everything free** to the public, whereas all of these **efforts** in other contexts and countries are **quite expensive** and the **public have to pay** for [them]. We need to consider **economic revenues to be sustainable.**" E/HC/6.1 added, "**Museums** here are a **burden** on the **government,** and one of the issues to think about is **how to sustain** them**.**" It is important to note here that in some parts of the world museums are free, but are economically sustained from the taxes paid by the citizens; this is not the case in the tax-free country of Bahrain. This relates to the issue of consumerism which was discussed earlier by Assad (2007), Al saif (2002), Al Motwa (1996) and others in the literature of (section 5.3) and the findings in (sections 8.3.7).

The argument above also relates to the widespread subsidisation, which was highlighted in (section9.4.5) and raises concerns about the effects of this on the cultural heritage in Bahrain, and eventually on the cultural sustainability of the urban environment. Furthermore, E/HA/2.5 claimed,

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[804] Al Qaisareyah is part of the old market of Muharraq
[805] Donald Macleod, *Tourism, Globalisation and Cultural Change: An Island Community Prespective* (United Kingdom: Multilingual Matters Limited, 2004).

"we try **not to use glass** so much, this is **not** a high-tech **sustainable solution** … **we insist** a lot on a **good design** and **hiring architects** that **understand** these things and try to **implement** them." Nevertheless, most of the MoC projects integrate glass to be in contrast with the indigenous fabric and to lighten visually the building (Figure 7-1). This relates to the argument in (section 7.3.2) and raises concerns about the quality of foreign employees and the external consultants they choose to work with, and is a worked example of the environmentally unsustainable outputs and the culturally unsustainable organisational practice of the MoC.

Interviewees also talked about the lack of sustainability in the internal system of the ministry. E/HCS/2.2 argued, "**sustainability is not yet there**: in regards of **having a long-term** strategy, where all the working tasks meet a certain **clear message** or **objective,** our **aims** are **not yet well defined.**" This also relates to the argument in (Section 9.4.2) and shows that the lack of an overall national agenda might have influenced the lack of an influential overall strategy in the work of the governmental organisation. This was supported by L/A/2.4 and raises concerns about the sustainability of this process and the effects of the deficiency of the internal system on the urban environment. It also highlights the relationship between the lack of local experts and the limited laws and regulations, which was discussed in chapter 7. E/HCS/2.2 described the sustainability of open public spaces in Muharraq which were reintroduced by the MoC: "the **open public spaces** … have many **sustainability considerations**, such as **greeneries**, **self-sustainable system of cooling** and **floor cooling** … So we are giving some **assets** to the **old historic core** to **attract various classes of the society in Bahrain ag**ain." This opposes the argument by Babikir presented in (section 9.4.2). Another form of social and environmental sustainability highlighted by E/HA/2.5 was the integration of social housing solutions in the historic part of the city of Muharraq to bring people back to the old city. E/HCS/2.2 added, "we are trying to **incorporate modern services** into the **old courtyard houses** because the **courtyard concept is about to abolish** from our **urban fabric** … There is a **long waiting list of houses,** and we can **use those courtyard houses** and **encourage** people to take them **immediately**, instead of **waiting for another ten years** or so to get a house." This relates to the argument in (section 8.3.3) and raises questions about the ability of those attempts by the MoC to reverse the effects of cultural change on the urban environment in Bahrain, which were presented in table 6-14.

Similar to the MoC, interviewees of the MoH also seemed to think that the projects of the government are not sustainable. L/SSP/3.1 added "we still **don't insulate** our houses … **We accept bad quality products** because **we think buying cheap is good**. There is **not enough awareness** about the **environment** … However, we are **working on it**. Because law governs us[806], and it costs **much money …** now we are looking into **lighting, insulation, and glazing** … **water consumption** and **flush systems** … **EWA** have even gone to the extent of **introducing grey scale**, and it will only be a matter of time to **implement** those things." This was supported by L/PA/3.2, L/A/3.4, L/HD/5.6 and relates to an earlier argument by E/CCP/4.4 about not using the treated wastewater. The argument here confirms the literature by Kumetat (2009), Richer (2008), Spiess (2008) and others of the lack of awareness about climate change in the Arabian Gulf which was presented in (section 5.5). The policy also showed that EWA has made some attempts to conserve energy. A project is now implemented by EWA in coordination with MoF and the support of the World Bank that aims at replacing the inefficient incandescent lamps with efficient CFLs in the short term and with the more efficient LED lamps in the medium term. Currently, this is only implemented in some public buildings but the project aims also to include residential and commercial buildings in Bahrain, which was also highlighted by an interviewee in (section 9.2.1). Moreover, the policy also showed that EWA started to implement the ministerial order of the year 2000 concerning the implementation of insulation and energy consumption in the building sector. This was mentioned

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[806] The interviewee here is referring to the new law introduced by EWA for the efficiency of insulation, lighting and AC's.

by some interviewees above. Also, in cooperation with other agencies in the Arabian Gulf, EWA has set technical specification for ACs to reduce energy consumption and gas emissions; none of the interviewees mentioned this. Policy also showed that the government has formed a committee for energy conservation and another for alternative energies, both containing representatives from various governmental organisations. The latter aimed to launch an energy-generating station using solar cells with a total capacity of up to 5 MW, scheduled for commission by the end of 2013[807]. Some of the applications recommended by this committee were implemented to illuminate streets using solar energy; this is now seen in a few streets around Bahrain[808].

Interviewees highlighted that there were social considerations when designing social houses, for example, L/PA/3.2 highlighted the addition of a kitchen outside the housing unit and a bedroom on the ground floor for elderly and disabled. L/HU/3.3 added that the designs allow for a third-floor future extension to allow families to expand. The interviewee also mentioned the addition of a small shop to each unit to provide income for the families and to also provide more open spaces, green areas and walking tracks. This indicates that the MoH projects are trying to achieve social sustainability regardless of the effectiveness and sustainability of the whole housing provision system. This will be further highlighted later. Interviewees also stressed that the MoH is trying hard to push for changing some of the existing planning regulations. L/PA/3.2 explained "we are trying to **convince** the MoW that we **need much narrower roads** of about only five metres instead of the regulated twelve metres; we are starting to think that is a **waste of land** and affects the **intactness** of the **urban fabric**. Now, they have **accepted** 5 metres' width for projects in the o**ld core of Manama.**" This was supported by L/A/3.4. The argument here relates to the issue of consumerism and improper use of land that was discussed in (sections 8.3.7 and 9.4.6). This indicates that there are some attempts to negotiate the existing regulations to implement more sustainable solutions to the projects of the MoH. On the other hand, interviewees from other organisations criticised the work of the MoH. E/UDA/5.2 argued, "the MoH has a tradition of 50 years in this country **doing houses**, but … they have their own regulations that are **completely unsustainable**, the **quality** of the **designs** are **really bad,** and once people get those houses, they **change them completely.**" L/HSU/5.4 added, "we have a **problem** with MoH projects because they **don't apply our policies** that we agree upon … there **should be mixed densities** in each housing project." This also highlights the weak communication between the different organisations (section 7.6) and the loose regulations and weakness of the UPD (section9.4.2).

Similar to previous organisations it did not seem that the projects of the MoW are sustainable, which was highlighted by L/HP/4.1: "I **don't** think that the **results of our projects** show a **full understanding of sustainability** … The ministry is taking **big steps** in **developing infrastructure** in Bahrain … people **sometimes complain** that those projects **affect the circulation,** but we are trying to **cater for current and future needs.**" The argument here adds to the discussion in (section 9.4.4) about the car-dominated society and the continuing impact of this on the urban environment. Also, this raises questions about the understanding of the MoW of sustainability, which was discussed in (Section 9.2.2) and relates to the discussion by Jacob (1999), Gillespie (1995), Urry (2007) and others in the literature of (section 3.2.3) regarding the influence of technology on culture. It is clear from the argument above that the environmental and social impact of those major road constructions, which targets projected future needs is barely considered, this is shown in (Figure 9-8). L/CR/4.3 highlighted the MoW role in the reclamation of projects and claimed that the environment was protected through their processes: "when we **reclaim land,** we **seek the advice of the SCE** and ask for **their permission**, we also go to the **fisheries** and **study the effects** of those **reclamations**, we **build roads** that **connect those reclaimed areas** with the

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[807] Oxford Business Group, 'Bahrain's Renewable Energy Plans', *Economic News Update* (London, September 2013).
[808] Supreme Council Of The Enviroment, *Bahrain's Achievements in the Field of Sustainable Development*.

mainland, so we have some **requirements to protect the environment,** but we also **ensure the safety** of the roads." This relates to the argument in (section 7.6) and raises questions about whether those recommendations of the SCE are really implemented. A worked example of this will be illustrated later.

L/HD/5.6 highlighted that although there are sometimes plans to implement sustainable solutions, however, most of the time they don't materialise: "we **talk about sustainability** and **discuss** it with other ministries, but we **don't enforce it** ... sometimes it is **implemented in a very shy way**, but mostly, it is **not.**" L/CU/5.3 added, "sustainability is **only limited to strategies** and is **not implemented.**" This was also supported by L/HSU/5.4. The argument here adds to the one in (section 9.4.2) and questions the tools required for those strategies to be implemented. One of these plans that has not materialised yet is the integration of a more sustainable transport system. E/UPA/5.5 highlighted, "there **never** used to be a **provision** for **public transport**, even in the **biggest** shopping mall in Bahrain, the BCC[809] ... bus operators **complain** that they are always **fined**, because there are **no bus stops** for them to park safely, this is definitely **not** something that is **desirable.**" The NPDS strategy showed that boosting the transportation infrastructure is one of the agendas of the government in Bahrain. The MOT has formed a committee to study the development and expansion of the current public transport system, keeping in mind the current negative output of that system. It aspires to introduce a safe and comprehensive transportation system at a reasonable cost to cover all high-density areas in Bahrain[810]; however, much of that has not yet materialised. E/UPA/5.5 also explained the sustainability of the marine environment: "we came up with a **marine and coastal management plan** that gives **clear guidance** on the **development** of the **marine and coastal areas** ... **defining the coastline** of Bahrain, because in the past reclamation projects were done with **no comprehensive approach** or **understanding.**" This also relates to the argument in (section 9.4.2) and confirms the weakness of the UPD in Bahrain.

Also, interviewees talked about the increasing development of public gardens and open spaces in the past few years. E/UPA/5.5 highlighted that "there are almost **120 parks** that were **recently created**, and this is **part** of **sustainability.**" E/UDA/5.2 added, "we transformed all **public lots** into **gardens** and **parks;** we also asked the government to **provide large areas** for **walking tracks**. There were none in 2007 and we have now about **20 walking tracks** around Bahrain. So now, **every city** in Bahrain has **at least one park.**" Moreover, the policy analysis showed that there are some strategies that were put into action by the government to ensure the provision of recreational spaces, walking tracks, increasing the green cover and encouraging internal tourism[811]. This highlights that there is more consideration and attention given to the provision of open public spaces in Bahrain and puts forward the question of the influence of this on the overall sustainability of the urban environment. Also, the allocation of walking tracks around Bahrain clarifies that the road network does not allow for pedestrian movement, and the government's solution of providing walking tracks, which it claims to be a step in sustainable development, shows that there is no understanding of urban sustainability and the real urban planning problems in Bahrain. This will be further discussed in Chapter 10.

Although the SCE is the official governmental organisation concerned with the environment, it appeared from the interviews that the situation in the council was not much different than other organisations. E/HEP/8.1 commented on the sustainability of the working environment: "there are **attempts to recycle papers** and **green the cabling**, but it is **still very preliminary and basic**. The

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[809] Bahrain City Centre (BCC) is the biggest and latest mixed-use development of this scale in Bahrain, opened in 2008 and located in the capital Manama. BCC is a destination for local families and foreigners. It includes a shopping center, hotel, cinema complex and an indoor water theme park.
[810] Supreme Council Of The Enviroment, *Bahrain's Achievements in the Field of Sustainable Development.*
[811] Supreme Council Of The Enviroment, *Bahrain's Achievements in the Field of Sustainable Development.*

working environment is not so sustainable, and it **doesn't encourage sustainable thinking.**" The interviewee also argued that the council is not being approached and has no influence on governmental decisions, which indicates that the environment is hardly considered in governmental projects. This relates to the argument in (section 7.4) which highlighted the limited power of the council over other governmental organisations, and raises concerns about the continuity of this limited power on the environmental sustainability of urbanism in Bahrain.

Key Findings:

- The working environments in most of the governmental organisations concerned with the built environment are not sustainable and do not encourage sustainable thinking or reflect an awareness of sustainability.
- Social, environmental, economic and cultural sustainability were approached in a very limited manner in some of the projects, although there was evidence for future strategies and plans; however, it is clear that the government does not yet have the tools to implement those strategies.

9.6 Evaluation of the Sustainability of Governmental Projects

It appeared throughout the interviews that projects are being assessed environmentally, before construction with an Environmental Impact Assessment EIA, and during construction with an Environmental Management Plan EMP. However, there is no evaluation of the environmental impact of governmental projects after construction. This relates to the limitations of sustainability rating systems and models in the Arabian Gulf which was discussed in (section5.8) and was highlighted by E/CCP/4.4 among others. E/HEP/8.1 talked about the efficiency of those EIA reports: "**Now** there is a bit **more consideration** … for the **making of EIA reports**, but those reports are **taken for granted** for two reasons: one, Those big companies they bring from **outside,** need to have those reports to be able **to secure loans** … so those [foreign] **consultants insist** on the government to have an **EIA.** Second, it is a tool **to claim** that **they satisfied the environmental matters**, so actually, until today, there is **no deep understanding** of why we do this, they only do it **to show off**, and **not** because they want to **take seriously the results into our development** or **future development plans.**" This relates to the argument in (section 9.2.1). All the attempts they have today to apply sustainability seem to be influenced by foreign programmes, rather than coming from the government's understanding of the sustainable roots Bahrain had. Also, this links to the argument in (section 9.2.2); there is evidence here of the limited understanding of urban sustainability and its importance. Governmental officials don't seem to have the right tools to implement the concepts of sustainability into planning, design and construction decisions; consequently, there also seems to be a lack of understanding of the importance of the environmental evaluation of projects. This will be further discussed later.

L/CD/4.2 explained that the MoW building was evaluated in terms of energy efficiency, and compared to the adjacent old building[812]: "looking at how much we have really **complied** with the **requirements of EWA**, they gave us a **report**, which included **recommendations** on how we can be **more efficient in using electricity**, it is difficult because **we need people who are specialised** in this, other than this we **didn't** have any **other form of evaluation.**" The issue of lack of specialisation which was discussed in chapter 7 keeps emerging. Moreover, it appears here that most of the evaluation of governmental projects tackles the environment, which raises concerns on how much the economy, the social dynamics and the culture are being considered in such process, which relates to the understanding of sustainability outlined in chapter 3. This will be further discussed later. Furthermore, L/A/3.4 explained that the MoH just started to introduce an evaluation scheme for its housing projects: "[MoH] created **a new committee** that will **distribute surveys** throughout **housing projects** in Bahrain … they have a list of **questions aimed** at **knowing if the occupants were happy** and if there were any **issues, recommendations** and so on … we **haven't** been doing this [before] … after we **hand [them] in** [to] the housing unit, we **don't** know what happens unless we hear **complaints** from the **news.**" This indicates that there is some improvement in the social evaluation of projects, which answers the question in the previous paragraph partially. However, also given the long history of the ministry in providing housing units, this raises concerns about the sustainability of the ministry projects, which are not evaluated in any way. L/HU/3.3 explained that there is a need for proper evaluation after projects' completion: "Because of the **number of projects** we are handling, and the **very big shortage of staff**, there is **no process of evaluating of project.**" This also raises the question of the large number of housing applications on the waiting list (53,000 in 2014), the proficiency of the housing provision system in Bahrain, explained in (section 6.7.1), and the effects of that on the internal system of the MoH. Moreover, it relates to the argument in (sections 7.3.5 and 9.4.5) and indicates that the government

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[812] Part of the MoW initiate in 2011 that aims at evaluating the energy consumption of the existing ministry building to credence it as a LEED Gold, this was part of a bigger attempt to revaluate the energy consumption of existing governmental buildings which are under the responsibility of the MoW, by maintaining them and determining the aspects that can be rehabilitated to improve their performance and reduce their energy consumption.

budget is no longer sufficient for this massive provision of public houses. This will be further discussed later.

Interviewees of the UPD explained that there is an evaluation of the work of consultants because almost all of their projects are outsourced. E/UPA/5.5 added, "there are **two kinds of evaluation**, one is that we evaluate the **completed work** of the consultant to **ensure** that it was done according to **our requirements**. We do that **very rigorously** … I can tell you that this is the case with **NPDS2 …** [which] was **supposed** to be completed in October 2011. The project **stretched until now** because we have been asking the consultant **to revise again and again** … Another evaluation comes when that is finished, and whether we are **implementing** it, and to **what extent**, I would say that we **haven't done enough** in that." This was supported by L/HSU/5.4 and relates to the quality of foreign consultants, their ability to work on local projects and the effects of the delays caused by this process to the urban environment in Bahrain. This also indicates that although strategies exist, there are no tools to implement those strategies, which is related to the argument set forward in (section 7.3.5) and questions the effects of the continuaed lack of local experts on those processes and eventually the sustainability of the urban environment in Bahrain. This will be further discussed later.

Key Findings:

- There are many struggles that keep the government from implementing the sustainable strategies, according to foreign consultants, that include:
  - Unsustainable working environments
  - Practitioners' limited understanding and dependency on foreign consultants
  - Limited laws and regulations
  - Deficiency of the evaluation system

9.7 Perceptions of the Sustainability of the Three New Towns

This section should be read in reference to (section 6.7). It was claimed throughout the interviews that the three projects of NGNT, EHNT and SGNT were perceived as more sustainable than the other projects of the MoH. L/IPM/3.5 highlighted, "we are building **huge towns** ... **creating new communities** that are **sustainable**, **self-contained**, and have **everything citizens need** for it to become a **friendly**, and an **encouraging environment**. The **three projects** are **different** than what you see around Bahrain, **especially** that we involve the **PCF**, ... our **main concern** while designing the roads and facilities is to provide **a healthy** and **nice environment** for the **inhabitants** ... **NGNT**, **EHNT**, and now recently **SGNT** are **sustainable projects**, because of the **facilities provided**, the **concepts** of the **designs** and everything." This relates to the understanding of sustainability between Bahraini practitioners that was discussed in (section 9.2.2) and is a worked example of the dependency and influence of foreign consultants that was discussed in (section 7.3.2) and the limited awareness of sustainability in the region which was discussed by Ulrichsen (2011), Luomi (2010), Raouf (2008) and others in the literature of (section 5.5.2).

E/DSP/3.6 added, "we have to **meet** the current **housing demand** in some way, but if we provided 50,000 houses **in one block**, that would just provide [a] **ghetto** ... **dormitory town**, not a **mixed-used** type of approach ... we will respond in a **mature** way, learning from the **lessons of the past** ... those **projects** are also **sustainable** in terms of **community, jobs ...** there are **very crowded** areas [In Bahrain] and [it] **needs** to **allow the population to expand**, **spread**, and **grow** and **not** to become **over concentrated**, so from that perspective, those new areas are **naturally sustainable."** This goes against the theories of densification, an essential requirement for a sustainable urban environment discussed by Farr (2007), Williams, Burton and Jenks (2000), Lerner (2007) and others in the literature of Chapter 2. Also, this relates to the Urban Villages concept that emerged in the 1980s with the support of Prince Charles. It aspired to return to the traditional medieval English villages, in an attempt to create more sustainable environments. Nevertheless, the movement resulted in "a little more than dormitory suburbs that look more like stage sets than real villages[813]." E/DSP/3.6 continued "we are **creating** those **towns** with all those **facilities**, to **become destinations** and to **ease the demand on the existing ones**...all of those **projects** are done on the basis of looking at **where people live**, ... **work** and how they will **grow in the future** ... We look **very carefully** at the **sustainability** of it; we want people to **stay happil**y there, and **not want to move** away." This relates to the adopted understanding of sustainability that was discussed first in the literature of chapter 3 then in (section 9.2.2) and raises concerns about the ability of the MoH to provide sustainable solutions to housing in Bahrain with this large demand and pressure from the public.

The consultant of the SGNT also assured the sustainability of the new town OC/UPM/3.9: "we try and operate **a model** that we call **the community capital model** [Based on non-Bahraini context], which takes **a holistic view**, across **a number of aspects**: **environmental**, **build form, performance, social, socio-economics** and **financial ...** we see all of those, as **key fundamental issues** for **succeeding in long term sustainability.**" This raises questions about the reality of this approach, and the sustainability of those projects, which will be discussed further in the coming sections. Also, this relates to the quality of foreign consultants, which was discussed in (section 7.3.3). L/SSP/3.1 highlighted that the dependency on external consultants in those three projects is due to the shortage of staff, which is a worked example of the arguments in (Sections 7.3.2, 7.3.5 and 7.4); however, they also explained the benefits from awarding the work to different consulting firms: "when you get a **variety of consultants**, you get a **variety of towns**, so our towns are **not identical** ... it is **variety** and it is also **testing** and **checking out** what is

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[813] Williams and Webster.

available in the market in addition to in-**house design.**" The data above indicates that there is a general perception at the MoH and among the foreign consultants that those three new towns are sustainable. This relates to the limited understanding of sustainability that was discussed earlier and raises concerns about the sustainability of these developments and their expected impact on the urban environment in Bahrain, which will be discussed further in the coming sections.

9.7.1   Sustainability of the Planning Process

The first two projects, NGNT and EHNT (sections 6.7.1.1 and 6.7.1.2), were planned in the same usual way, through planning permissions, like all of the previous projects of the MoH. L/SSP/3.1 further explained "we got **reclamation licenses** and decided about **points of connection**, then **reclaimed**. After that, we went into the **planning process**, and **consultants** continued **planning** while the **reclamation** was going on." This raises concerns about the appropriateness of reclaiming a piece of land without a full comprehension of the development planned on it, and relates to previous arguments regarding the introduction of the proposed system which abolished the indigenous incremental system of additions to the urban fabric according to the emerging needs of the society, which resulted in an intact urban structure and stronger community; this will be further discussed later. L/SSP/3.1 added "we processed those through the **CPO**, where we **handed the plans** for **approvals** to get started with **building** ... we apply for **planning permission** ... they come back with their **comments, amendments, additions, subtractions**, or with what they **need**, whether we **like** those **comments or not**, that is another issue. We **have** to **incorporate the comments**, or we go back and **discuss it** across the table." This helps to understand better the relationships between the various governmental organisations that were outlined in (section 7.6). However, the planning process of the third project (section 6.7.1.3) was different from the first two. L/SSP/3.1 explained that SGNT have a core team containing the main stakeholders and a wider team with all the stakeholders. In this project, the MoH is trying to ensure collaboration from the very beginning so that different authorities have an agreement on the masterplan.

Interviewees highlighted the reasons for changing their approach to planning and adopting the PCF recommendations. L/SSP/3.1 explained "there is **a lot of stalling** in **providing services** for these projects. Other organisations are working **slower** than us because they **have other commitments**, but we need those **infrastructures** to be able to **build the units.**" L/IPM/3.5 added, "another issue is the **resistance** from the **authorities to change**, **deviate** and bring **new ideas,** because we are **challenging the existing** to **provide better solutions**, some **don't** realise that we should **develop** because they are **happy** with whatever **works** now." This was supported by OC/UPM/3.9 and relates to the argument in (section 7.3.3) regarding the respect of foreign consultants for the local sum of knowledge: it was clear that while consultants and the SPD were pushing for change in regulations, the CPO thought that this process of change was a waste of time and failed to address the current political need for social housing, which raises concerns about the level of communication between the CPO, the SPD and the consultants. This will be further addressed later. The reason for engaging foreign consultants in these projects was related to the shortage of local skill force at the ministry (Section 7.3.5). E/DSP/3.6 explained "the **Directorate struggles** to **obtain results**, because to **design at this rate** and **obtain results;** we need a **team**, [this] is **difficult**. At the moment, we do that **competitively** through **engaging consultants** to **boost up the team**, but that it is **limited to the short term**; this is one of the **major constraints** we have." This again raises concerns about the sustainability of this process and the dependency on foreign consultants in Bahrain, especially that there are no plans to improve the local skills to be able to do future projects in-house (section 7.3).

E/DSP/3.6 argued that the new collaborative planning approach was more efficient than the previous one; however, engaging decision makers in this process is instrumental in its success. OC/UPM/3.9 added, "Bringing people **together early, identifying the issues early** … Moreover, **debating them**, results in a **productive system** of **collective responsibility** rather than having **a responsive system.**" This indicates that there is a need for integration between different entities at the first stages of the design rather than when the design is complete, an issue that was discussed earlier in (section 9.4.2). Although the success of this approach cannot be measured before the completion of this planning process and comparing it to the previous method, the above indicates that there is a direction towards a more sustainable model in terms of governmental decision making. This model is, however, brought by foreign consultants and relates to the argument in chapter 7. The adaptation of this international model raises concerns about the sustainability of the urban planning process in Bahrain. This will be further discussed later.

Also, interviewees claimed that the three projects comply with the larger governmental development strategies and the 2030 vision for Bahrain (NPDS I). E/DSP/3.6 explained "they are **recognised developments, included within that study** … when **UPD** did those **plans,** they **allocated land** for **basic use**, of course **not in detail**, but we are **not creating projects** that are **outside the NPDS.**" L/SSP/3.1 supported this. The argument here relates to the inefficiency of the UPD which was highlighted in (section 9.4.2) and the limited understanding of urban sustainability (section 9.2.2). The argument raises concerns about the effectiveness of those plans that allow for such developments to take place in Bahrain. The sustainability of the three projects will be further discussed in the coming sections. L/IPM/3.5 highlighted the incompleteness of the national master plan (NPDS) to follow when creating those projects. This is related to (section 9.4.2): "The **baseline** for those projects is the **2030 vision** … However, the **2030 vision** is **not fixed yet.** The **goals are well known** to everyone, and all the **authorities are working on them**, but the **national master plan** is **not yet settled** … we are **trying to meet those goals** and **provide a healthy sustainable environment,** by providing **social houses** and **good communities.**" This relates to the lack of implementation tools to the strategies and goals of the NPDS, which emerged earlier in the discussion. OC/UPM/3.9 added, "we are **aware** of what the **national plan** is **suggesting …** we are **aware** of the **wider development complex** … A big part of that is having a **robust debate** with the **ministries** and **other people** about what is the **nature** and **identity** of this place, **who** is going to **live** there, where they are going to **work**, etc." The argument above indicates that the NPDS plans were helpful in identifying the overall context in which projects are being developed; however, it is less helpful in terms of implementing regulations that govern urban sustainability in Bahrain. This will be elaborated on in the coming sections.

9.7.2   Physical Connectivity

The interviewees talked about the external connectivity of these projects, with other areas in Bahrain, and internally, through their network system; this relates to the challenge discussed in (section 9.4.4). OC/DUD/3.8 argued, "**physically** we are on King Hamad highway, so we are **extremely well connected** to the **south** to Durrat Al Bahrain [section 6.6.8], and to the **north** towards Manama, the **Qatar causeway** will be **near** to where we are … However, the key is **not only connection by motor vehicles**, but how the [future] **guided bus**, or **tram connects** to this development and other **key destinations** … a lot of what we are trying to build in the **master plan** is a **future design**, so when a **tram** is **introduced** in **twenty years'** time, they will be able to do that." This relates to the argument in (section 9.4.4) and is evidence that other alternatives for transportation do not yet exist but are being considered. Also, this refers to (section 9.4.2) and raises concerns about the possibility of those alternative solutions materialising, with the lack of implementation tools, the lack of local expertise (section 7.3), and the weaknesses of the UPD

(section 9.4.2), and especially the fact that the Bahrain 2030 plan proposed the use of alternative transport systems since 2008 (see Appendix 9.2). This will be further highlighted later.

OC/DUD/3.8 talked about walkability within the SGNT project and explained the mixed-use nature of the development: "**not** every day, or all the times of the year, but the **option is there** for **shorter car journeys**, **walking** and **cycling**." The interviewee explained the social and environmental benefits of this for the community. The consultant explained the challenge of the sustainability of road design guidelines in Bahrain: "there are **standards** for the **dimensions of streets**, **driven by the utilities** ... The streets are **very wide**, because of those **utilities** ... building **large streets** on an island of this size is **wasteful of land** ... making them **narrower** will be **economically more sustainable** ... also, **narrower streets**, in the **right place**, will help **create shading** and **slow vehicle**s down. We want to make this place **walkable** and **to bring the speed down will help**." This relates to (sections 8.3 and 9.4.4) and indicates that there are now attempts to reverse the effects of cultural change on the urban environment in Bahrain (table 6.14) by foreign consultants; however, this raises concerns about the public adaptation to those changes and whether the public is informed of those decisions. This will be discussed further later.

As seen in (Figure 6-71), NGNT comprises a number of islands. Each is connected to at least two other islands, then islands 13 and 14 are linked to mainland Bahrain through two bridges. There is also a connection between Island 4 and more reclaimed islands in the north of Bahrain. Building those relationships is still in progress, and only one of the links to the mainland is now established, which can be seen in (Figure 6-69). The master plan stated "**high levels** of **access** and **mobility** provided with **transit** as a **critical** element ... the **public realm** will **facilitate safe** and **simple access** and **movement**, **connecting the islands together** and **to the main island of Bahrain**."[814] This raises concerns about the effect of those connections and the movement of cars in the future on the marine environment. More about the environmental sustainability of those projects will be discussed in the coming section.

As explained in (section 6.7.1.2) EHNT is unique for its shared surfaces concept, it is important to note here that OC/DUD/3.8 who is working with SGNT was also the roads advisor for this project. E/CCP/4.4 explained in (section 7.3.3) that PCF do not respect the local officials' experience and was referring to their concepts of shared surfaces. In a presentation prepared by OC/DUD/3.8 in 2013 to explain new concepts of movement and streets to be implemented in their projects in Bahrain, a reference was made to a number of worldwide projects, most of which are in European countries where weather circumstances and culture are substantially different from Bahrain; one example was Poundbury, Dorchester, UK, a town that upon its completion would be half the size of EHNT. This indicates that overseas consultants understand the problems of the current urban environment in Bahrain, which were explained in (section 9.4); however, the attempt to use foreign planning schemes to solve these problems goes back to the argument presented earlier and indicates that the process of change that happened in the oil era might be repeated today. This will be further discussed later.

9.7.3   Environmental Sustainability

The interviewees discussed the environmental sustainability of the new towns. E/DSP/3.6 stated: "**every stage** of the project goes through an **environmental study**, a lot of our projects are **created on reclaimed areas**, so first, an **environmental study** [EIA] is done to establish that the project is **sustainable** from that perspective, and if it is **not**, **mitigations** and **compensations** can be

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[814] AECOM.

discussed to treat those damaged areas." This relates to the reality of those EIA reports, (sections 9.4.2 and 9.6) and the role of the foreign workforce in the understanding and addressing sustainability in governmental projects (sections 7.3.2 and 9.2.2). L/IPM/3.5 added, "one of the major requirements is the EIA and TIA reports, to know how the environment will be affected by the project, so any project, won't be initiated before coordinating with all the authorities who are concerned about the environment." Having more than one organisation to deal with regarding the environment in Bahrain raises concerns about the effectiveness of this in solving environmental problems. E/HEP/8.1 highlighted the role of the SCE "in the NGNT … I studied the EIA report … I used to receive reports and discuss the auditing on the reclamation in particular… a priority decision was given to the provision of housing units for people; for this reason, environmental and economic aspects were given less respect from the social aspects." This relates to the lack of representation of the SCE in the PMR and their limited role in enforcing decisions, discussed in (section 7.4). Also, this raises concerns about the sustainability of this project given the neglect of its economic, cultural and environmental aspects. This will be further highlighted later. E/HEP/8.1 explained: "the area was very rich with sea life … However, because of the housing priority, the sustainable sea life was destroyed … We tried to reduce the negative impacts of dispersion and spread of sand during the reclamation and to choose sand borrowing areas that had the least environmental value. We did a dispersion model with a [foreign] consulting company … we made sure that the reclamation was done properly and that there was no dispersion of silt, which would result in killing all the [remaining] surrounding sea life." The argument here shows that the SCE does not yet have the authority to stop projects from harming the environment in Bahrain, although they do attempt to reduce the harm caused by those projects. This also relates to the vast environmental threats and lack of awareness of climate change which was discussed by Ulrichsen (2011), Kumetat (2009), Brook et al. (2006) and others in (section5.5) and is also another worked example of the dependency of consultants in Bahrain, which was discussed in chapter 7; the SCE does not yet have the skilled workforce to make those specialised models. In addition to the harmful effects of urbanisation on sea life, policy also showed that oil explorations and industry in general, in addition to shipping, are also primary sources of water pollutants. Furthermore, sewage, agricultural and industrial land-based wastes are partially treated and then also released into the sea, all of which puts more pressure on the marine life in Bahrain and threatens its environmental sustainability[815].

E/HEP/8.1 highlighted that non-humans weren't included in this idea of "compensation" and that relocation of sea life was not a materialisable option: "we did talk about it, but in reality, the only compensation was to the fishermen, and the promises that were given to them … the planners and decision makers do not have enough knowledge about environmental considerations … we lost the sea life in the northern part … even if we were to locate it somewhere else, it would never have the same properties again." The discussion here is a worked example of the argument in (section 9.2.2) and emphasises the lack of understanding between practitioners and decision makers of the importance of the environment, an arguments that relates to the general lack of awareness of climate change in the Arabian Gulf (section 5.5.2). The argument also highlights the effects of consultants on the environmental sustainability of projects by influencing decision makers. Article 11 of the Constitution states "all natural wealth and resources are state property, the state shall safeguard them and exploit them properly, while observing the requirement of the security of the state and the national economy." This indicates that laws that safeguard the environment exist; however, there is a lack of implementation of those laws.

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[815] The public commission for the protection of marine resources environment and wildlife, *Bahrain National Assessment Report on Implementation of the Mauritius Strategy (MSI) of the Barbados Program of Action (BPOA)*.

E/HEP/8.1 also talked about the environmental sustainability of the infrastructure phase: "we also studied the **land activities** coming up **later**, [and] the main issue was the **sanitation plant**, its **nature, technology, location** and the **consequences** of having it." Furthermore, L/SSP/3.1 highlighted that the implementation of environmental solutions to housing units was in its initial stages. This relates to the argument in (section 9.2.2) and shows that environmental regulations by EWA are now enforced on new projects in Bahrain. The interviewee also highlighted that the communication with the SCE was limited to the reclamations: "We actually **collaborate** with the **SCE** for the **NGNT**, and **EHNT** to check if the **reclamations were environmentally sustainable. We hired a** [foreign] **consultant** that did all those **tests** and **submitted reports** to the **SCE** and they came up with their **recommendations**, so the **methodology statement** is **always agreed with the SCE**. However, for the **housing itself**, we are working with **EWA**." L/HEP/8.1 added, "**PCF** talk about **sustainability** all the time, but **from an architectural perspective,** not an **environmental one**. We are more concerned about the **quality of the air, waste, sanitation** and the **pollution** that will result from the project". It was clear from the interviews that the responsibility for protection of the environment and implementing environmental solutions to projects in Bahrain was controlled by a number of organisations, which raises concerns about the efficiency of this system. Also, hiring a foreign consultant for the development of EIA reports highlights the lack of local specialists, an issue that keeps emerging. The lack of local experts in the SCE also raises concerns about the quality of recommendations of the SCE to those consultants, an issue that will be further discussed later. Furthermore, L/SSP/3.1 added, "there are **palm groves** in the **NGNT** along the **coastline** of the mainland [Figure 9-10], on the other side of the **reclaimed islands.** ... those will be **maintained** ... there is a **fishing port**, [and] the **municipalities** will **preserve** those." It is clear from the argument above that the SCE is more concerned about the bigger environmental problems that have to do with infrastructure and reclamation, rather than the implementation of environmental solutions into the units; however, the protection of the palm groves by the MoM further raises concerns about the degree of communication between the MoH, SCE, MoM and EWA (section 7.6) and the impact of the spread of environmental control across various authorities. It is clear that in addition to the miscommunication problem, there also seemed to be an issue of overlap between the responsibilities of governmental organisations.
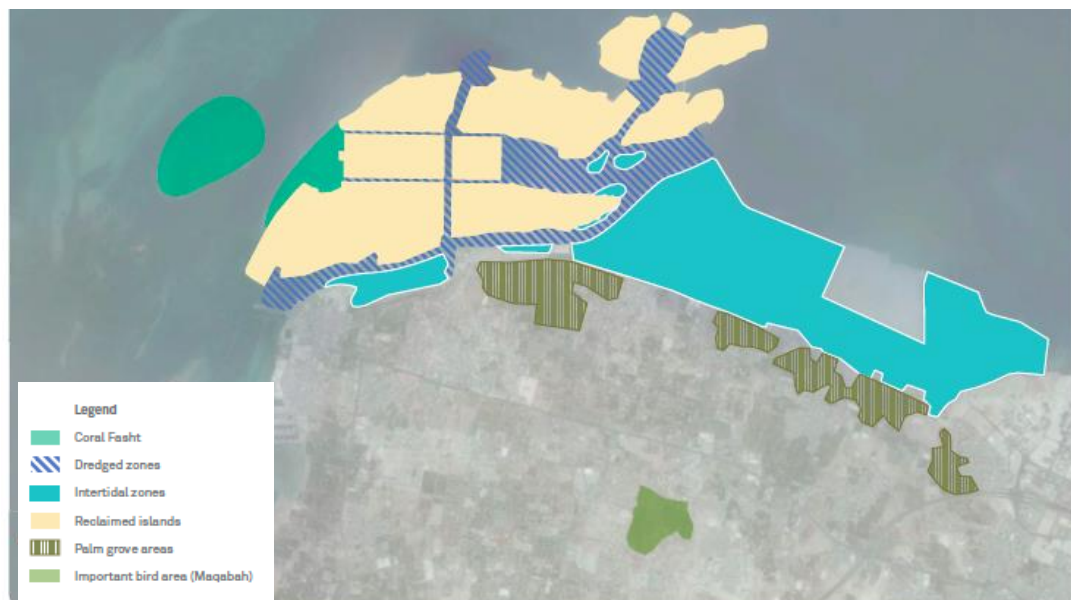
Figure 9-10 The ecological and contextual considerations of the NGNT[816]

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[816] AECOM.

Another example of the weakness of the SCE and the impact of foreign consultants is the location of the SGNT project. The site is surrounded by a quarry, landfill site, and a desalination plant[817], and Bahrain's large aluminium[818] factory (ALBA) on the northeast of the site. This is in addition to future expansion plans to cover the north side of the site (see Appendix 9.2). OC/UPM/3.9 claimed, "we are in **consultation with the SCE** about some **challenging environmental aspects** of this town because of its **location**, and we are looking at how those are **mitigated.**" On the other hand, L/HEP/8.1 explained "what we are going to say **doesn't matter**. We called for their **attention few times** about the **quality of the air** there ... The **last study** happened at the beginning of the **90s,** and it **proved** that the **air quality was not suitable for habitation** ... the **number of industries increased**, and a lot of **new activities** are now happening ... ... we have to do **air modelling** that will tell, whether the **area is suitable or not**, we **can't** just **develop the area** and everyone eventually gets **cancer or asthma**, the country would then spend 50 years **providing them [with] health care**[819]; this is **not sustainable** ... the people **surrounding decision makers didn't inform** them of all details, so now **the town will be developed** and the government will have the **burden of the consequences** of this decision." This is a worked example of the weak stand of the SCE on other governmental organisations and further stresses the need for a strong representation of the council in the PMC, an issue which was discussed in (section 7.4). The NPDS states "**economic wellbeing** must **never** come **at the expense of the environment** and the **long-term wellbeing of the people.**"[820] Nevertheless, because those projects have a social, not economic priority, this could justify the neglect of environmental considerations. Also, the NPDS stated "**no effort** will be **spared to protect our environment** and **preserve our cultural heritage.**"[821] This part of the strategy was, however, overlooked in the planning of the SGNT, which is now being planned more than five years after the adoption of the NPDS by the government.

Legislative Decree No. (21) for the year 1996 "aims at **controlling pollution** in all its forms and **avoiding any short or long term effects** which may **result** from the **implementation** of **economic, industrial, architectural or other development plans** which aims at improving the standard of living." The law specifically states the necessity of "[e]**valuating** the necessary **studies** by the **competent authorities** to **protect the environment** when **planning any project** and expressing an **opinion** about the **environmental impacts** of these projects **before approving their implementation.**" This relates to doing the EIA reports. Also, the law states "No **person or project** may use the **environment** in **any activity that pollute it** or **contribute to its degradation** or **damage its natural resources or organisms.**" The argument of the interviewee above indicates the lack of implementation of this section of the law because of the limited representation at the PMC, which was discussed earlier. Also, the law decreed "The **protection** of the **community, the health of humans** and other **organisms** from all the **environmentally harmful activities.**" This part of the law also seemd to have been overlooked, for both the SGNT and NGNT projects are still being planned in the same location despite the concerns of the SCE.

In addition to the lack of representation of the SCE, the lack of understanding of decision makers and the impact of foreign consultants, E/HEP/8.1 recognised that the lack of local experts is another cause of the problem (section 7.3): "we **don't** have the **national capabilities** nor the **programme** to develop the **dispersion models**, so we asked **PCF** to **provide stations** for air modelling, but we **realised** that they **wanted the results to serve them** ... the most important

[817] A plant to treat sea water, remove salt and purify it to be suitable for domestic use. Bahrain today is 35.6% dependant on desalinated water

[818] The aluminum manufacturing industry is one of the heaviest in the world, causing a lot of dangerous pollutants

[819] Health Care in Bahrain is a subsidized service, for all Bahraini's. Article 8-A of the constitution states "every citizen is entitled to health care. The state cares for public health and the state ensures the means of prevention and treatment by establishing a variety of hospitals and healthcare institutions.

[820] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.

[821] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.

thing in the **SGNT** is the **air quality**, then also the location, direction and technology of **infrastructure, electricity** and **sanitation plants** ... it is **not possible** to have another Tubli Bay[822] in there." This indicates that the dependency on consultants could lead into catastrophic environmental issues due to the ignorance of decision makers. The SCE realises this. However, there were no attempts to invest in local skills to avoid such issues in the future. This will be reflected on further later.

9.7.4   Cultural Sustainability

The cultural sustainability of the projects was also discussed with the interviewee. L/SSP/3.1 highlighted "one way of **addressing the culture**, is by **saving traditional elements**; that's something that we **always do** because we **design using traditional elements**, whether this is **successful or not**, that's another question. Nevertheless, many people **knock that down** and **build something modern** that looks like **Durrat Al Bahrain** [Section 6.6.8] ... people **want their identity** for the house ... Beauty is **in the eyes of the beholder** ... people will **adapt** that **unit to meet their needs** and our **building regulations** are **not strict enough**, so we **cannot prevent** those **changes**. There **should be a law to regulate** those things." This is an example of the iconic understanding of culture which was discussed in (section 8.2.2) and raises concerns about the sustainability of those projects which are built in a style that does not satisfy the end user, and result in the destruction of new units. Also, this relates to (section 7.5) and is a worked example of the lack of laws and regulations; this all raises concerns about the sustainability of the housing provision system in Bahrain, and the consequences of this mass housing, which is done to satisfy the increasing demands discussed in (Section 6.7.1), but not in a way that respects the wishes of the people. Whether regulations should be set to stop people from changing their units or units should be built according to the needs of people to prevent change by the end user will be discussed later.

Local interviewees were able to explain issues related to the local culture; this was already explained in chapter 8. L/SSP/3.1 highlighted, "our **population is growing**, and **gone** [are] the days when **kids live with their families** ... that **big complex family is not wanted anymore** ... However, we **cannot** cater for **all those needs** ... even in a **small country** like Bahrain, the **culture** of Muharraq is **different** from Manama, Riffa, or Jaw [section 6.6]: there are **differences in the way people live**, but we **cannot address all those needs.**" This relates to (sections 8.3.2 and 9.4.5) and raises questions about the cultural sustainability of those projects that don't cater for the current cultural mandates, and the consequences of this on the urban environment. Also, this relates to the housing provision system in Bahrain (section 6.7.1) and raises concerns about the sustainability of those new towns and the overall massive housing provision system, given that all houses produced by the MoH are similar, and on some occasions, different families from different areas come to live in one place. This will be discussed further later. OC/UPM/3.9 talked about the ways in which they get familiar with the cultural context: "We have got **representatives** from **across the spectrum** in the **core team**. We started a **series of interactive sessions** by **asking** people to **tell us about the context** and **site**; we have representatives from **governors' offices**; we had a serious **presentation around the history**, **culture** and **development of Bahrain**; the **MoC** also took us on a **walking tour** in **Muharraq** where we went to **visit a number of traditional buildings** and **residential neighbourhoods.**" This is a worked example of the arguments in (Sections 7.3.2 and 7.3.4) and shows the delays caused by the employment of foreign consultants. This raises concerns about the depth of their understanding of those issues and the impact of that on the urban environment.

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822 Tubli Bay is located between the mainland Bahrain and the island of Sitra to the east, the bay used to have a very rich ecosystem that consisted of fresh water springs, mangroves, and a rich birds and sea life, however the area suffered from land reclamations, pollution and destruction of fresh water springs, and is now one of Bahrain's most polluted areas.

Interviewees also talked about the cultural sustainability of the SGNT in particular. L/SSP/3.1 highlighted, "**people from [the] southern governorate do not want that new town** … they think that **bringing outsiders into their culture will ruin it** and affect their children. They want to **maintain those small fishing**, **sleepy towns**[823]**,** so **PCF introduced a perceptual buffer zone of trees to enclose the villages** [away] from the main **SGNT** area. They can still **use the amenities** provided in the **new town**, but they will **stay small.**" This raises questions about the effectiveness of this solution. L/IPM/3.5 added, "we are **implementing an enquiry by design process** by the **PCF** in the **SGNT**, and part of that is to **have the community involved** … they **called for representatives from the community, discussed the design**, and **asked them** about their **requirements and needs**. For the other two projects, the **community involvement was theoretical.**" This indicates that the government realised the impact of separating people from the planning and design decisions, and the consequences of cultural change, which was discussed in (section 8.3.5). In opposition to the employment of the PCF, E/CCP/4.4 argued "they [the PCF] claim the **implementation of a new design by inquiry process**; all designs **should be by inquiry.**" The existing completed projects by the MoH, however, indicate that the public was not previously involved in design decisions, which suggests that the PCF approach could call for a more socially sustainable design process. OC/UPM/3.9 added, "rather than having a **continuous urban sprawl** we are looking into **constructing two, possibly three new villages over time**[824]. Those will develop **according to numbers and demands** … so it is a **historical growth of the town**, not **a large town from day one** … part of this town will become **a visible edge**, **outward facing,** to **respond to sub-regional functions** and **employment opportunities**, so an area will be secured for **offices, education, governmental departments**, and a **regional hospital**; those will also help **reinforce the sustainable growth** of the **small towns.**" This is related to (section 9.7.3) and raises concerns about the consequences of bringing all those activities into an area that is not suitable for habitation. Also, this does not reflect the Bahraini culture but is adopted from other global examples explained in chapter 2.

OC/UD/3.7 also talked about the cultural heritage and assured that the local history of fishing villages in the south is understood and respected. OC/UPM/3.9 added, "we **understand the nature of the place** and **realise** that **successful developments** and **new towns** need to be **rooted in the context,** and **culture** of the place … by **creating a narrative**, we can start to **imbue the new master plan** with that kind of **sense of identity.**" This indicates an attention given to the cultural heritage as a result of the new system of collaboration that was discussed in (section 9.7.1). Also, this relates to the delays caused by the lack of local experts and the dependency on foreign consultants, which was highlighted in chapter 7. L/SSP/3.1 added, "We are **collaborating** with the MoC because there are **few historical sites** in the **SGNT** to **preserve**. However, for the **NGNT** and **EHNT**, they are **reclaimed islands**, so there is **no culture** there." This relates to (section 8.2.2) and is evidence of the lack of understanding between local practitioners of the culture and the need to preserve it; it appears here that the understanding of culture is limited to the remaining monuments on the site, which is also related to the limitations of policies concerning the protection of cultural heritage discussed in (section 7.5.2).

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[823] The interviewee here is referring to the coastal villages in the south, section 6.6.7
[824] This was the initial concept for the Askar-Jaw corridor proposed by SOM in the 2030 Land use strategy in 2008, see appendix 9.1 and 9.2.

9.7.5   Social Sustainability

The interviewees also talked about the social sustainability of the projects. E/HEP/8.1 highlighted the social compensations of the NGNT reclamations saying, "we required **compensations**, to be given to the **fishermen** who had a Hadra[825] in that area, we **evaluated their loss**, gave them **money,** and they were also **promised to get the priority on the waiting list** for those houses in the **NGNT.**" This relates to the other non-human compensations discussed above and highlights the social attention to prevent the public outrage from such projects, despite the limited power of the SCE in safeguarding the environment. Similar to cultural considerations, local interviewees were able to explain more about the social connectivity of those projects with other areas in Bahrain, an issue that was discussed previously. L/SSP/3.1 highlighted, "**EHNT** will **house** a lot of people from **Hidd, Qalaly** and **Muharraq** first, therefore **their grandfather's house** will be **within the same area**, that is **social connectivity**, then, **people who don't mind** staying anywhere, those will get the **next priority.**" L/IPM/3.5 added, "when doing the **master plan** we look at the **existing facilities** in the **motherland** because those who are **living outside** this **town** will also **use the facilities within** ... so that is how it **connects socially**... in the **distribution of the houses**, people will be **given units in their same original environment**, so we **respect the social fabric.**" This relates to (section 8.5.3) and indicates that the MoH is learning from the past examples of Hamad and Isa Town (section 8.4.3). On the other hand, it is important to note here that the foreign head of SPD was less concerned about social connectivity of the project: "I **don't** know, I am **not sure** if we really **considered how to connect socially**; it is a brand **new town**, and we are very much **focused on the development of the town itself.**" This supports the idea that local employees are more aware and concerned with the cultural and social aspects of the projects.

L/SSP/3.1 also highlighted the accessibility considerations in those projects: "in each project, we provide **1%** of the houses **for people with disabilities ...** we **don't** know who is going to **move in,** if those people are **disturbed**, have **mental problems**, people **don't** really say that on the **form**, that we have a **mental child,** or he is an x-inmate, we only know when they have **physical needs.**" This indicates that there are no additional considerations for other social matters. L/IPM/3.5 supported this. The argument above indicates that some social considerations are being looked to by the MoH while others are being appointed by different authorities. L/SSP/3.1 explained, "we have a percentage of the **SGNT** and **NGNT** dedicated for **social centres**, in **EHNT** we have **health centres**, those locations are plotted, surveyed and are **given to whichever ministry** that is required." The law that governs the allocation of public services in such projects was discussed in (section 7.5.2). This indicates that there are social considerations in those projects and raises questions about the level of communication between the MoH and the Ministry of Social Affairs regarding other social needs in those areas, especially in the projects which did not incorporate the needs of those authorities in the design phase.

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[825] Hadra is a traditional fish catching structure built using local palm fronds or reed stalks, tied together using ropes.

9.7.6   Economic Sustainability

It appeared from the interviews that the three projects are funded through the GCC funding[826], and the continuity of those projects depends entirely on the continued provision of this money from the GCC countries. This is related to the lack of the consultants awareness of sustainability in the Arabian Gulf and the limitations of considering sustainability in the management and design of projects discussed by Al Kandari (2013) in (section 5.2.2). NGNT is funded by the UAE, Kuwait funds EHNT and SGNT is not funded yet. L/SSP/3.1 highlighted this: "every year we have to **project the amount needed** for the **next five years**, including **infrastructure**; we **don't** just pay **for houses**, we also pay for **roads, sewers, electricity** and **everything within our plot.**" E/DSP/3.6 highlighted that the completion of those projects depends on the continued provision of funding: "with the **GCC funding** in place, **NGNT** will achieve about **70%, in the next 4–5 years**. So it is an **intensive build-out programme**, and the same with **EHNT**, which is **fully funded by the GCC funds**. The **SGNT** is still **unfunded** at the moment, so we are **proceeding with the design phase** while funds are being allocated, and that will largely **define the construction programme** and how **quick** that could be **completed.**" This relates to (section 8.2.4) and indicates that significant changes in the urban environment are associated with the availability of large amounts of the fund. However, in this point of history, Bahrain no longer enjoys that sudden wealth that materialised after the discovery of oil (section 8.2.4). However, it is clear that the consumerism that spread during that era (sections 9.4.5 and 8.3.7) still continues today, despite the country no longer enjoying the same resources; this was discussed in the literature (section 6.3). The above raises concerns about the sustainability of continuing to provide subsidised housing services on this large scale, and the impact of this on the quality of the urban environment in Bahrain. Moreover, it is important to note here that while interviewees of the MoH above argued that the SGNT is still not funded, E/HEP/8.1 highlighted in (section 9.7.3) that the SCE was told that funds were secured for the town, thus asking them to overlook the environmental problems of the location. This indicates the seriousness of this matter and supports the argument of the SCE regarding the intentions of the consultant and SPD to overlook the health and environmental problems which concerns the SCE.

In addition, L/SSP/3.1 highlighted that the MoH does not get any economic returns for those projects, except for the contractor's fees that are covered by the instalments of those who get houses, this was discussed earlier in (section 6.7.1) and is a worked example of the challenge of subsidisation that was discussed in (section 9.4.5). The argument here raises concerns about the sustainability of this process and the negative implications if subsidies were reduced. E/DSP/3.6 realised the unsustainability of this housing provision process: "providing housing units to people at a **fraction of the cost**[827] to the government **isn't** a **sustainable plan** ... but we [SPD] are here just **to deliver these projects** in the **short term**, but the **longer term plan** for the MoH is **sustainability** ... we are clearly **can't carry on providing housing units for everybody**. We have already **run out of land ...** this is **recognized and understood**, but we still have to **meet the current demands**, we **cannot change** how things are done **overnight**, that is [also] **not acceptable and not sustainable.**" It appears here that there is a realisation of the unsustainability of the process. However, there were no indications of any plans to change the situation, which relates to the lack of policies discussed in (section 7.5). This also raises concerns about the public's reaction towards those changes, and the possibilities of reversing the spread of consumerism that materialised in the last decade by reducing subsidies. This will be further discussed later.

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[826] After the political uprising in Bahrain in 2011, the Gulf Cooperation Council countries supported Bahrain with 10 billion USD, which were directed towards infrastructure projects including housing.

[827] Limited income citizens only have to pay for the construction cost by instalments; this was explained by L/SSP/3.1 all other services that come with the development of those areas are free.

Despite the above, a few interviewees debated that the three projects will provide economic benefits for the residents in those areas rather than to the government. L/SSP/3.1 highlighted, "The projects will have **economic returns** because they will **all provide new major sources** of **employment** … if you **build a health centre**, **a police station**, **a petrol pumping station, a school,** how many **jobs** is that going to **provide**? **Shops** will also have **returns** for the area. In **NGNT**, there are also **hotels, a university, parks, private schools and light industries** … So we will **cater** for all that, and that will have **economic returns.**" L/IPM/3.5 talked about the financial returns of the SGNT saying, "**SGNT** is our **most sustainable project**, it **doesn't** only provide **housing** … **authorities** are **involved** in the design **from the initial concept stages**. This gives a chance for **UPD** to **suggest places** to create **job opportunities**, so **most of our projects**, especially the **SGNT**, create **opportunities for jobs.**" OC/UPM/3.9 added, "we are thinking about **local employment opportunities**, both in terms of **its performance** as a **sub-regional hub** but also how it relates to the **existing communities** and **employment opportunities** down there, we know that a **medical city**[828] is coming … the **potential of a sports city** … the **expansion of ALBA and that whole industrial area** that is slightly north of us, so this could be **a key residential area** for **local employment**, within **easy commutable distances.**" This also relates to (section 9.7.3) and raises questions about the sustainability of bringing all of those activities to an area that is not suitable for human habitation; it also supports the argument of the SCE and shows that the consultants are aware of the industrial activities surrounding the site, but are ignoring it willingly. The aim of the national 2030 plan of Bahrain states "in the **future**, the world would find in **Bahrain** an **environmentally sound world-class physical** and **business environment.**"[829] Although the consultants argued earlier that their planning strategies are in line with the national strategies, the argument above clarifies that this is not the case.

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[828] King Abdulla Medical City, which is funded by Saudi Arabia and is planned to be located to the south of the SGNT site
[829] Skidmore Owings and Merill, *The Bahrain 2030 National Planning Development Strategies*.

9.8 Achieving Urban Sustainability in Bahrain

9.8.1   Educational and Training Barriers and Difficulties: The Greatest Challenge to Achieving Urban Sustainability

The literature in chapters 5 and 6 showed that the Gulf coastal states witnessed massive foreign migration by the mid-20th century due to the good working conditions that followed the discovery of oil. This continued relocation of foreign workers caused some social and cultural challenges that cannot be overlooked today[830]. The literature revealed that by the mid-20th century, western employees were at the top of the management pyramid, and Bahrainis at the bottom in junior jobs, whereas Indians and Pakistanis were sandwiched in between[831]. Nevertheless, this study shows that foreign western skilled employment and consultants in the public sector today are sandwiched between the local decision makers and the local junior architects and planners, while foreign Asian employment dominates jobs that are lower in the power hierarchy. Moreover, this research showed that the government in Bahrain is almost entirely dependent on foreign knowledge, workforce and consultancy, in fields related to the built environment. This research supports other arguments in the literature that attributed this dependency to the lack of national expertise[832]. The study showed evidence of the great shortage of local experts and qualifications due to limitations in the higher education system. The research discussed the deficiencies in the programme of architectural education in Bahrain, and the lack of other disciplines related to urban, planning and landscape studies. These, in addition to the lack of training, are the greatest challenges facing the development of a sustainable urban environment in Bahrain today. Other challenges will be discussed later. Although there seemed to be an awareness of the need to be more sustainable, the decision making process and working environments proved to be unsustainable and do not, to date, encourage sustainable attitudes and thinking. In addition to the dependency on foreign knowledge, workforce and consultancy in academia, and governmental practices, official statistics showed that the number of Bahraini graduates working in the private sector was limited to only 36% of the total employment[833]. This shows that both the private and governmental sectors in Bahrain are highly dominated by foreign employees.

A limited number of recent policies were written by foreign consultants to encourage the establishment of an indigenous workforce with useful business and technical skills[834]; this, however, is not yet encouraged or emphasised in Bahrain. Most interviewees acknowledged the need to strengthen the relationship between academia and practice. However, active policies failed to mention the importance of this link between higher education and the work of different governmental organisations concerned with the built environment in developing sustainability, and focused merely on projects aimed at rehabilitating and employing university graduates to limit the unemployment rate for political purposes. The literature in Chapter 2 argued the importance of this relationship for the development of a sustainable urban environment. Interviewees argued that the relationship between the various governmental bodies in Bahrain, in general, is not ideal. Interviewees from the university thought that other organisations should approach them for advice and consultancy whereas other officials believed that it is the university's responsibility to outreach, because other governmental organisations are always busy doing their own time- and money-consuming work. The negative influences of depending on foreign consultants since the 20th century were acknowledged by some of the officials; however, there was no acknowledgement of

[830] Kamrava and Babar, *Migrant Labor in the Persian Gulf*.
[831] Beling.
[832] Shaban, Assaad and Al-Qudsi; Seccombe and Lawless.
[833] Alayaam Foundation For Press and Publication, 'Forign Labour Dominates the Educated Larbour Market.'
[834] NPDS I, NPDS II and the reports of the SCE

the ongoing nature of the problem or its causes and there was no evidence of plans to resolve this issue. The continuity of this process means that the negative influences of depending on foreign knowledge and expertise on the sustainability of the urban environment that materialised throughout the 20th century would also continue in the future.

The research showed the low quality of foreign consultants hired by the government, and their limited ability to work on local projects because of their narrow understanding of the social, cultural and environmental context in which those projects take place. The use of foreign consultancy for governmental projects proved to cause delays to the process of urban development in Bahrain, and to negatively influence decision makers to take irrational decisions that have long-term social, cultural, environmental, political and economic consequences. Moreover, the research showed that strategies to encourage sustainable development exist in Bahrain[835]. However, there are limited tools for implementation. Those strategies are developed by foreign consultants, who then hand them over to the unskilled local officials, who proved to be unable to implement the recommendations of the foreign consulting companies. The study showed that in most cases, this resulted in an abandonment of the strategies, which were put forward to encourage a more sustainable urban environment. Another consequence of the lack of local skilled expertise was the limited laws and regulations in different sectors that govern the sustainability of the built environment. Throughout the interviews, it was also evident that employees of different organisations struggled to update and develop the existing regulations due to their limited expertise and the lengthy bureaucratic systems.

Overall, this study showed that there is a lack of proper urban and architectural education in Bahrain, which results in a shortage of qualified Bahrainis to feed into the different organisations concerned with the built environment. It further illustrated that this absence of Bahraini skills is the main reason for the continuation of dependency on a foreign workforce, consultancy and knowledge, which not only results in the import of foreign ideas but also the decrease in awareness and sensitivity of the context, social requirements, culture and environment. This unsustainable process argubly results in an unsustainable urban environment. The lack of sustainable examples in the architecture and urban environments, also proved to be another cause of the decline of the urban and architectural education in Bahrain. It addition, the study showed that this lack of local experts limits the generation and implementation of policies, law and regulations in Bahrain, which has had its negative influences on the sustainability of the urban environment.

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[835] NPDS I and II

9.8.2 Cultural Change and its Influence on Urban Sustainability

Throughout the interviews with different governmental organisations, it appeared that officials and academics recognised well the process of cultural change in Bahrain; however, there was rather less understanding of the process, its dynamics and consequences. Interviewees acknowledged that the Gulf's culture in general and Bahrain's in particular had changed and were able to identify some of the causes and major effects of this change on the urban environment. However, there was less realisation and limited understanding of the role of governmental organisations in perpetuating this phenomenon. The research also showed that there was a very limited focus on the negative influence of the cultural change on the urban environment in practice, as well as in academia. (Table 8-3) explained the effects of different phases of change in the urban setting of Bahrain, as described by an interviewee from the MoC. Those were considered, in addition to the findings from this study, outlined in chapters 8 and 9, to draw conclusions about the effects of cultural change on the urban sustainability in Bahrain. The findings are illustrated in (
Table **6-14** and Figure 9-11). This showed that officials and academics were able to express their realisation of this phenomenon and to highlight its causes despite their limited understanding of the dynamics of the process of cultural change. Interviewees identified the same forces of change to both the culture and the sustainability of the urban environment. This further assured the relationship between the two. The literature in Chapter 3 identified four drivers for cultural change: 1. Globalisation and Modernisation, 2. Industrialisation, 3. Colonisation and military expansion, and 4. Communication and transport improvements. Interviewees highlighted the above-mentioned drivers of cultural change. Most of the interviewees identified oil, and the consequent sudden wealth, in addition to the exposure to foreign cultures and the adaptation to advanced technologies, as the main forces of change to both our culture and the sustainability of the urban environment in the Arabian Gulf in general and Bahrain in particular.

The literature in chapter 3 showed that there are external and internal influences of cultural change. The interviewees' explanations of the cultural change in Bahrain, related the process, more, to external influences. It appeared from the findings that officials and academics realised that the local culture has changed dramatically, and stressed the importance of protecting what is unique about the current culture from further extreme changes. Interviewees discussed the different images of cultural change in Bahrain; those include the change in the family structure and the consequent fragmentation of society, the adaptation to new technologies such as air conditioning, the car and the use of imported materials in construction, the consequent evacuation of the inner city and the creation of urban sprawl, and then, the loss of identity with the change of the planning system, and finally the contrary reactions of creating the MoC in an attempt to preserve the remaining cultural identity from further disfiguration.

The research showed that the understanding of cultural change also proved to be a form of external knowledge. Only recently have people in Bahrain started to look and reflect on the dramatic cultural change that Bahrain went and is still going through. Interviewees were able to spot locations of urban change influenced by the change in the Bahraini culture. Manama was at the top of the list. Interviewees stated that Manama "doesn't look like Bahrain at all" because of the various reclamation projects and the introduction of many business areas, which brought different nationalities together. Although, as explained in chapter 6, Manama has always been Bahrain's gateway to trade and "a melting pot" for many cultures. The more recent cultural change of Manama was reflected in its architectural language with the development of projects such as the BFH and BWTC by foreign consultants; such projects were criticised by some interviewees for being "alien", "out of context/scale" and "environmentally unsustainable". Also, the former strong relationship with the sea was disturbed, not only in Manama, but also in other areas of Bahrain like

Muharraq, an issue which was discussed in the literature that tackled the transformation of the waterfronts in Bahrain[836]. The sea used to be a means of communication between the island's inhabitants and the outside world. Nevertheless, today it is rather a means of separation and isolation.

Muharraq's urban environment was argued to be less influenced by cultural change than Manama's, which could be justified by the residential function of the area, as explained in Chapter 6; Bahrain's different areas, although identified as "cities", nevertheless mostly do not operate autonomously[837]. Other discussed areas were the planned towns of the 20th century, Isa and Hamad Town, and the new developments of the 21st century, Amwaj, Durrat Al Bahrain, and Diyar Al Muharraq. Interviewees expressed different opinions about the sustainability of the 20th-century developments and questioned the potentials of the 21st-century projects. The northern and southern villages were identified as being the least influenced areas by cultural and urban change in Bahrain and were characterised as being "contained", "inward looking" and "segregated". It was also evident through this research that the intact character of those few villages is also now threatened by future projects like the SGNT and the NGNT.

Most participants, excluding some foreign interviewees who lacked an understanding of the local culture, acknowledged the limited awareness of the dynamics of cultural change between the rest of officials and academics in Bahrain, and highlighted that cultural change is not a focus of attention. A minority believed that there was a rising consciousness about cultural matters in general and related this to the 2011 political events, explained in chapter 6. Although the implications of the political events are beyond the scope of this research, nevertheless the findings indicated that topics of cultural differences and change in the Bahraini culture could also be avoided after the political events. As explained in Chapter 5, Bahrain is located in one of the fastest transforming regions in the world[838]. While it is important to avoid political clashes, avoiding cultural matters in practice and academia could result in further dependency on foreign expertise, who already have limited access to cultural and social information, in shallow outputs and projects that lack sensitivity to contextual matters.

The literature in chapter 5 and the interviewees showed that in other places in the Gulf, cultural change has taken shape in a more dramatic manner than Bahrain[839]. Nevertheless, it also proved that while Dubai, for example, was significantly transformed, its twin city Abu Dhabi was able to set models in preserving the local identity and following sustainable strategies in urban and architectural planning by introducing the Estidama initiative and the pearl rating system[840]. This study showed that those who are in favour of development in Bahrain view the more dramatic change in Dubai as a positive add-on to society and the urban environment while those who are in favour of the local identity view it as a negative cost of development and modernisation. Interviewees agreed that cultural change is much more dramatic in the surrounding countries of the Arabian Gulf than in Bahrain. This, as explained in chapter 4, was one of the main reasons for focusing on Bahrain in this research. The relatively slower change allows the Bahrainis to reflect on the extreme change in the surrounding countries and learn from their lessons. Having said that, it is worth noting here that the different opinions about the sustainability of development in neighbouring countries is a good practice and both opinions are of relevance and were necessary for the development of this study.

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[836] Al Ansari; Ministry of Culture, *RECLAIM: Kingdom of Bahrain National Participation in Venice Biennale 2010*; Al Orrayed, *Manama City through Five Centuries*.
[837] Gugger.
[838] Koolhaas and others; Koolhaas, 'Last Chance?'
[839] Ehteshami.
[840] Luomi, 'Abu Dhabi' S Alternative-Energy Initiatives: Seizing Climate-Change Opportunities'; Fraser and Glozari; Kumetat; Raouf.

While it is easy to generalise the situation to all Gulf coastal states who share many of their cultural, social, economic and environmental circumstances[841], this research suggests that it is unjust to compare Bahrain, a country that operates as a single city with limited resources and high density, to other countries like the UAE who could benefit from using Dubai as an experimental development arena to assist the economy with its tested large-scale projects, while maintaining sustainability in other cities like Abu Dhabi. Therefore, this research does not suggest that the process of cultural change and its implications for urban sustainability is better in the UAE model than Bahrain. It does, however, indicate that there are positive lessons to be learnt from neighbouring countries. Abu Dhabi's government was able to maintain sustainability by first enhancing their local skills and capabilities, which are today equal if not better than experts brought in from abroad by other countries like Bahrain, Kuwait and Qatar; then, by initiating and enforcing local sustainable development models and rating systems to govern the sustainability of the newly planned developments. The implementation of supporting laws and regulations is managed by skilled locals, who are capable of not only generating but also updating and implementing those rules to help ensure a sustainable future for the urban environment. On the other hand, other lessons can be learnt from the unsustainability of the excessive transformation of other neighbouring cities like Dubai, which disregarded the local identity in the architectural language and human scale of its developments. This research showed that more than any of the Gulf States, Bahrain is in urgent need of developing a more sustainable decision making and planning process to govern the sustainability of the urban environment because of its limited resources and critical economic and environmental situation. Recommendations for academics, decision makers and planners will be given in chapter 10.

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[841] Torstrick and Faier; Zahlan.
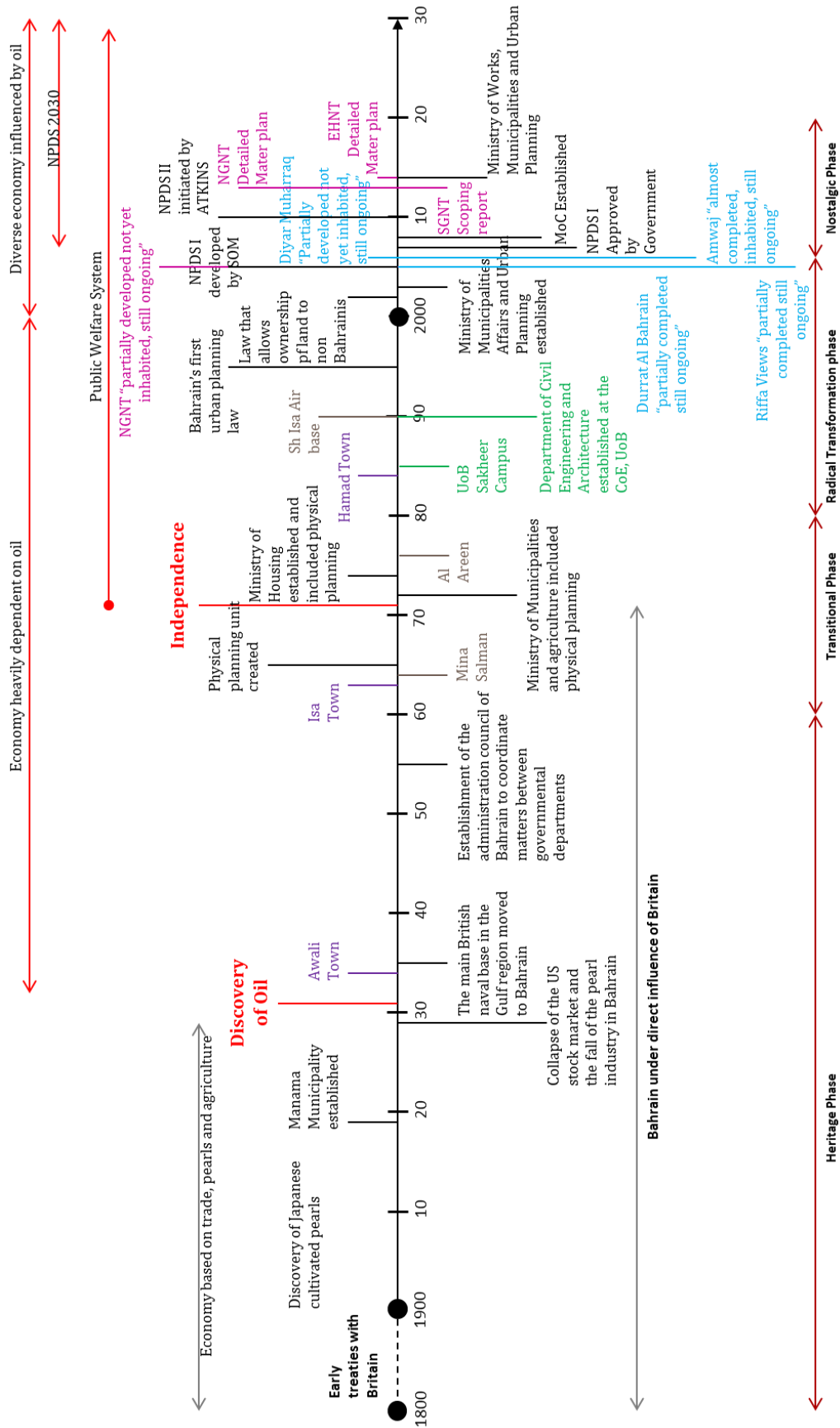
Figure 9-11 The phases of cultural transformation in Bahrain, and the corresponding phases of urban transformation

9.8.3 Potentials and Constraints of Urban Sustainability in Bahrain

This research showed that there is a limited understanding of sustainability and urban sustainability in academia and different governmental organisations concerned with the built environment in Bahrain. Furthermore, it also demostrated how the role of the government in spreading awareness for a more sustainable lifestyle between the general public is limited, which could be attributed to the limited understanding officials have themselves. The study showed that the understanding of sustainability in Bahrain varies considerably, depending on the interviewee's background. This corresponds with the literature in chapter 2 that discussed the understanding of sustainability in western societies[842]. It also showed that in Bahrain, the terms sustainability and sustainable development were used interchangeably, an argument that was also outlined earlier in the literature, but was never confirmed by empirical evidence in Bahrain before. The Research also revealed that interviewees had difficulty in defining sustainability and urban sustainability but had less difficulty in explaining what was not sustainable about their urban environments. A limited number of interviewees were able to identify the different pillars of sustainable developments, and mainly mentioned the environmental, social and economic, with less reference to the cultural pillar. The political pillar and the role of the government in encouraging urban sustainability were mostly marginalised.

The study also showed that officials and academics believed that the urban environment in Bahrain was more sustainable in the past than today. This, in addition to other findings discussed earlier, proved that there is a connection between cultural change and the change in the sustainability of urbanism in Bahrain. The different images of change to the urban environment were outlined in (Table 9-5). The research also showed that future projects in Bahrain, such as SGNT and EHNT are now being planned with underpinning indigenous identity, in an attempt to avoid rather than reverse the adverse impacts of the extreme transformations that occurred since the mid-20th century. Nevertheless, those projects are still being developed by foreign consultants and planners who have limited understanding of the social, cultural and environmental circumstances of Bahrain. The findings indicates that in the past, consultants impressed the local decision makers with their foreign ideas, while today, they attempt to satisfy the nostalgic decision makers with their concepts of bringing back the indigenous planning and architectural style. Almost all the efforts of the government to achieve sustainability seem to be influenced by national and regional programmes and case studies, rather than come from the local experts' understanding of the sustainable roots of the indigenous architecture of Bahrain. Foreign consultants, as mentioned previously, have limited understanding of the culture and the technicalities of the indigenous architecture in Bahrain. Therefore, their ideas of bringing the indigenous planning systems are fused with other worldwide examples such as Poundbury in England[843]. Their attempts to create more sustainable urban environments in Bahrain could, and would most probably, end up with another set of unsustainable mega projects, unless locals who are naturally aware of the cultural, social and environmental mandates were educated and trained, and unless policy and public awareness governed the creation of such environment.

The government, with the help of foreign consultants, are attempting, by the development of future projects, to bring back the lost urban identity, for example by trying to bring back the hierarchy between public, semi-public and private spaces, an issue which was argued to be lost in the contemporary urban planning system in Bahrain[844]. This study showed that much of this revival of

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[842] Simon and Simon; Bulkeley and Betsill.
[843] Nystrom.
[844] Al Ansari.

the local identity is being achieved superficially by imitating indigenous architectural and planning features, which do not suit the contemporary ideologies lifestyles, technologies or population size. This imitation would most probably result, as in previous cases, in the demolition and alteration of the brand new units by the inhabitants, to amend them according to their contemporary needs and style, which proves that the mass housing process is not efficient, socially, culturally, economically or environmentally. The research suggests that while it is interesting to see a variety of projects by various consultants, such as in the case of the experimental Dubai, Bahrain's case proves to be unsuitable to replicate the Dubai example because of its social, physical, resources, economic, and environmental constraints. Bahrain is rather in need of educating local professionals from various disciplines including but not limited to architecture, urban design, urban planning, landscape, civil engineering and others in sustainability. More about this will be outlined in the recommendations of chapter 10.

The study further identified a number of challenges and obstacles to achieving urban sustainability in Bahrain today. The first and most significant obstacle appeared to be the educational and training challenges and the consequent lack of local experts. This was explained in (section 9.8.1). Other challenges included the unsustainable growth of population, which in addition to the failing welfare system[845], described in Chapter 6, threatens the sustainability of the economy in Bahrain. Neutralisation and migration have contributed to the failure of the welfare system by increasing the national population who are entitled to receive public services for free[846]. It is today a question of how to reform the economy and use a more sustainable economic model to limit the public dependency on the welfare system, rather than how to feed and maintain the collapsing unsustainable scheme. Chapter 2 discussed a number of technological solutions to achieve urban sustainability, which were tested, as seen in chapter 5, in wealthier neighbouring countries such as the UAE and Qatar. However, this study showed that such highly advanced costly solutions cannot be implemented in Bahrain at the same magnitude, due to the collapsed welfare system and the island's limited resources, an issue which makes the implementation of urban sustainable solutions particularly critical in Bahrain.

Another challenge is the insufficient urban planning system, which is mostly deficient because of the lack of local experts who can generate, update and maintain urban planning policies, laws and regulations. Interviewees repeatedly debated that there is a need for a national strategy and a plan to govern a more sustainable urban environment; such policies proved to exist, despite some faults, such as the very unrealistic projection of population growth. Nevertheless, because those were mostly prepared by foreign consultants and passed to locals who are not capable of implementing or updating such national-scale strategies, they remained unimplemented and awfully outdated. James (2015) explained that "The more the language of sustainability is used, the more it seems to be directed at rationalising unsustainable development"[847]. This study showed that this was at the core of many recent Bahraini governmental policies that claimed to encourage sustainable solutions in new developments that were proven by this research to be not so sustainable.

Limited public awareness was also found to be another challenge to achieving urban sustainability in Bahrain. A new urban area must adapt to the needs and aspirations of its inhabitants[848]. Therefore, the creation of a sustainable environment by officials and consultants to be inhabited by an unsustainable population in terms of their behaviour (for example, high energy consumpltion) would render the sustainably planned urban area unsustainable. Therefore, this research suggests

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[845] Winckler.

[846] Louer; Sharon Nagy, 'The Search for Miss Philippines Bahrain Possibilities for Representation in Expatriate Communities', *City and Society*, 20 (2008), 79–104.

[847] James.

[848] Madanipour, *Urban Design, Space and Society*.

that it is important to educate the public and change their perceptions to understand and accept the benefits of long-term sustainable high-quality living, a target which can be achieved by focusing on higher education and having a stronger connection with the formal channels of public representation. Laws and regulations that govern sustainable living should be encouraged and pushed by the majority of the public, rather than being enforced by the minority of officials. The car-attached behaviour of society, for example, can be changed, not only by providing alternative modes of transportation by the government, but also by educating the public on the importance of reducing carbon emissions for the sake of the general public health. The car-dominated urban setting was argued to be one of the main challenges to urban sustainability, which cannot be overcome quickly, because other alternative transport modes such as cycling and walking are hard to achieve due to climatic and cultural constraints.

The findings also showed that widespread subsidisation is another major challenge to achieving urban sustainability in Bahrain. This is linked to the welfare system discussed above, where environmental and economic sustainability proved to be hard to achieve without reducing subsidisation and altering the economic model. For example, environmental solutions to conserve electricity and water proved to be financially unjustifiable in Bahrain even in the long run because the government subsidises energy and water. Also, the housing provision system which was the focus of the three case studies investigated as part of this research proved to be associated with the availability of large amounts of funding, mostly in the form of aids provided by wealthier neighbouring countries. The study showed that in this point of history, Bahrain no longer enjoys the wealth that materialised after the discovery of oil. But the consumerism that spread during that era still continues today, despite the country's much-reduced resources. The continuity of the housing provision system at this magnitude in Bahrain is therefore not sustainable and cannot be maintained in the long run. The interviews indicated that there is a realisation of this problem by some of the officials at the MoH. Nevertheless, there were no indications of any plans to change the situation.

Another challenge that relates to the consumption pattern that materialised after the creation of the welfare system is improper land use. The research showed that one image of that was the change of the architectural style from open courtyards to closed houses with unused setbacks and gardens. Another is the acquisition of large tracts of land out of greed and the love of showing off rather than considering the functional needs of the family. For example, in the past a smaller family would always have a smaller house than a larger family despite their social or economic states, while today, the size of the house depends on the purchasing power of the family. The failure of the waste disposal system was another challenge that is linked to the improper land use and consumerism pattern. The research showed that the excessive amount of waste forms a real threat to the environmental sustainability of the islands, and that this threat could be reduced by increasing the public's awareness as discussed earlier.

Finally, the last challenge was the inherited unsustainable existing developments and the planning system that produced them. While it is relatively easier to set regulations and build more sustainable urban environments in the future, the upgrading of the existing urban setting is harder to achieve[849]. For example, the government's attempt to retrofit walking tracks around Bahrain indicates that the road network does not allow for pedestrian movement, so people of Bahrain in most cases have no option but to drive. The government's solution of providing walking tracks in urban areas to increase the public's health by encouraging exercise was claimed by officials to be a step towards sustainable development. This shows that the government does not yet understand the magnitude of sustainability-related problems in Bahrain and their underlying causes. Those

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[849] Flint and Raco.

superficial, temporary solutions will cause more problems in the future by not addressing the core of the issue. Instead of building walking tracks, the layout of the roads in residential areas should be altered to allow for an easy pedestrian movement, and this in addition to having a pedestrian access to parks should contribute to the development of a more sustainable and healthier community in Bahrain. More suggestions will be given later.

The study also showed that the current working environment at different governmental organisations is not sustainable and does not encourage sustainable thinking or advertise sustainability; this was also proven to be reflected in the output of various governmental organisations and resulted in the overall poor sustainability of the urban environment in Bahrain. The literature showed a dispute over whether sustainable or creative environments encourage creative thinking, or dull unsustainable environment would motivate people to think more creatively. This research concludes that a combination of the two is essential to trigger creativity and achieve sustainable living. Nevertheless, the study also showed that although the work and outputs of governmental organisations were not sustainable, local officials were able to identify examples of unsustainability in their work. There seemed to be an increasing awareness and a desire to do better. Almost all interviewees acknowledged that there was something unsustainable in the work of their organisation and the educational and planning system in Bahrain. However, very few of them were able to put into words a holistic comprehension of the unsustainable situation or suggest ways to improve, which again relates to their limited education and lack of expertise.

In addition to the unsustainable working environments, the limited understanding of local practitioners and the dependency on foreign consultants, this study also showed that there are inadequate laws and regulations concerning planning and sustainability, especially environmental sustainability, which is the responsibility, as proven by this study, of a number of governmental organisations which do not seem to be working in harmony. This, in addition to the deficiency of the evaluation system, which focuses on the environmental and entirely neglects the social, cultural and the economic, allows for unsustainable developments to continue to exist in Bahrain, creating a cluster of unsustainable processes resulting in unsustainable buildings, spaces and behaviours.

A number of future governmental mega projects were investigated as part of this study, to examine the sustainability of the decision making process. The findings suggested that the same problems that materialised during the end of the 20th century continue to take form today. Nevertheless, the study also showed that there is an increasing awareness of those problems between local decision makers and practitioners, despite their ignorance of the core problem and their inability to identify the real challenges facing the sustainability of the urban environment and the decision making process in Bahrain. This research attempts to resolve this by giving guidance to academics and officials; those will be outlined in the next chapter. For instance, two of the three investigated mega projects are being planned on reclaimed land and the third is situated closer to the desert, all of which are being phased into a number of stages, each including units of around 400 or more. The development of such projects by the government continues to abolish the indigenous, sustainable incremental system of additions to the urban setting, which depended on the emerging needs of society, and in most cases resulted in an intact, varied and exciting urban structure and a stronger community[850]. The new projects, despite being built in the 21st century, and are somewhat varied in style, replicating previous failed examples of the 20th century, such as Hamad Town, discussed in chapter 6. After completion, it revealed a maze of identical, dull, monotonous urban environments that lacks character and individuality, a feature that characterised indigenous urban areas that expanded by incremental additions.

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[850] Morris.

The order in which events are taking place during the development of the three new housing towns proved also to be problematic and unsustainable. For instance, at the time of data collection, the first phase of houses in EHNT was being constructed while the master plan of the area was still under development. In addition, infrastructure and landscaping were not yet tendered. This overlap between planning and construction is caused by the pressure from the public who are waiting for their housing units. For some, the waiting time extended to more than 15 years. The study showed that this pressure affects the sustainability of the process and the quality of the end product. Recommendations to improve the public housing provision system will be given in the next chapter.

Moreover, although a strategy has been implemented in allocating housing units to ensure that beneficiaries would receive a house in a project that is closer to their original family home to maintain social cohesion in new projects, the massive housing provision system does not give much choice to the inhabitants. On many occasions, different families from various areas with different backgrounds, religious groups, and cultures come to live in one place. While this is argued by officials to be an addition to the cultural richness of those areas, locals consider such a blend to be threatening and dangerous to their values, beliefs and everyday life. An example of this is the introduction of the SGNT project in proximity to the southern coastal villages, which was discussed in (sections 6.7.1.3 and 9.7.5).

Despite the above criticism, it is nevertheless worth noting here that the study also showed that using foreign consultants in the design of those projects has helped the government to improve the decision making process by suggesting collaboration, particularly in the SGNT, where a new system has been put in place to consult all governmental bodies concerned with the built environment earlier at the design stage. Also, for the first time in a very long time, the public has been invited by the consultants to participate in the decision making process. Despite the public's small contribution, the study concluded that the consultants' approach to public consultation in SGNT demonstrates the potential for a more socially sustainable design process.

9.9 Conclusion

This chapter clearly shows that there is a limited understanding of sustainability and urban sustainability in academia and different governmental organisations concerned with the built environment in Bahrain. Furthermore, it was also clear from the argument above that the role of the government in spreading awareness for a more sustainable lifestyle between the general public is limited. The interviews also gave insight into the urban environment in Bahrain, showing that it was more sustainable in the past than today and that there is a connection between cultural change and the change in the sustainability of urbanism in Bahrain. The chapter further identified the many challenges and obstacles to achieving sustainability in the urban environment in Bahrain today and showed that the current working environment at various governmental organisations is not sustainable and does not encourage sustainable thinking or advertise sustainability; this was also proven to be reflected in the output of different governmental organisations and resulted in the overall unsustainability of the urban environment in Bahrain. An example was given by discussing the sustainability of the most recent and largest governmental urban projects in Bahrain. The chapter ended by discussing the challenges and potentials to achieving urban sustainability in bahrain.

 "I have **huge questions** about the **sustainability of urbanism in Bahrain** ... **Bahrain** as an **island does not** seem to **have the material resources** that are **necessary to sustain human habitation**. It does not **produce enough food** for itself, **doesn't have the capacity to produce enough water**, [or] the **capacity to produce enough employment opportunities** and so on. If you really project it into the **future**, it seems **impossible** to imagine how it can be really **sustained** with **hardly any resources** on the ground." E/AP/1.1

10.1   Introduction

This is the concluding chapter of this research, which attempted to investigate the relationship between cultural change and urban sustainability in the Arabian Gulf and focused on Bahrain as its main case study.   The chapter addresses the last objective of this research (section 1.2) by providing recommendations for policy makers, planners and academics. This chapter gives recommendations for academics, planners and decision makers. The main research contribution to knowledge is later outlined and followed by recommendations for further studies.

10.2   Recommendations for built environment, academia, practitioners and policymakers

This research concludes with a set of recommendations for a number of governmental organisations concerned with the built environment. The recommendations should assist Bahrain to upgrade the existing non-sustainable urban environment and to ensure the sustainability of future projects:

10.2.1   Strengthening the Relationship between Academia and Practice

This research proposes a number of recommendations, the most urgent and important of which is to strengthen the educational system and its relationship with practice. This study showed that a lot of the problems and challenges of implementing sustainable solutions in governmental projects are sourced back to the lack of proper education and a limited skilled national workforce. Therefore, this research recommends strengthening the relationship between academia and practice. This study targeted the UoB. As explained in chapter 4, the UoB is the largest but not the only higher education institution in Bahrain that offers a programme in architecture. The research recommends the creation of a committee across academia and practice in Bahrain, to ensure that the needs of governmental organisations are given serious consideration in the choices of academic programmes across different higher education institutions in Bahrain. The research further calls for a more cross-disciplinary approach to education in Bahrain, especially in fields related to the built environment. This should assist in strengthening the relationship between not only different academic disciplines but also between different governmental organisations in the future. Furthermore, the research showed that many academics in Bahrain decide not to continue their academic pursuits because of the more attractive offers and better working conditions in other organisations and sectors. This calls for a need to make the working environment in academia more attractive in Bahrain.

Also, the Department of Civil Engineering and Architecture at the UoB has been graduating students since 1995, which means that there are now a lot of young architects in Bahrain who could benefit from specialised Masters and PhD courses in various fields including but not limited to landscape, urban planning, urban design, sustainable architecture, and sustainable development. Such education and training would assist unskilled local officials who are currently employed by different governmental bodies concerned with the built environment in understanding sustainability and the relationship between cultural changes and urban sustainability. Also, academia could help reduce the clear gap in knowledge by encouraging research. Research in Bahrain should be co-produced with practitioners to strengthen further the relationship between academia and practice. The research also recommends the establishment of a principle of sharing between the various governmental organisations concerned with the built environment to ensure the easy access to data, research information and new knowledge. The creation of a skilled national workforce should help in reducing the gap created by foreign consultants between local decision makers and young local employees. A lot of the current problems such as the adaptation of international solutions, the lack and outdated laws and regulations, and the limited ability to implement future national governmental strategies, should be eased by the development of skilled national expertise in Bahrain who can handle such issues without depending on foreign knowledge, expertise and workforce.

10.2.2 Reforming the Governmental Structure

Regulating and ensuring sustainability is currently the responsibility of a number of governmental organisations which are not working in harmony. For example, although the SCE is the official governmental body responsible for the protection of the environment in three areas of air, soil and water, this research showed that there is an overlap in the responsibility of the various governmental organisations in the protection of the environment. EWA is responsible for regulating the use of electricity and water, the types of building insulation, lighting and so on; the MoM is responsible for the protection of palm groves; and the MoC overseea the protection and preservation of oyster beds; while the SCE oversees the sustainability of infrastructure. The research showed that this split of responsibility results in confusion that affects the overall environmental sustainability of the urban environment in Bahrain negatively. Moreover, neither the SCE nor the EWA is directly represented at the PMC, which has delayed laws and regulation, and disregarded environmental considerations, especially those of the newly established SCE.

The MoM is responsible for land use zoning, urban planning regulations and the creation of national strategies that aspire to achieve urban sustainability, while the CPO, which was until 2015 part of the MoW, is responsible for managing all public and private infrastructure in Bahrain. It acts as a central body which overseas different bodies approve governmental projects. Similarly, while the MoF is the official governmental organisation responsible for allocating and managing the government's annual budget, the EDB handles the development of the economy. This research showed that scattering those responsibilities across a number of organisations that are not communicating effectively is inefficient. In addition, as stated in chapter 4, the continuous introduction of new authorities, directorates, interministerial committees and the change in governmental bodies by replacement, shuffling, splitting and re-joining during the last decade has made it particularly difficult for officials to know who is responsible for what. This was also a challenge for the researcher when allocating data sources. The study suggests that the introduction of new authorities, splitting and shuffling should be minimised. Governmental organisations worked better in the past when they were under one management, despite some problems related to handling large tasks.

The study concludes that while it is unmanageable to join the different governmental bodies concerned with the built environment under one umbrella, it is possible to form an intermediate body to assess the communication across different sectors, and to try to minimise the number of authorities falling under separate managements as much as possible, without overcrowding and exaggerating the amount of responsibility to one ministry. For instance, the MoM has been changed very recently, as stated in chapter 4, to the Ministry of Works, Municipalities Affairs and Urban Planning, which indicates that the government is already aware of the problems caused by splitting the work across different separate bodies. Nevertheless, the MoW and the MoM handle many issues relating to planning, municipalities affairs, and infrastructure, which is much burden on one minister. The study showed that SCE was already struggling because of the lack of representation of the council at the PMC, because of the many responsibilities handled by the minister of the MoM, who was also responsible for representing the SCE, let alone with the addition of the responsibilities of the MoW. The internal structure of this new ministry should be accurately defined, to avoid the problems that caused the splitting in the first place.

The CPO that used to be part of the separate MoW is now joined with the UPD in one new ministry after the decision to join the MoW and the MoM. This is a first step in harmonising governmental efforts in planning. This research does not suggest the creation of a new governmental body, but it does suggest that the CPO, which is now under the umbrella of the new Ministry of Works,

Municipalities Affairs and Urban Planning, should be directly responsible for assuring the environmental, economic, social and cultural sustainability of projects, rather than just managing public and private infrastructure. The study showed a pressing need for integration to achieve the government's plans for urban sustainability, since individual efforts by one organisation proved to be doomed to fail without the support of other governmental bodies. For example, targeting environmental protection should also be supported by a sustainable economic model to ensure its success. The CPO is the central body responsible for assuring that different ministries and departments approve governmental projects. Therefore, the organisations should employ representatives from different entities to ensure integration. The good outcome of joining those different entities earlier at the design stage in the SGNT project should be continued with the permanent allocation of such representatives in the CPO.

Moreover, this research suggests that the different governmental authorities, which are not large ministries such as the authority of culture, formerly the MoC, the EDB, EWA, and so on, should work under the umbrella of an existing governmental ministry and report directly to the minister of that ministry. For instance, the EDB should work under the umbrella of the MoF, and the former MoC should work under the umbrella of the new MoWM. This research also suggests the upgrade of the SCE to become the Ministry of the Environment, which should also include EWA. This should ensure that the protection of the environment is overlooked by one governmental organisation under one management. Moreover, this study showed that Bahrain is in need of an environmental assessment system. Currently, governmental organisations are dependent on regional and international systems such as the LEED or the Estidama Pearl Rating system in assessing the sustainability of some projects. A national system needs to be created, tailored to the needs of the Bahraini society and the particular cultural and physical circumstances of the islands. The new system should be developed with respect to the five pillars of sustainability discussed earlier: environmental responsibility, social equity, cultural vitality, economic viability and political support.

10.2.3   Rethinking the Welfare System

This study showed that Bahrain can no longer continue to cater for the welfare system. It is essential for the development of a sustainable urban environment to first rehabilitate the general public attitudes and perceptions of the state and to make them realise that the era of excessive wealth is ending. The state will have to introduce taxes gradually, to ensure that public funding is available for the development of infrastructures and public services such as schools and hospitals. Reducing the quality of those services should not become the next option with the reduction of available funds. The provision of subsidised houses is an example for this. The government continues to promise the provision of adequate housing, almost for free, for each family in Bahrain. This research showed that such promises can only continue to materialise today with the availability of funds from other neighbouring wealthy countries. This unreliable dependency should not continue into the future.

Currently, more than half of the population in Bahrain are waiting for houses to be provided by the government, which pressures the MoH into providing low-quality houses in a short time to cover the backlog and avoid public outrage. Moreover, with the approval of new laws that will add more people on the list, the MoH will be under more pressure to develop additional houses in the same time frame which already proved to be limited for the development of sustainable high-quality urban areas. This indicates that the level of subsidised housing in Bahrain will continue to deteriorate and that there is an urgent need to limit the states support by building mass housing to those who are in need. Building mega projects to accommodate more than half of the population in mass housing has been argued in the literature to have other consequences related to increased

crime rate and loss of identity[851]. This study focused on three mega governmental housing projects and concluded that the development of all three mega projects at the same time threatens the sustainability of the urban environment in Bahrain. The study findings suggest the government should slow down the rate of development. All three projects are phased into a number of stages. Nevertheless, the introduction of completely new urban areas at a number of locations around the islands with the many unresolved challenges to sustainability explained earlier seems to be problematic.

Nevertheless, limiting access to public subsidies in housing can only materialise in conjunction with economic reforms to avoid a social disaster. This study concludes that rather than trying to cover the backlog of housing applications, the government should attempt to solve the underlying issues that cause such backlog from accumulating; for example, reforming the economic system, redefining land and construction prices and strictly limiting the purchase of land to Bahrainis. Middle-income families should be able to buy houses and built land in Bahrain easily, without suffering unrealistic long-term debts. This study therefore suggests that the demand problem should be fixed first and that development of governmentally planned housing projects should be slowed down and limited gradually, while allowing existing towns to expand naturally at a gradual, sustainable pace of development.

10.2.4   Reforming, Upgrading and Enforcing Laws and Regulations

The study showed that Bahrain is in urgent need of the introduction of some new laws and regulations to update others and to enforce some existing ones. The research also showed that the success of this process should be achieved through the development of a skilled local workforce which can establish, update and enforce national strategies, laws and regulations. The study showed that there is scarcity in laws relating to cultural conservation and heritage protection in Bahrain. The study also showed that laws relating to safeguarding the environment are also lacking. The research suggests refining urban planning laws, particularly the setbacks regulations in Bahrain, which proved to result in much waste in the land of the already small country with high density. Moreover, the law concerned with allowing the ownership of land by non-Bahraini citizens has resulted in the increase of land prices that pushed local middle-income citizens out of the market. The refining of the land ownership law is important for controlling the number of housing applications in Bahrain and redefining the housing provision system. The study also suggests the introduction of some regulations that could minimise car trips, control the widespread vehicular mobility and encourage other sustainable alternatives by, for instance, applying fees for using major highways, an approach that is successfully used in regional and national countries such as KSA and the UAE. Also, the study suggests that the provision of car parking per household should be regulated, to limit the increasing urban heat effect caused by converting home gardens into massive parking lots of concrete and other solid materials that reflects heat.

Findings showed that waste is another issue that should be regulated in Bahrain. The research showed that Bahrain is in need of a comprehensive national waste management plan and suggests first to raise awareness among the general public of the importance of recycling and reducing households waste. Moreover, fees should be introduced on waste gradually to help control its amounts and its negative impact on the environment. Also, hazardous waste should be managed by the responsible authority. The research showed that the SCE is currently not handling issues related to hazardous waste efficiently; for example, fluorescent lamps are still being disposed of with general waste, which puts the environment at risk of mercury contamination.

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[851] Wassenberg, Turkington and Kempen; Rowlands, Musterd and Kempen.

10.3   Main Research Contribution to Knowledge

Most literature that discusses urban sustainability focuses on the western and far-eastern worlds but little consideration is given to the situation in the Arabian Gulf countries. This research is the first of its kind that addresses changes in cultural identity in relation to skills and knowledge and the resulting urban environment in the Arabian Gulf states. It is also the first that discusses the sustainability of the governmental decision making process in relation to the built environment in Bahrain, and the understandings and perceptions of governmental officials of the concepts of cultural change and urban sustainability.

The research contributes to knowledge by defining urban sustainability and cultural change within the context of the Gulf. The study investigates the two paradigms of cultural change and urban sustainability, but in the context of Bahrain. The research takes into account the original three pillars of sustainable development, but focuses specifically on the two pillars of sustainability of "Cultural Vitality" and "Political Support", paying particular attention to aspects of organization, governance, identity, believe, meaning, enquiry and learning. The research focuses on the work of seven governmental organisations concerned with the built environment: UoB, MoM, MoH, MoC, MoW, SCE, and ARCWH. The research shows how changes in cultural identity affect skills and knowledge and governmental practices in the Arabian Gulf in general and in the Bahraini context in particular. It also describes a deeper understanding of the process on both a long- and shortterm basis, first by investigating the sustainability of the built environment throughout the last century, then by examining the sustainability of the built environment now, and finally by focusing on three future governmental mega projects. The research also contributes to knowledge by outlining a mechanism to evaluate future projects in Bahrain according to the five pillars of sustainability: the social, cultural, environmental, political and economic.

The effect of "political support" for urban sustainability is examined by focusing on the decision making process and the perceptions of policy makers in Bahrain. The research contributes by highlighting the need for a cross-institutional programme of awareness-raising of sustainability. This research highlights how cultural change in the case of Bahrain, or any similar situation, could affect the sustainability of the decision making process, and the consequences this might have on the urban environments and the lives of the inhabitants. In Bahrain, as in many other places in the world, very little consideration has been given to the relationship between cultural aspects and sustainability. Moreover, the study highlights the challenges faced when implementing urban sustainability in Bahrain today and concludes by giving recommendations to overcome those challenges not only in the short term but also in the long run.

10.4   Recommendations for Further Research

1. Chapter 2 highlighted that some universally recognised terminologies such as "city", "urban area" or "neighbourhood" might have different associated meanings and understandings in different regions in the world. Further research could be carried out to investigate using empirical evidence what those terminologies mean in the Bahraini context.

2. This research focused on the understandings of officials in Bahrain of the concepts of cultural change and urban sustainability; it also highlighted their perception of the knowledge of the general public of the same concepts. Further research could be carried out in the future to measure the understanding of the general public to the same concepts of cultural change and urban sustainability, those, could then be compared with the findings from this study.

3. This study focuses on the role of the government in assessing or preventing urban sustainability in Bahrain today and the effects of cultural change on the urban environment. Further research could be carried out to assess the role of the general public in this process of change on the sustainability of the urban environment.

4. The research highlighted that while some areas of Bahrain like Manama were affected significantly by cultural change and became socially fragmented, other areas like the northern and southern villages were considered to be inward looking. Further research could be done to investigate how much social cohesion in Bahrain is needed for society to be socially intact without being too fragmented or too inward looking.

5. This research investigates the sustainability of larger-scale urban areas. Further studies could be conducted to investigate the sustainability of smaller-scale units of the urban environment. For example, the neighbourhood, or the individual building/dwelling.

6. Many of the national-scale plans and strategies in Bahrain were set without supporting empirical evidence; for example, there was no evidence that in the NPDS I, studies were carried out to determine the components of the neighbourhood core needed by the local society. Also, policies suggested that Bahrainis are willing to walk for 5 minutes if shading was provided. No empirical evidence was found that proves such claims. Future research could investigate such issues and compare their findings with the assumptions made in the existing national strategies.

7. The research showed that the evacuation of the inner cities of Muharraq and Manama was only possible because of the new developments that were created around the island at that time. Locals had other places to go, and those were appealing because of their high quality, spacious sizes and modern infrastructures. The research showed that at that time, those were more important than the social coherence and cultural richness that are now being missed. This research is focused on the sustainability of the urban built environment. Therefore, the details of such change in interests and ideologies are not particularly a focus. Investigating this change is a good starting point for further research to study the development of the psychology of the Bahraini society.

8. This research is focused on the work of the government. Therefore, the in-depth investigation of the sustainability of the new non-governmental gated developments such as Amwaj, Durrat Al Bahrain and Riffa Views is beyond the scope. This, however, marks a real potential for further research on urban sustainability in Bahrain.

10.5   Conclusion

This research shows both the diverse negative effects of cultural change on the sustainability of the urban environment in the Arabian Gulf in general and Bahrain in particular, and the positive qualities such change in culture can bring to society. With the limited remaining resources on the ground, the increase in population and demand for natural resources, Bahrain today has no other option but to transform its culture gradually to ensure the continuity of life on the islands. It is today a question of how to channel change into more sustainable practices. This research suggests that rather than questioning the need for change, Bahrain needs to learn from the mistakes of the past rather than repeat them, and use the remaining resources to invest in human capital. The wealth that materialised following the discovery of oil was directed for decades to building modern infrastructures and services which distracted attention from the importance of developing the abilities and skills of local citizens. The research therefore concludes that the future of urban sustainability in the Arabian Gulf is dependent on human development that will require the reorganisation of academia, governance, laws and regulations, as well as improving access to information.

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Appendix 4.1: Research Aims, Objectives, Methods and Outputs

Aim: To investigate the effects of cultural change on the development of Urban Sustainability in Bahrain.

Stage	Objective	Importance	Method/technique	Strategy	Output
Problem Definition: Theory and Modelling	**First Objective:** To explore the socio-cultural, environmental and eco-political mechanisms behind the formation of Bahrain's urbanism and to investigate the forces that contributed to the development of cultural transformation in Bahrain.	To trace the roots of the current problem and to identify gaps in the literature. This step also aims to record the development of urban sustainability in Bahrain and to compare Bahrain's situation to other places of cultural change (choosing Bahrain as the main case study).	Brainstorming techniques, mapping and literature review	Arabic and English Literature: Urban Sustainability, Cultural transformation (Since 1920s), National documents, maps and pictures of the Arabian Gulf (Since 1800s).	A redefined concept of urban sustainability in relation to areas of cultural change, in addition to a theoretical review of academic studies on urban sustainability and cultural change and an investigation of the past and current situation of the urban fabric of the Gulf
			Archival Research	A review of National Documents, diaries of Englishmen who were resident in the Arabian Gulf, the political diaries and reports of the American missionaries, and the political reports and intelligence summaries prepared by British political officers located in different British libraries in addition to those held by archives in Bahrain.	A review of the existing policies and documents considering the economic, political, social and cultural aspects that have influenced the development of urbanism in Bahrain.
			case study comparison	A literature review and a visit when possible of urban island: Cyprus, Singapore, Malta, Abu Dhabi, Copenhagen, with a focus on sustainability	A comparison study of the urban sustainability of Bahrain. Compared with other islands of similar characteristics.
				semi-structured interviews based on networking with researchers and officials in the four selected Arabian Gulf countries (Bahrain, Kuwait, Qatar and UAE).	A synthesis of the gathered information and a comparison between Bahrain and other areas of cultural change in the Gulf under the umbrella of Urban Sustainability, in addition to making connections with the potential sample.
Aims and Objectives			Pilot study	Two semi-structured interviews with governmental representative and two informal interviews with the general public.	An evaluation of the feasibility, time efficiency and compatibility of the selected methods. in addition to an examination of a number of residential, commercial and public open spaces in Bahrain.
Synthesis, Evaluation and Interpretation	**Second Objective:** To examine the transforming culture of Bahrain and to assess the role of the existing culture in stimulating or preventing the development of sustainable urbanism in Bahrain.	To investigate the Bahraini culture as it is today and to examine people's understanding of sustainability and the importance of the development of urban sustainability to enhance the cultural framework and the quality of life in the country, with a focus on governmental officials working within the built enviroment. The current situation will then be compared with the findings from the first stage.	Semi-structured interviews with key officials, planners and researchers — Phase I data collection	28 Semi-Structured interviews with 29 key officials from MOH, MOW, MOC, MOM, ARCWH, SCE and with researchers from UOB. Questions relating to the understanding and adressing of cultural change and urban sustainability, in addition to the role of these organizations in the development of Urban Sustainability in Bahrain today.	An understanding of the role of the government and NGOs in preventing or stimulating the development of urban sustainability in Bahrain.
				Analysis of governmental current Policies,laws and regulations, Strategies and implementation plans	
			Phase II data collection	5 Semi-Structured interviews with 7 key officials from MOH, SCE and PCF. Questions relating to the urban sustainability of the government's largest three new twons NGNT, EHNT, SGNT.	An understanding of the urban sustainability of the future governmental major developments in Bahrain
				Analysis of the Latest detailed master plans for NGNT and EHNT and the scoping report for SGNT.	
Generation of ideas, results and recommendations	**Third Objective:** To put forward recommendations for a sustainable urban regeneration strategy for Bahrain and for a future urbanism scheme which focuses on all aspects of sustainability.	To publish an academic piece of work which will offer suggestions for governmental agencies to enhance the sustainability and quality of the urban fabric in an attempt to improve the overall quality of life in Bahrain.	Deductive Analysis	Analysis of the collected data, then the synthesis of empirical evidence with the theoretical perspective and the archival findings.	An agenda for sustainable urban reform in Bahrain, as resembled in a set of recommendations for sustainable urban regeneration in Bahrain.
			Methodological assessment	Evaluating the methodology used in the research, and reflecting on the data collection and analysis processes.	The development of a redefined methodology based on a qualitative strategy and a case study approach that suits the context and to give methodological guidelines and recommendations for further research to be carried out in the Arabian Gulf Context.

Category labels: Empirical Research Methods; Initial data interpretation and formation; of a theoretical perspective; Final data interpretation

Appendix 4.2: Aims and Objectives of First Stage Research Questions

Organization	Category	Question	Objective	Importance
University of Bahrain (Department of Civil Engineering and Architecture)	General Information	For how long have you been working for the University of Bahrain ?	Ice breakers for a smooth opening and to direct the interview to the research topic. These questions will also help in understanding the level of power and influence the interviewee has in the organisation.	The experience, role and position of the interviewee will determine the deepness of the information given and the extents to which those data are precise and up to date.
		What is your job title ?		
		What is your role in this organization ?		
		To what extent does your job allow you to make changes in the existing curriculum ?		
		To what extent does your job allow you to make changes in the learning enviroment ?		
	Cultural Change	In your openion, what is "Cultural Change", or "Cultural Transformation"?	This will assist in fulfilling the second research objective by understanding the local authority's views and understanding of "Culture" and "Cultural Change".	Understanding the local authority views and understanding of "Cultural Change" will determine the degree to which the protection, continuity, and sustainability of "Culture" is important to the local authority and whether there is awareness of its influence on the urban enviroment in Bahrain.
		Do you think that there is a general understanding of the meaning of Cultural Change in the department ? between the faculty and the students ?		
		If "Cultural Change" or "Cultural Transformation" was defined as the alteration of cultures around the world due to either external or internal forces, or sometimes a combination of both. do you think that there is a general understanding of this meaning in the department ? Why?		
		Do you think that there has been "Cultural Change/Transformation" in the Gulf region in general and Bahrain in particular? In what ways?		
		Do you think that the urban fabric of Bahrain was affected by this "Cultural Change"? In what way?		
		Do you think that this "Cultural Change" affected the formation of Architecture education and knowledge in Bahrain? How?		
	Urban Sustainability	In your openion,what is "Sustainability" ?	This will assist in fulfilling the second research objective by understanding the local authority's views and understanding of "Sustainability" and "Urban Sustainability".	Understanding the local authority views and understanding of "Urban Sustainability" will determine the degree to which the principles, approaches and rules of "Sustainability" are important to the local authority concerned with planning.
		In your opinion, what is "Urban Sustainability" ?		
		Do you think that there is a general understanding of those meanings in the university ?		
		If "Urban sustainability" means that the way inhabitants of a certain city interact with their built and natural environment is sustainable, and will therefore enable the sustaining of that environment and the cultures that produced it, for future generations. do you think that there is a general understanding of this meaning in the department? Why?		
		In your openion, how sustainable is urbanism in Bahrain today ?		
		How sustainable was urbanism in Bahrain in the past?		
		Do you think that there have been changes in the sustainability of urbanism in Bahrain? If yes, when and why you think this change happened?		
		What areas you think were affected by the change in the sustainability of urbanism in Bahrain the most ? why and how were they affected?		
		How sustainable is the campus and the learning enviroment in the department? And does it encourage sustinable thinking in the students and the faculty ?		
	The Formation of Urbanism	What in your opinion are the socio-cultural mechanisms behind the formation of Bahrain's urbanism?	This will assist in fullfiling the first research objective by investigating the forces that contributed to the development of urbanism in Bahrain.	Understanding the local authority views and understanding of the factors that informed the development of Bahrain's urbanism will assist in determining the external and internal forces that drived transformation in the urban structure of Bahrain.
		What in your opinion are the environmental mechanisms behind the formation of Bahrain's urbanism ?		
		What in your opinion are the eco-political mechanisms behind the formation of Bahrain's urbanism ?		
	Projects and Events (The Cirriculum)	What subjects are you currently teaching ?	This will assist in fulfilling the second research objective by understanding how the local authority operate and what sustainability standards and principles are being followed and achieved.	Understanding the work and projects of the local authority will help determining the level of "Sustainability" of the urban enviroment in Bahrain and the current pace of "Cultural Change"
		Do you teach anything related to "Cultural Change/Transformation" in your courses? In what ways ?		
		Is "Cultural Change/Transformation" being tackled in other modules that you are not teaching in the department ? Who teaches those courses and what do they involve?		
		Do you teach anything related to "Urban Sustainability" in your courses? In what ways?		
		Is "Urban Sustainability" being tackled in other modules that you are not teaching in the department ? Who teaches those courses and what do they involve?		
		Are there any courses that tackle the existing culture and its consideration and relationship with the design and planning of the built enviroment in Bahrain today?		
		To what extent do you think students are informed about the importance and value of "Ubran Sustainability"?		
		Are there any extra Cirriculum activities/programs that encourage sustainable thinking/awareness or the implementation of sustainable urban solutions?		
		Are students usually evaluated on the sustainability of their projects ? And to what extent does the consideration of sustainable solutions affect their evaluation?		
	Connection with other governmental organizations	Is there a connection between the Department of Civil Engineering and Architecture and the Ministry of Culture? In what way?	This will assist in fulfilling the second research objective by understanding how the different organisations within the local authority connect together and what national strategies for achieving "Sustainability" are being adapted and achieved.	Understanding the connection between the different governmental organizations in Bahrain will help assessing the overall national plan in terms of achieving "Urban Sustainability" in the country.
		How strong is this connection if it exists and do you think it should be enhanced ?		
		Are there any connections between the department and any other governmental body concerned with the built enviroment in Bahrain ? If yes, which organization and in what way?		
		Are there any connections between the department and any other body concerned with "Sustainability" in general ? or "Urban Sustainability" in particular? If yes, which organization and in what way?		
	Future Plans	What would the University of Bahrain interpretation be of a sustainable urban regeneration strategy for Bahrain and a future urbanism scheme that focuses on all aspects of sustainability?	This will assist in fulfilling the third research objective by understanding the role of the local authority in setting future sustainable urbanisation strategies and plans for Bahrain.	This will help in setting an agenda for sustainable urban reform in Bahrain.
	General wrapping up questions	How do you think cultural transformation affected the sustainability of urbanism in Bahrain in the past?	This will assist in fulfilling the main aim of the research by understanding the views and opinions of the local authority on the main questions of this research.	Asking the local authority the main research questions dirctly will assist in projecting a better understanding of those questions from a contexual point of view.
		What in your opinion is the role of the existing culture in stimulating or preventing sustainable urbanism in Bahrain today?".		
		Do you think that the University of Bahrain, the department of architecture play a role in stimulating or preventing "Urban Sustainability" in Bahrain today ? How ?	This will assist in fulfilling the second research objective by understanding the role of the local authority in preventing or stimulating the development of "Urban Sustainability" in Bahrain.	Understanding the role of the local government in preventing or stimulating the development of "Urban Sustainability" in Bahrain will determine the probability of the continuation of the existing phenomenon of "Cultural Change" and its influence on the "Sustainability" of the urban enviroment if Bahrain.
		Do you think that the University of Bahrain, the department of architecture play a role in understanding "Cultural Change/Transformation" in Bahrain? How?		
		Do you think that the University of Bahrain, the department of architecture play a role in understanding the relationship between "Cultural Change/Transformation" and "Urban Sustainability" ?		

Appendix 4.3: Stage II interview questions

A) Questions to local interviewees

1. How the Ministry's/ government's approach to planning urban development has changed over time?
2. What is the aim of this project?
3. Why do we need it in Bahrain today?
4. Does the project address our current society needs/ the current local mandates? How?
5. Does it comply with the Government National Planning Development Strategy (NPDS) and Bahrain 2030 vision? How?
6. Are you working with other governmental agencies in these projects? How? Moreover, do you think it had been productive?
7. How does the project connect to other areas of Bahrain?
8. How sustainable is this project environmentally?
9. How sustainable is this project culturally?
10. How sustainable is this project socially?
11. How sustainable is this project economically?
12. In what stage is the project? Moreover, when you think it will be completed? Is work progressing according to plan?

B) Questions to Overseas Consultant

1. What is the aim of this project in General?
2. What is the Role/Contribution of the Prince Charles Foundation in this project?
3. How sustainable is this project environmentally?
4. How sustainable is this project culturally?
5. How sustainable is this project socially?
6. How sustainable is this project economically?
7. Does it comply with the Government National Planning Development Strategy (NPDS) and Bahrain 2030 vision? How?
8. How does the Prince Charles foundation benefit from the local culture in this project? Moreover, do they respect the current cultural mandates?

Appendix 4.4: List of Interviewees

#	Nationality	Position	Organization	Date	Time	Code
01Pilot	Bangladish	Assistant Proffessor	UOB	7th January 2014	2.30 Pm	E/AP/1.1
02Pilot	Bahraini	Architect	MOC	19th January 2014	4.00 Pm	L/A/2.1
03Pilot	Bahraini	Senior Architect	MOH	9th January 2014	10.00 am	L/SS/3.1
1	Bangladish	Assistant Proffessor		7th January 2014	2.30 Pm	E/AP/1.1
2		Assistant Proffessor and coordinator of Interior Design program		10th February 2014	12.00PM	L/CID/1.2
3		Assistant Proffessor and director of the engineering office		13th February 2014	11.00 AM	L/DEO/1.3
4	Bahraini	Teaching and Research Assistant	UOB	10th February 2014	10.30 AM	L/TA/1.4
5		Assistant Proffessor		23rd February 2014	12.30 PM	L/AP/1.5
6		Lecturer		12th March 2014	9.00 AM	L/L/1.6
7	Bahraini	Architectural Engineer		19th January 2014	2.30 PM	L/AE/2.1
8	Egyptian	Consultant for heritage conservation and architectural heritage		15th February 2014	12.00 PM	E/HCS/2.2
9	Lebnanies	Urban conservation specialist	MOC	23rd February 2014	4.00 PM	E/UCS/2.3
10	Bahraini	Architect		23rd February 2014	3.00 PM	L/A/2.4
11	Plestanian	Head of Architectural Affairs.		20th February 2014	12.00 PM	E/HA/2.5
12		Seconder to strategic projects as head of architecture and master planning.		9th January 2014	10.00 AM	L/SSP/3.1
13	Bahraini	Advisor for planning and development		11th February 2014	11.00 AM	L/PA/3.2
14		Head of urban development	MOH	19th February 2014	12.3 PM	L/HU/3.3
15		Architect		19th February 2014	11.00 AM	L/A/3.4
16		Infrastructure Design Engineer and Project Manager		10th September 2014	0.1.30 PM	L/IPM/3.5
17		Advisor to Minister of Housing and Director of Strategic Projects		15th September 2014	10.00 AM	E/DSP/3.6
18		Urban Designer	PCF			OC/UD/3.7
19	British	Director of Urban Design	WSP	10th September 2014	11.30 AM	OC/DUD/3.8
20		Urban Project Manager	PCF			OC/UPM/3.9
21		Head of prequalification of contractors and consultants		2nd March 2014	1.00 PM	L/HP/4.1
22	Bahraini	Chief of design	MOW	11th March 2014	1.00 PM	L/CD/4.2
23		cost engineering director Ex head of road design section		11th March 2014	8.00 AM	L/CR/4.3
24	British	Chief of Central Planning Organization		16th march 2014	12.00 PM	E/CCP/4.4
25	Bahraini	Head of Building Unite and Senior Architectural Engineer		3rd March 2014	1.00 PM	L/HB/5.1
26	Iraqi	Urban Development Advisor		5th March 2014	10.00 AM	E/UDA/5.2
27	Bahraini	City Urban Planner	MOM	5th March 2014	1.00 PM	L/CU/5.3
28	Bahraini	Head of Strategic and Urban Planning Section		11th March 2014	10.00 AM	L/HSU/5.4
29	Indian	Advisor to the General Directorate of Urban Planning		13th March 2014	10.30 AM	E/UPA/5.5
30	Bahraini	Head of design		10th March 2014	11.00 AM	L/HD/5.6
31	Algerian	Head of the centre	ARCWH	2nd of March 2014	10.00 AM	E/HC/6.1
32		Head of Enviromental Planning		15th April 2014	12.30 PM	E/HEP/8.1
33	Bahraini	Enviromental Specialist	SCE	10th March 2014	1.00 PM	L/ES/8.2
34		Enviromental Specialist		10th March 2014	1.00 PM	L/ES/8.3

Appendix 4.5: Sample Interview Transcription

Interviewee: O1.1
Location: University of Bahrain- His office, Isa Town campus
Date: 7th January
Time: 2.30 PM

Interviewer: So, for how long you have been working at the University of Bahrain?
Interviewee: I came here in the 2000, so, and I was absent for two years, I would think that would make it up to 11 years.
Interviewer: 11 years?
Interviewee: Yes, 11 years.
Interviewer: And what is your job title?
Interviewee: Currently an assistant professor, in the Architecture section of the Department of Civil Engineering and Architecture. That is how it goes.
Interviewer: Okay, and what is the role of the University of Bahrain, Department of Architecture in Bahrain?
Interviewee: Well, there is no Department of Architecture, still. Although, from what I have heard recently, the civil engineering department has now been split, and the department of architecture is officially established. But for the time being we are part of the Civil Engineering and Architecture department. And we remain as the architectural section. Which involves the architecture and the interior design together. For official purposes, that is how it goes. We are part of the civil engineering and architecture department. Administered largely by the civil engineering section. So to speak, the civil engineering department is the original in which existed, and architecture came in later. So we are secondary in that sense. But having said that, I would think that we are working almost like a department, except for the fact that we do not have that complete independence. Apart from that we are offering the BSc. Architecture degree, five years and then the Interior Degree four years. So we are more or less like a separate department, although, officially not so.
Interviewer: Okay, and to what extent does your job allow you to make changes in the current curriculum?
Interviewee: It's like this, it allows us to make changes in the current curriculum in two ways, and one is that we are currently trying to get accreditation from the National American Accreditation Board, so, as far as that is concerned. There has been a program, contentiously to change the curriculum. In fact, at the year that I came here in 2000, that was the first year of the first BSc in Architecture, five years program. And, at that time there was a Curriculum development happening. Particularly there was a committee working on the design courses. There were those things happening and I was involved in that change to a certain extent and I was involved in talking about the graduation, not the graduation, the basic design and graphic courses and how they should be integrated with design one and so on. So, this happened, and then, we made changes. Subsequently we are making changes if we feel that certain changes need to happen; we have the freedom to bring it up at the council meetings of the architectural section. And, then discuss and take those decisions. And, forward it to the college council and so on. The process is always open, and we can make those changes if necessary. But, at the same time, because of the NAAP we have been re-examining our course curriculum, quite a bit, for the last couple of years. And, we have done quite a degree of changes to the curriculum, rewriting the descriptions, redefining the objectives. And, in fact, I would say streamlining the entire system of delivery of the material and assessment systems. Particularly to be in line with the NAAP requirements, because the NAAP has some criteria, some 32 criteria that we need to fulfil and when we were looking at the NAAP conditions we discovered that we were not fulfilling some of those criteria in our courses. So we have been revising it for the last couple of years. So we are free to do that when necessary.

Interviewer: Okay, and how about the physical environment. How much does your job allow you to make changes in the physical environment of the department?

Interviewee: that's where we don't have any control what so ever really speaking, like I said because first of all we are part of the civil engineering and architecture department in which we are currently occupying the buildings 33 and 35 to a great extent and then some rooms in the building 15 have been allocated to us. But, as you know, since the establishment of the Polytechnic, many spaces have been taken over. And, we do not seem to have many rooms to manoeuvre. We are having difficulty in organizing the classes and juries and various classroom activities. And, so on, we are tight in that. I particularly don't have any individual control on any of those spaces, but as the department we still have some degree of ability to negotiate spaces as when we want. So we are not completely constrained; we have the possibility and opportunity to negotiate. I suppose this is the case in many other universities or even if you are completely independent. Spaces have to have the multi-use and can be used by other departments. So you need to negotiate, but we are a little bit tightly cornered also because the students numbers have increased, and we are under pressure from the inside of the classrooms to expand and we are under pressure from the outside from the Polytechnic to squeeze our selves. So this is the situation right now.

Interviewer: Okay, talking about cultural change, in your opinion, what is cultural change or cultural transformation?

Interviewee: interesting question, in my opinion, culture is constantly in change. Because my definition of culture is total material and non-material production of a given group of people and then a group of people will grow, change with time, age and get exposed and so on, so whatever they produce in terms of their ideas and thinking and the materials they produce are constantly in change. This is a natural thing. Now I also subscribe to this notion that someone has been education at some point, that culture constitute at least two major components. One of which he called the core and the other he called the periphery, and he came out with a theory, I wrote a paper about that actually, where the core is what is constituted of the essential values that a certain group of people or a society will hold so dear and, therefore, will not allow change so easily. Where as periphery, as he defined, is what is likely to come in touch with other cultures on a daily basis and, therefore, has flexibility to adapt and change. So peripheral culture is constantly changing, and it is very visible that we are changing as a result of it. But, as the opposite of this the core culture does not necessary change; it takes generations for core to change. Periphery has the flexibility and opportunity to make those changes and adapt and so forth but the core changes. This is how I think the culture change happens; transformation is inevitable.

Interviewer: Okay, so do you think that there is a general understanding of the meaning of cultural change around the department between students and faculty?

Interviewee: I am not sure if there is a real understanding about the culture change, because culture change is not necessarily a focus of attention at all, but I think, we are conscious about culture to a great extent. For a couple of reasons, I think we are conscious about culture. One is because we see visible changes that are happening around Bahrain, which culturally sometimes not compatible with the core culture of Bahraini people and therefore they become aware of these changes, this is one. Second, I think, because we are also having various nationalities working in the department, we are constantly coming in touch with different nationalities. We are even having a Portuguese faculty coming in here, so from a completely different background and so on. So we suddenly become aware of those cultural differences and I think the students are also exposed to this, so I am sure there is a great degree of sensitivity and understanding about the presence and differences of culture but I am not so sure whether there is a real understanding of this idea called cultural change and how it happens and its implications and so on. But, having said that, I would think that some of the courses that we are teaching are in some way dealing with those issues. I mean I talk about culture changes to some extent in theory of architecture then we have indigenous courses in which culture is coming into the picture, we talk about Hassan fatehy and obviously

culture comes in, I just had a question paper where we were asking the same question. So students are to a certain extent coming aware of it but I would think subconsciously. The faculty would be rather subconsciously aware of these changes, but not necessarily focusing as such on cultural change.

Interviewer: if we define cultural change as the alteration of the culture around the world due to either external or internal forces or sometimes a combination of both, if this is the definition of cultural change. Do you think that there is a general understanding of this particular definition around the department?

Interviewee: I think the general understanding; most popular understanding is that culture change is externally influenced, I think there is around the world I would think there is sort of lack of understanding that the culture change is also actually internally manifested. Because what are quite visible always are the externalities, you know? The globalisation, things that are happening around us, they are alien. And, therefore you yourself do not know that some of the changes are happening to you, or within your community and so on. This is the nature of understanding in my opinion.

Interviewer: Do you think that there is cultural change/transformation in the Gulf region in general and Bahrain in particular? In what ways?

Interviewee: Huge changes. I think, the Gulf has of course been changing quite fast since the discovery of oil and people having had lots of resources to travel around the world, this is one thing. Then also people from around the world are coming to live in and work in the Gulf region which exposes them to all kinds of different cultures and they have to deal with different cultures, people speak different languages, practice different religions and so on. So that transformation has been happening. Then at the same time, I think, the Gulf has been able to bring in technologies and knowhow and understanding and knowledge from around the world at ease and therefore things have changed. I think to some extent the original cultures that would have existed in this part of the world are almost not visible nowadays. This is how I think it is happening now. I mean I live in Juffair in Bahrain, there are huge changes happening. I walk down to my street, and it does not look like Bahrain at all. Food shops are of different nationalities, all over the world, there is Japanese there is Chinese everything there, so this multiculturalism has really taking hold of some parts of the island. And, so there is a huge change-taking place.

Interviewer: Do you think that the urban fabric of Bahrain, in general, was affected by this cultural change?

Interviewee: I think the answer is both yes and no. In the sense that there are parts of the Bahraini urban fabric, which remain still intact, not seriously affected. Probably superficially like I said on the periphery, the surface of things would have changed, even with the presence of, let us say for example you walk around in Manama and the shops have cloths and fabrics and mobile phones, stuff like that which wouldn't have existed ten, fifteen years ago. In that sense, the appearances of things are changing. But then again you go a little bit further inside you have the Mashrabeia's and knocks and corners and coffee shops and the Bahraini people sitting and drinking coffee, and all of those things are still existing. So in some part of the island, I would think that are not affected. But then, there are some areas where the old did not exist. There is no sign of any old at all because they have completely dealt with the modern cultural practices of technologies and material and so on and so forth. So you go into some places, but it does not look like it belongs here. I mean one example is Juffair, and then the block 33 is the one, which has been completely transformed. So there are patches and little knocks and corners, which have been severely transformed. Then at the same time there are certain areas in which things have remained intact, I would also think that there are certain areas in which things are being resurrected, regenerated with the old charm, particularly with the ministry of culture influence of discovering the old buildings and renovating them and so on, so all of those three things happening at the same time.

Interviewer: do you think that cultural change affected the formation of architectural education and knowledge in Bahrain and, in particular, this department?

Interviewee: It does. It does naturally, because, I mean teaching itself has a culture. This is one, the way we are now teaching, the way we are talking, and we are talking in English for example. The moment you take a language, language brings its cultural practice itself. That is one, then architectural education itself has a specific way of teaching and learning, which isn't part of the Bahraini original cultural practices and schools and so on. This has been brought from outside, and those of us who came here have brought with us cultural habits. Certain ways of talking, certain ways of thinking, I myself, I am quite aware of the change. I remember the way students were thinking and talking at the time we walked into the classrooms in the year 2000. And, I now see how students are thinking and talking about things. They are extremely different. Of course this culture change has not been brought only by us, we have brought about some of those cultural changes, but at the same time the world has changed, they have access to the Internet and mobile phones and all those technologies. Some of the changes that are happening inside the classrooms are beyond our control. As well, so they are in a global space and they are acquiring things from where they are acquiring them, how they are assimilating them is quite, what shall I say, complicit and powerful, so it is changing for all those reasons.

Interviewer: Okay, now talking about sustainability and urban sustainability and moving from cultural change. In your opinion how do you define sustainability?

Interviewee: I think the common definition seems valid. Sustainability is to try and live our present life with the least impact that we should make upon the surrounding environment in which we live. This is as simple as that, I think, so everything else comes from that point.

Interviewer: okay, and in your opinion what is "urban sustainability"?

Interviewee: I would think the urban sustainability is to try and extract from the urban, urban sustainability is to try and change the urban system of living which completely isolated and illuminated from the ground and agriculture production and so on and so forth, to move into a balanced situation where we live in. Because urbanity is not just living in close proximity, urbanity in my opinion is to live and depend on the industrial production and mechanical systems, this is what urbanity is all about. If we are talking about urban sustainability the point is that living on the basis of industrial production and mechanical systems is not sustainable, it cannot be kept up in the long run. Therefore, what I mean by urban sustainability would be to try and bring back a certain degree of connection to the ground and relationship to production, which is not based entirely on the industrial production system. And, thereby reduce the effect of the industrialised mechanical systems on the environment and that is how I think it should be. Its not any easy thing to do because the difference between urban and rural it is not the density issue it is the dependency on what systems, the rural you depend on the agriculture and the production based on natural in the urban you depend on the artificial/ mechanical system. We buy things from the supermarket while in the rural you have things coming from your garden and surroundings, from your village and so on. So urban sustainability would suggest that we somehow try and connect ourselves with the possibilities of production, it is not entirely mechanically and industrially driven.

Interviewer: okay do you think that there is a general understanding in the department of this definition?

Interviewee: I do not think so.

Interviewer: between the faculty and students?

Interviewee: I do not think that anyone would understand what urban sustainability means. I think there is a great confusion about sustainability really speaking. Sustainability is being reduced to thinking about some how saving energy solar and water and recycling waste. Those are signs of outcomes of sustainable existence, but that exactly is not sustainability. There is a huge confusion I think about it in the department in the faculty as well as in the students. We see projects, for example, I mean there are reports of sustainable housing, I was looking for their understanding of how it is but it is rather superficial, and there is a lack of understanding.

Interviewer: If "Urban sustainability" means that the way inhabitants of a certain city interact with their built and natural environment is sustainable, and will, therefore, enable the sustaining of that environment and the cultures that produced it, for future generations. Do you think that there is a general understanding of this meaning in the department? Why?

Interviewee: No, I do not think so. I don't think that although the sustainability definition seems to evolve these aspects of maintaining them and keeping them for future generations, this is an idealistic definition, I don't think that people are interested or thinking about this aspect of the future. I think they are more interested in what happens now, here. And, that is it. So I am not sure if this understanding is there, really speaking.

Interviewer: in your opinion, how sustainable is urbanism in Bahrain today?

Interviewee: it is a huge question. Because, I think, Bahrain as an island doesn't seem to have either material resources, none of the material resources that are necessary to sustain human habitation really speaking because it doesn't produce enough food for itself, it doesn't have the capacity to produce enough water, it doesn't have the capacity to produce enough employment opportunities and so on and so forth, so to come to think about it, inhabiting an island like that and trying to build upon it, with a huge population, is unbelievably unsustainable. That is the direction in which we are going. I was reading recently an article in which it says, Bahrain's population has doubled between 2000 and 2013. The number of cars has doubled, so, and that is the rate in which it seems to be growing, on the one hand it seems to be useful and good because the more people you have, the more economy you have, I was at one point thinking how come there are so many shopping malls being opened and who is buying from these shopping malls? Then I realised actually that the number of people has also expanded so much to sustain that we have also brought so many other people from outside as well. So things are sort of exponentially growing and for the time being it seems okay that this exponential growth is manageable. But, if you really project it into the future, it seems impossible to imagine how it can be really sustained with hardly any resources on the ground. But, then there are examples of how societies have sustained, I mean Japan is a good example of how community, the whole community, but then Japan is not a good enough example because it does have bigger land and areas of agriculture and so on and so forth, Singapore does have things more than Bahrain does. I have huge questions whether urbanism in Bahrain is really, really sustainable.

Interviewer: okay and how sustainable you think Bahrain's urbanism was in the past?

Interviewee: I think it was very sustainable, because, I think it lived within its means, it lived certainly within its means, and it build amicably on the ground that was available, it was easy to harvest the material resources that was necessary to keep those smaller, happier, more content settlements growing at the rate that it was growing, I am sure it was certainly more sustainable than now.

Interviewer: Do you think that there have been changes in the sustainability of urbanism in Bahrain? If yes, when and why you think this change happened?

Interviewee: this change would have probably happened, I would think it would have happened with the discovery of oil and the increased wealth that would have necessitated extensive developments to feed the aspiration and desires that grow up with the increased wealth. Because immediately the moment you have got wealth in your hand, you have access to luxurious stuff, cars, you know, things naturally, and then to sustain them, to keep them happening you need to build the roads and so on. So I think that was the point that things would have started to change and then to keep those buildings being built and so on you bring people, and the whole system would have gone into a different mode of living from that point. That is what I think probably was the case.

Interviewer: What area's you think were affected by the change in the sustainability of urbanism in Bahrain the most? Why and how were they affected?

Interviewee: I think one of the major things that have changed is the road networking system, the construction of huge highways, if you look at the size of the island and the number of settlements

and the number of people comparatively, the road networks are far ahead of those scales of habitation. That would have really shouted of to bring in unsustainable transportation systems into the island. This is one, and then with that comes, I think the expansion of settlements far away from where food and water is available and so on and so forth, so that I think, the transportation is one and then human habitation, people living in luxury, big villas and spaces that are far away from where things are available, not easy to walk to you need to get into a car to go to another place, and the roads as well and so on, so those are two things that would have gone completely out of control.

Interviewer: How sustainable is the campus and the learning environment in the department? Moreover, does it encourage sustainable thinking in the students and the faculty?

Interviewee: yes I think the buildings of the department in Isa Town are not necessarily expectantly unsustainable, we are living in the rather low key kind of lifestyle, our buildings are two story, we walk up and down and from one place to another place. We are not involved in excessive consumption or excessive generation of waste, and so on and so forth. But, the general culture of the island at the moment is not towards sustainability and therefore we have sort of habit of not seriously taken care of those issues. For example, even electricity is being heavily wasted, if you walk around the buildings at around 6 o'clock, I leave at about 7 o'clock, all the classrooms have the lights on until somebody switches them off, I don't know when. So there is no conscious about doing your little bit to try and contribute to it, so that is I think the general attitude that has come into being because of the prevalence of abundance. Availability of things and then also lack ownership, we do not feel that those things belong to us, and therefore we will not suffer consequences of the loss of anything like that. And, I think those two attitudes are instrumental in creating unnecessary damage to the furniture that we have, the spaces that we have and the use of electricity and so on, yeah.

Interviewer: What in your opinion are the socio-cultural mechanisms behind the formation of Bahrain's urbanism?

Interviewee: the social, cultural mechanism behind. I think like it happens in many parts of the world there is natural tendency to not appreciate things that are, smaller, old-fashioned, what shall I say, un-opulent things, there is a lack of appreciation of those things. There is a this is a cultural thing that people have tended to want to follow western models and western lifestyles and ways of thinking and so on, this is a cultural thing, but I think at the same time, socially from what I understand the traditional family structures, ways of living are slowly changing more nuclear families, more going away from extended families situations and so on, which was based on shared use of space and relationships. I think they are changing, so those socio-cultural changes are partly responsible for the change.

Interviewer: What in your opinion are the environmental mechanisms behind the formation of Bahrain's urbanism?

Interviewee: I think largely, environment wise, if you go into traditional urbanism, it was a result of the environment being harsh and unbearable and so on, so people used to live closed with buildings that could shade each other and thereby held each other to manage the environment. So traditional urbanism evolved as a result of trying to respond to the environmental harshness within the means that they had, and the technologies that they had, whereas, the current way of urbanism is influenced by the environment again but in a different way, because what is happening is, currently, environmental harshness hasn't changed really speaking. But although the harshness exist there are the improved ability and capacities, the Bahraini people have acquired to address this environmental harshness through highly advanced technological means and therefore people are now responding to the same environmental harshness in a way that depends largely on technology and mechanical systems. To give you an example; like I noticed in Manama, for example, at one point in the 1930's even immediately after the discovery of oil, when buildings were all surrounded by perforated screens that prevented heat from really hitting the glassed windows.

There are lots of buildings like that they have screens like that perforated of some sort so that there is a layer of cool air in between that, and then that has been abundant because technologies are now more available for them to not worry about that screen at all, they will go for the glass, but use the air-condition inside to get the same or even better quality of environment inside, responding to the same harshness. But using more strongly powerful technological means, because they have now acquired the ability to use them and sustain them as they wish, and therefore they can go and do fancy things and face the same environmental harshness and manage it depending entirely on an unsustainable system. That is how it has affected.

Interviewer: What in your opinion are the eco-political mechanisms behind the formation of Bahrain's urbanism?

Interviewee: economy and political system?

Interviewer: yes.

Interviewee: I think the economy would have certainly affected, I am not sure about the political system has much to do with it really speaking. Economic system, because the economic system is dependent on imported labour and having to sustain a larger population from outside and therefore the economy requires expansion because otherwise the economy is very small if you simply confine to a local population you wouldn't be able to do any of these modern luxurious hotels and buildings and so on and so forth which they aspire to have. They can aspire to have them but they cannot have them and sustain them unless you also have other people to sustain to whole system, so the economy is dependent on having larger population and ways of doing things in order for them to maintain the aspirations and aspires, so in the economy it has really affected, I am not sure if the political system has anything to do with it. The political system perhaps, I haven't really thought about it, but, politically, I would have thought It would have been more difficult to change really systems had there been a general, a different kind of political system. It would have probably been worse or better, it is unpredictable because it depends on what that system would be and how decisions would have been taken so it is difficult to say what would happen.

Interviewer: coming back to your job at the university, what subjects are you currently teaching?

Interviewee: I am teaching design; I am teaching theory courses, a theory I and theory II and then the behavioural course.

Interviewer: Do you teach anything related to "Cultural Change/Transformation" in your courses? In what ways?

Interviewee: I do not really teach this specifically cultural change as such but in the process of teaching in a particular theory of architecture. We do come across ideas that are connected with culture change. For example, we are looking at Hassan fathy's work in theory or philosophies, and then immediately we talk about how culture is a significant issue in it so in that sense we are involved in it, but it is not given as such for the purpose of talking about culture change as such.

Interviewer: Is "Cultural Change/Transformation" being tackled in other modules that you are not teaching in the department? Who teaches those courses and what do they involve?

Interviewee: I am sure it is being tackled under the courses of indigenous architecture that I think Ahmed Al Jodar is teaching now, and probably it is being dealt with or talked about in the design courses, specifically I would think in design four, which has a focus of culture so immediately the idea of culture comes into the picture obviously in the classroom and then the change of culture must come in into the picture as well. Maybe some other elective courses like urban design would be talking about them. I mean it does not really; culture change is not something we teach as such, but culture change is something that we cannot avoid talking about in many situations. We were doing a project for design six design seven rather, the Bab al-Bahrain square in front of Bab al-Bahrain. So when were going to look at Bab al-Bahrain site and what is happening there, we are going to talk about cultural change and how Bahrain changed so much with Bab el Bahrain has been

shouted back and what we need to do and so on. So culture change is not something that can be avoided talking about in most of the things that we are doing in particularly design courses.

Interviewer: Do you teach anything related to "Urban Sustainability" in your courses? In what ways?

Interviewee: again not specifically in that sense, but when it comes to talking and teaching design sustainability eventually comes into the picture, so we will be talking about them in the classrooms but not necessarily teach it as a separate thing.

Interviewer: Is "Urban Sustainability" being tackled in other modules that you are not teaching in the department? Who teaches those courses and what do they involve?

Interviewee: I really don't know if, housing must be a course where urban sustainability and culture must be dealt with because it is enviable because those areas are subject to them so the moment you talk about housing it comes into the picture, so yeah, housing and the design thing. Design 4, those are the two things I can think of.

Interviewer: Are there any courses that tackle the existing culture and its consideration and relationship with the design and planning of the built environment in Bahrain today?

Interviewee: existing culture? I would imagine this should be a major focus of the contemporary architecture course whether this is happening or not, I do not know. But, I think because when we talk about contemporary architecture. The very issue that you need to deal with is how is what we are building today comparable with what has been happening, what is happening around the world. It should be one of the major purposes.

Interviewer: To what extent do you think students are informed about the importance and value of "Urban Sustainability"?

Interviewee: I think the students has a great awareness of sustainability, urban sustainability as well, they are doing from time to time various activities that are trying to bring about awareness about it. So students are conscious, especially with Dr Saeed claimant course, they are being exposed to it and they are being challenged to do things and I think design 3 is always now dealing with the issue of sustainability.

Interviewer: Are there any extra Curriculum activities/programs that encourage sustainable thinking/awareness or the implementation of sustainable urban solutions?

Interviewee: yes, there are always. I mean we have the green week, every year. Which is organised by the AEIA student body and then last year I think we had many workshops that tried to bring awareness. I had a class lecture talking about sustainability to some of the students. So there are programs like that.

Interviewer: Are students usually evaluated on the sustainability of their projects? Moreover, to what extent does the consideration of sustainable solutions affect their evaluation?

Interviewee: yes, to what extent? I think to design three; it is the main focus and being evaluated to a great extent. So I would think 80% of design 3 is judged on the basis of how sustainability is being understood and addressed through the design. That is a major.

Interviewer: In the other designs?

Interviewee: In the other designs there are generally there is a certain degree of lets say relevance being questioned but not very specifically, because many times like I am saying it gets reduced from sustainability to climate sensitivity. So when it comes to other design courses, it would be looked in within those scopes of how sensitive you are building in terms of climatic conditions. So, to that extent it will be but not necessarily, sustainability itself.

Interviewer: coming to talk about connections of the department with other organizations. Is there a connection between the Department of Civil Engineering and Architecture and the Ministry of Culture? In what way?

Interviewee: there is no direct relationship between the ministry of culture and the University of Bahrain as such, but there are indirect relationships, students who graduate from here go and work

at the ministry of culture. And, some of them are coming back and teach in the department. So there is a kind of relationship give and take in there, and then we are being invited to various activities of the ministry of culture. Things being organised, like for example just last month we were invited to a conference that took place about a museum and many of our faculty were present there and then when the ministry of culture organises certain events we are sometimes part of it. So in certain ways there is a connection but not formally established as such.

Interviewer: How strong is this connection if it exists and do you think it should be enhanced?

Interviewee: it certainly needs much better enhancement. There are a lot of things that we as a department should be able to do, being involved in the ministry of culture but it is like I said informal rather than formal connection and, therefore, is limited to being just participating in those events whenever it happens. But, at the same time, I would think that connections it goes up and down. I remember in the year 2002, the ministry of culture commissioned us, myself and Dr Suhail, we did a research project for the Ministry of culture. They were looking to see how to develop the various historical sites in Bahrain for truism. So we did a project to try and ask the question what should we do and we submitted the report to the ministry of culture and I think part of the things the ministry of culture is now doing, going and constructing visitors centres and so on and so forth came from that report, as a suggestion. So in that sense there have been situations at which these relationships have been stronger. It depends on, now this strength does not exist in the same way, but it now exists in a different way. So the connections continue to exist but depend.

Interviewer: Are there any connections between the department and any other governmental body concerned with the built environment in Bahrain? If yes, which organization and in what way?

Interviewee: Yeah, we constantly have connections with other agencies outside at the moment the ministry of housing or even previously we were doing projects that were initiated by the ministry of housing we did a housing project here, the ministry of housing was involved in that. Now, we are doing a housing project for design five which is being evaluated and being awarded by a bank in Bahrain. Moreover, then we continue to have for the last four or five years we have Deyar Al Muhharaq to promote students work and give them awards and recognise their talent and somehow eventually help them to find work, so there is the continuous linkage happening with various organisations from time to time.

Interviewer: Are there any connections between the department and any other body concerned with "Sustainability" in general? Alternatively, "Urban Sustainability" in particular? If yes, which organization and in what way?

Interviewee: not in Bahrain as such, but I think we are beginning to build certain links. I was particularly involved in a new initiative from the University of Westminster, which is trying to establish a young peoples network across the world actually, to make students aware of the sustainability issue. It is still at the very early stages, and I acted in between the Westminster and the AIEA initiative, the network is now beginning to take shape. So there are links like that happening. I mean when links like that happen then it is not just the Bahrain government or Bahrain itself but it is a broader network in which Bahraini other institutes or government may also sort of plug in. But they are still sort of at early stages I would say we are not so actively perusing this as an agenda, no, not yet.

Interviewer: What would the University of Bahrain interpretation be of a sustainable urban regeneration strategy for Bahrain and a future urbanism scheme that focuses on all aspects of sustainability?

Interviewee: Bahrain University has officially recognised the Bahrain 2030 vision of the government. And therefore we are constantly making efforts to try and connect with those objectives and intentions of the 2030 vision and try and facilitate that to happen and also to derive our objectives and various projects and programs from the 2030 plan, so in that sense we are

connected trying to facilitate things to happen as well as to try and derive our policy making in relation to that, so we are in complete confirmative with that plan.

Interviewer: and, in general, to wrap up with some questions, how do you think cultural transformation affected the sustainability of urbanism in Bahrain in the past?

Interviewee: cultural transformation affected sustainability relatively negatively I think because the cultural transformation is promoted and propagated by various habits and practices that are not necessarily sustainable. In that sense, it has not been really positive. But, having said that, I think with more awareness now coming in those practices are slowly changing but slowly, surely they will change. But, at the moment, no, the cultural transformation has actually been negative because it has promoted many things that have been quite negative and quite detrimental to the whole idea of sustainability.

Interviewer: What in your opinion is the role of the existing culture in stimulating or preventing sustainable urbanism in Bahrain today?".

Interviewee: I think the existing culture is preventing sustainability in Bahrain rather than encouraging it to happen. Although the ministry of culture and ministry of, I do not if the ministry of interior is trying very hard to cultivate those habits and try and bring awareness in many ways. Weather the message is percolating down to the actual people and weather the habits and behaviours are changing, I am not so sure. Because those behaviours are not so easy to be changed. People do not, this is a big issue because sustainability requires a different way of life and sustainability requires behavioural changes, of individual people and families, their lifestyles and so on. Those are not going to be changed, particularly because of government intervention. The usual tendency among people is that when government ask you to do, not to do it, to resist doing it, because it is a personal decision how you live your life. So the government cannot really influence that much. The government can only bring awareness and hope that people will respond to it positively. But, people's actions are dependant on a couple of different things. It depends on their aspirations and the pier pressure that is constructed by whole gangs, I would not use the word gangs but groups of people who are constructing certain ways of doing things, so, it is not an easy task.

Interviewer: Do you think that the University of Bahrain plays a role in stimulating or preventing "Urban Sustainability" in Bahrain today? How?

It is not preventing urban sustainability in Bahrain in any sense certainly. It is if you would like to say, it is stimulating, I am not so sure if it is really actively stimulating it either. It does not certainly involve any prevention of it, but I do not think it is stimulating actively sufficiently. It is not consciously engaging any production or any program to do so. So you cannot really say stimulating. It does contribute indirectly because University of Bahrain through its education, naturally inculcates in the minds of the students the awareness that is necessary for students to take eventually the leading role of site when they graduate and go out. In that sense, we are quietly involved in the whole process. The result will not be seen immediately. They will be seen, you know in many years later. So we are involved but not necessarily stimulating as such.

Interviewer: Do you think that the University of Bahrain plays a role in understanding "Cultural Change/Transformation" in Bahrain? How?

Interviewee: I think we are aware of the culture change. Understanding is a difficult word because it is a very difficult to say if the university understands. Individual faculty members some of them may understand it, depending on their orientations and their involvement and so on. But, to project it and say that the university understands. Because if you say that the university understands then the university must have policies or programs to show that there is an understanding. There isn't anything like that, but certainly individual faculty members do understand how things are changing.

Interviewer: Okay and the last question, do you think that the University of Bahrain plays a role in understanding the relationship between "Cultural Change/Transformation" and "Urban Sustainability"?

Interviewee: No, I do not think the university plays a role in making those connections. As a university, I think in certain department's maybe that connection is made, in our department to some extent in some areas of discussions that understanding maybe visible. But, overall that is a problem that I was not been able to say and project it to the whole institution, to say that the university play a role. No, the university as an organization does not necessarily play. But, the university various departments and faculty who are dealing with and engaging with those issues are certainly playing a role in it but not as a university.

10	Interviewer: Do you think that there has been cultural change/transformation in the Gulf region in general and Bahrain in particular? In what ways?	
Huge cultural changes	Interviewee: (Huge changes.) I think, the Gulf has of course been changing quite fast (since the discovery of oil) and people having had lots of resources	**Comment [FA28]:** Cultural Change in the region is acknowledged.
Discovery of oil.	to travel around the world, this is one thing. (Then also people from around the world are coming to live in and work in the gulf region) which exposes	**Comment [FA29]:** Milestone (The discovery of oil), leading to Cultural Change.
Local's Travelled	them to all kinds of different cultures and they have to deal with different cultures, people speak different languages, practice different religions and	**Comment [FA30]:** Migrations to the Gulf is identified as a second reason for Cultural Change.
Migration into the Gulf	so on. So that transformation has been happening. Then at the same time, I think, the Gulf has been able to bring in technologies and knowhow and	
Original culture almost not visible	understanding and knowledge from around the world at ease and therefore things have changed. (I think to some extent the original cultures that would	
Change in Juffair/Manama	have existed in this part of the world are almost not visible nowadays.) This is how I think it is happening now. I mean I live in (Juffair in Bahrain) there	**Comment [FA31]:** Degree of Change (Dramatic)
	are huge changes happening. I walk down to my street and it does not look like Bahrain at all. (Food shops are of different nationalities) all over the	**Comment [FA32]:** Juffair in Manama, as one of the urban areas that changed in Bahrain
Multiculturalism	world, there is Japanese there is Chinese everything is there, so this multiculturalism has really taking hold of some parts of the island. And so there is a huge change-taking place.	**Comment [FA33]:** Globalization, the world as a small village

Appendix 4.6: A sample initial analysis of unedited text

Appendix 4.7: A sample analysis of unedited text

Questions:

1. **What in your opinion are the Socio-Cultural mechanisms behind the formation of Bahrain's urbanism?**
2. **What in your opinion are the eco-political mechanisms behind the formation of Bahrain's urbanism?**
3. **What in your opinion are the environmental mechanisms behind the formation of Bahrain's urbanism?**

Category	Primary Theme	Secondary Theme	Evidence
The formation of urbanism (Factors of change)	socio-cultural	Western influence	This is a cultural thing that people have tended to want to **follow western models** and **western lifestyles** and **ways of thinking** and so on.
		Family structure	From what I understand the traditional **family structures, ways of living** are **slowly changing** more **nuclear families**, more **going away from extended families** situations and so on, which **was based on shared use of space** and **relationships** .
	eco-political factors	Economically dominant	I think the **economy** would have certainly **affected**, I am **not sure** about the **political system** has much to do with it really speaking. I am not sure if the political system has **anything to do with it** . The political system perhaps, I haven't really thought about it, but, politically, I would have thought it would have been more **difficult** to really **change systems** had there been a general, a different kind of political system. It would have **probably been worse or better** , it is **unpredictable** because it depends on what that system would be and how decisions would have been taken so it is difficult to say what would happen.
			Economic system, because the **economic system** is **dependent on imported labour** and having to **sustain a larger population** from **outside** and therefore the **economy requires expansion** because otherwise the **economy is very small** if you simply confine to a **local population** you **wouldn't** be able to do any of these modern **luxurious hotels and buildings** and so on and so forth which they **aspire to have.**
		Foreign work force	They can **aspire** to have them but they **cannot have** them and **sustain** them unless you have also **other people** to **sustain** to whole system so **the economy** is **dependent on having larger population** and ways of doing things in order for them to **maintain the aspirations** and aspires.
	environmental factors	Passive designs	**Traditional urbanism**, it was a **result of the environment** being **harsh** and unbearable and so on, so people used to **live closed** with **buildings that could shade each other** and thereby **held each other to manage the environment** . So **traditional urbanism evolved** as a result of trying to **respond to the environmental harshness within the means** that they had , and the **technologies** that they had
			The current way of urbanism is **influenced by the environment** again but in a **different way**, because what is happening is, currently, **environmental harshness hasn't changed** really speaking. But although the harshness exist there is the **improved ability and capacities**, the Bahraini people have acquired to address this environmental harshness through **highly advanced technological** means and therefore people are now **responding to the same environmental harshness** in a way that **depends largely on technology and mechanical systems.**
		Technology	Buildings were all **surrounded by perforated screens** that **prevented heat** from really hitting the glassed windows. There are lots of buildings like that they have **screens** like that **perforated** of some sort so that there is **a layer of cool air** in between that, and then that has been **abundant** because **technologies** are now **more available** for them to **not worry** about that screen at all, they **will go for the glass, but use the air-condition** inside to get the **same or even better quality of environment** inside, responding to the same harshness
			using **more strongly powerful technological** means, because they have now **acquired the ability to use them** and **sustain them** as they wish and therefore they **can go and do fancy things** and face the same environmental harshness and manage it **depending entirely on an unsustainable system.**

Appendix 5.1: Masdar City Visit, Abu Dhabi, December 2014.

I went to visit Masdar City in Abu Dhabi on the 17th of December 2014. The city is located in proximity to Abu Dhabi International Airport and is about a twenty minutes' drive from central Abu Dhabi. The signs on the road clearly mark the entrance to the city and direct all visitors to the 'visitors centre' office. The only mean of proper navigation between Dubai and Abu Dhabi, like most of all other countries in the Gulf, is the car. I stopped my rented car at the security office which, at first, I thought was the visitors centre. Philippian security personnel greeted me, which is not odd at all for an Arabian Gulf city, particularly for the UAE. The staff asked me to drive to the "red building" in the distance. Park my car there and use what he called 'a train like' transit system. I went back to my car and saw another lady who seemed to be on the same journey as I was. I drove to the 'red building' and found another philippian security on the street giving directions. At that point, I was not sure where the entrance for that building was so I stopped and asked him. He pointed out the way to the entrance and again assured me that I will be parking and using the transit system.

I finally reached the parking, parked my car and entered the building, which had a longitudinal narrow hallway and small glass rooms closed with containing small grey vehicles, about the size of a Mini Copper, but a bit taller. As I approached the transit vehicle, two people have been already inside. The third philippian I met, who seemed to have given them directions, asked me to go to the car next to this one because they were about to move. I was very excited because that was the first ride for me on a sustainable transportation tool. I entered the second one as directed by the philippian personnel, and an Indian employee who looked like he is used to the process, jumped in with me. I was taking photos and videos of the inside of the vehicle while it was moving. The other passenger had a phone call, and it seemed from the conversation that he was one of the people working there. At some point he said 'one minute, ill be there in one minute, I am in the TNR'. The vehicle knew its way around, black trails were on the concrete floor, and there was nothing exciting in the journey, simply concrete walls and columns.

When we arrived, I was not so sure where to go, there was a large staircase, and the Indian employee who accompanied me in the journey went upstairs, so I had no option but to follow him. When I arrived at the first floor, I realised that the ground floor consisted merely of parking, and the whole city was elevated two stories above the ground. I found a receptionist, another philippian, whom I told that I am here for a research study and that I would like to go to the research office. Up until At that point, I did not realise that Masdar Institute existed and was there to visit the famous Masdar sustainable city. The receptionist asked an Indian employee who seemed to be on his way there, to take me with him to the research centre. We walked for about five minutes between outdoors, indoors and shaded corridors until we were in the right building of the cluster. We took the elevator, to the third floor, and I noticed on the elevator that there was an advertisement for a P.hD. Program and another digital screen showing that there was a thesis meeting taking place at one of the meeting rooms. The whole thing seemed very high tech.

We reached the research centre, and there were a guy and a girl at the reception desk, both of which were Emirates, the first nationals I meet since my arrival. I explained to them that I was there for research. Moreover, that I have tried emailing to book for an appointment but got no reply. The receptionist told me that they should have responded, and promised to arrange for someone to show me around. He made his calls while I was waiting in a small café by the reception. Shortly, they came to tell me that they have found someone available to show me around. The receptionist asked an Indian coffee boy to take me downstairs and informed me that I will be meeting this person at a café outside. When we reached the café, the person whom they arranged for me to meet was an American Ph.D. holder who is a representative of the outreach office. He was setting with a national young lady, whom later was introduced to me as one of his employees at the

outreach office. I explained that I tried contacting the Masdar City a number of times, but they never replied on any of my calls or emails. He was not shocked or bothered by the news, rather told me that Masdar City was a different entity than Masdar Institution. Moreover, acknowledged that Masdar City Visitors centre was 'horrible' in responding to inquiries.

After a brief introduction, he started his tour by explaining to me about the institute while we walked around from the café. He explained that the institute was only three years old and that they offer different masters and Ph.D. programs. The fourth batch of masters students and the first Ph.D. student were about to graduate soon. We moved around while he explained the different buildings, parts of the Institute and the sustainability features they had installed, as part of the design, varying from photovoltaic panels to using curved walls to ensure shading to the inside structure of the building and the use of louvered windows.

We moved then to see the wind tower, which we stood underneath. It was wet, and water was running all over the ground of the tower. He explained that the tower was used for cooling effects. Air enters from an elevated opening, gets cooled by water mist, then descends and the water evaporates. I asked him about the photovoltaic panels installed on the roofs and whether they work efficiently in this context and weather. He explained, cautiously, that they were often cleaned. As we were walking around, we saw a lot of cafes in the campus, which impressed me until he explained that students actually live on campus, that's why there were a lot of amenities to facilitate their living away from the city centre. There were two apartment buildings, he explained. One contains smaller apartments than the other. Apparently the old apartments were just vast in size for one person to live, and many students, especially locals did not want to share.

The outreach office representative explained that the institute employs only four national staff and that about 50% of the students are UAE nationals. The government, he explained, ensures the maintenance of this percentage that pressures the quality of the institute, because a lot of the domestic students are below the desirable standard. The Institute, he explained, worked in collaboration with MIT because they needed the international reputation. If they simply referred to themselves as Masdar Institute, people would not know them, or care about them. Thus, he told, the Institute is now in a four-year basis renewable contract with MIT and that in the future, the centre might be able to establish itself without needing them as a reference. MIT, he explained, help in overseeing the overall quality of programs. Masdar Institute uses the MIT modules and adopts them to the agendas of sustainability. MIT also reviews a selection of student's thesis and that sometimes they invite visiting professors from MIT or other universities from the region.

The representative also explained that while half of the students were nationals, the other half was mainly from the MENA region or Asia and that a very little percentage of students came from the USA or Europe. He also explained that international publicity for the institute was not necessary because they already had about 2000 applications on the waiting list. The institute works under Masdar Corporate, which is part of The Abu Dhabi Investment Authority. The latter attempts to invest in clean energy and research, which makes the institute, work in close collaboration with the Corporate. The institute is paid by the government and uses the same campus of Masdar city; however they set themselves in different buildings. It seemed from his conversation that there was some competition between Masdar Corporation and institute and that they were annoyed, rather that supplemented by each other.

All of the research programs the Institute offers were engineering related, and aimed at providing professionals in the sciences of sustainability. They attempt to study how engineering systems work and improve them. The representative explained the challenge of upgrading the skills of the

UAE national students. Initially, nationals would never have been accepted by MIT because of their lower capacities compared to the top international students who are taken by the centre. This, he explained might elevate the level of local students by competing with their high-level international colleagues. National students undergo tests and are given foundation courses to develop their English language and calculus skills. The outreach office representative explained that only about 10% of the national students would be at a level that allows them to be enrolled without having to undergo the foundation course first.

When I asked about other aspects of sustainability the representative mentioned that nationals are spoiled and that they are given many things that they do not appreciate. The representative was also was asked about the possibility of survival of such environmental solutions, in a financial model that is based entirely on subsidy. He mentioned that UAE national's pay only one-fifth of what everyone else pays, referring to electricity and water bills. He also suggested that bringing this up to ensure sustainability would result in a public outrage. He also explained that it is a challenge to get UAE nationals to study higher degree programs because they are already offered around 50,000 dirhams on average elsewhere. Which is a proper amount to start a life. Thus, many nationals are not interested in further education. The outreach office representative also despondently explained that this puts a heavier burden on the institute because in order for the centre to invite one international student, they have to secure one national student to maintain the percentage enforced by the government.

When asked about the social, economic, and cultural sustainability, he explained that national males usually have lower grades in schools than females. He also mentioned that other national higher educational institutions are packed with female nationals rather than males who would most probably be studying abroad or join the military. The culture of the UAE often allows males to live away from their families while restricts females from studying far from their family home. The representative also talked about the wrong attitudes of locals towards conserving energy; he explained that people tend to turn all the AC's in all the house, regardless if those spaces are being used or not. At the end of the tour, the representative pointed out at larger villas in the distance, away from the campus and mentioned that those are allocated for mature students who come with their children, while mostly; campus apartments are occupied by single students or couples. He also pointed out at a large photovoltaic panel's field in the distance, explaining that the field was part of the clean energy initiative run by the Institute. The representative complained that the area needs continues maintenance. Each of panels requires cleaning ever three days because of the dusty weather in the UAE. Because the field was huge, they had to work all week to ensure that it is properly maintained. The cleaning of the field is done by another company that uses Asian workers to clean, maintain and take care of the field. Moreover, a number of sustainable versions of Mitsubishi cars were in proximity of the Institute site being tried by a number of students. The outreach office representative finally mentioned at the end of the tour that in an attempt to invite locals to the Institute, a Friday market is held on a weekly basis, which includes camel rides, and stalls that sell local products.

Summary of sustainable solutions used in Masdar City

All buildings in Masdar City are elevated on a 7 meter podium to allow for the personal rapid transfer system (PRT) (Figure 0-6), which was intended to replace cars under the buildings, however, due to its expensive production and operation cost, in addition to the expensive cost of elevating the entire city, the plan to have the entire city run by the PRT was cancelled and the system is now used only to connect pedestrians from the outside parking to the Masdar Institute. The designs of the buildings consider passive and active environmental sustainable solutions,

(Figure 0-1). Passive solutions include the arrangement of buildings to include narrow alleys, (Figure 0-5), the use of glass reinforced concrete (GRC) screens and louvers to ease the effect of direct sun radiation while allowing airflow, (Figure 0-4). In cooler months of the year, buildings are ventilated naturally by cold air, which enters from the ground floor, to be gradually heated and escape through the upper floor openings. Active solutions include a large-scale contemporary wind tower that generates mist and directs cool breeze into the open court, (Figure 0-2), and a range of other active systems[852] including solar panels to generate energy, (Figure 0-4). While the passive solutions seemed to be working properly, the active solutions appeared to be experimental, in a visit to the Institute in December 2014, see Appendix 4.1. The outreach office representative, explained that the wind tower is used to cool air, nevertheless, the water mist used in the tower to cool air dampened the walkways around and below the tower, which was not very pleasant scenery, (Figure 0-3). Moreover, the solar panels require continued maintenance and cleaning to remove the accumulations of dust from the sandy weather. The outreach office representative explained that the institute was helping in running a large solar panel field. Nevertheless, maintaining the field requires daily efforts of cleaning, mostly done by foreign workers, he pointed out that cleaning the whole area requires a week work and that by the time they are done, they have to start all over again.

Figure 0-1 The different passive and active sustainable solutions including the solar panels, wind tower and GRC screens and louvers[853]

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[852] Mitchell, 'Design for the Future: Educational Institutions in the Gulf.'
[853] Taken by the author in Abu Dhabi, December 2014

Figure 0-2 The outside of the wind tower (left) and the inside of the wind tower with the water mist (right)[854]

Figure 0-3 The dampened floor under the wind tower[855]

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[854] Taken by the author in Abu Dhabi, December 2014
[855] Taken by the author in Abu Dhabi, December 2014
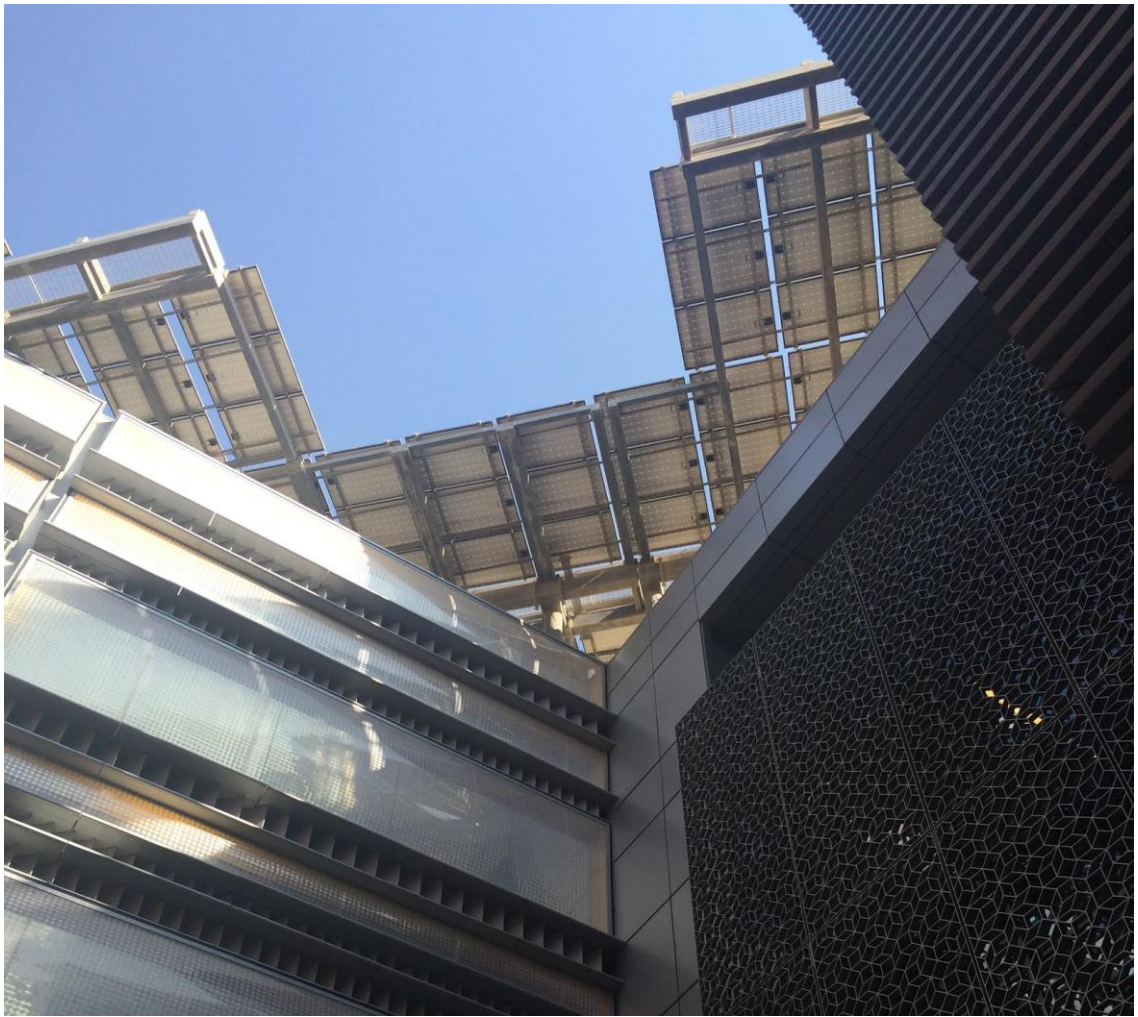
Figure 0-4 The details of the louvers and solar photovoltaic panels[856]

Figure 0-5 The library building and the louvers used to shade the structure (left) and the shade and shadow created by the passive design solutions (right)[857]

Figure 0-6 The personal rapid transfer system (PRT)[858]

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[857] Taken by the author in Abu Dhabi, December 2014
[858] Taken by the author in Abu Dhabi, December 2014

Appendix 6.1: The National Plan envisioned public gains 2030

	2001	2030 THE NATIONAL PLAN	PUBLIC GAINS
PEOPLE			
Population	650,600	1,142,000	76% increase
Population Density (people/ sq. km)	920	1,450	58% increase
LAND			
Total Land Area	724 sq. km	800 sq. km	10% increase
Zoned Land Area	127.4 sq. km (20%)	800 sq. km	100% of country
Coastline (all islands)	660 km	900 km	36% increase
Public Waterfronts	20 km (3%)	250 km (30%)	1100% increase
Parkland	14 sq. km	44 sq. km	214% increase
COMMUNITY			
Housing	105,686 units	231,000 units	118% increase
Cultural/ Community Facilities	32 ha	60 ha	88% increase
Office Space	42.3 ha	157.4 ha	272% increase
New Health Centers	20 ha	60 ha	200% increase
Education (number of students)	178,600 *(2004/ 2005)*	225,200	26% increase
ECONOMIC SECTORS			
Gross Domestic Product	4.55 billion *(2005)*	27.6 billion*	506% increase
Industrial Land	20 sq. km	34 sq. km	70% increase
Employment	291,400 jobs	750,000 jobs	157% increase
Retail	19.9 ha *(2004)*	48.6 ha	144% increase
Tourism (visitors)	4.7 million *(2004)*	16 million	240% increase
Hotel rooms	6,200 *(2004)*	25,600	312% increase
Tourism Employment	12,000 jobs *(2003)*	34,000 jobs	183% increase
Financial and Business Services Employment	22,000 jobs *(2003)*	95,000 jobs	331% increase
Manufacturing Employment	53,000 jobs *(2003)*	134,000 jobs	153% increase
Health, Education, Construction and Personal Services Employment	111,000 jobs *(2003)*	240,000 jobs	116% increase
Oil Industries	16,443 jobs *(2003)*	13,697 jobs	17% DECREASE

2001   **The National Plan 2030**   **Public Gains**

* BEST SCENARIO

Appendix 7.1: Program of B.Sc. Architecture – University of Bahrain

Architectural

University of Bahrain
College of Engineering
Civil & Architectural Engineering Department

New B.Sc. in Architectural Eng'g (ARCG)

	Course	Title	Pre-Req.	Lec	Lab	Cr
Sem. 1	ARCG 110	Basic Design I		0	6	3
	ARCG 111	Architectural Graphics I		0	6	3
	MATHS 101	Calculus I		3	0	3
	ENGL 101	Composition and Reading I		3	0	3
	CEG 131	Surveying		3	3	4
				9	15	16
Sem. 2	ARCG 120	Basic Design II	ARCG 110	0	6	3
	ARCG 121	Architectural Graphics II	ACRG 111	0	6	3
	PHYCS 106	Physics for Architects		3	0	3
	MATHS 102	Calculus II	MATH 101	3	0	3
	ENGL 102	Composition and Reading II	ENGL 101	3	0	3
	CSC 100	Introduction Computer Science		2	3	3
				11	15	18
Sem. 3	ARCG 210	Architectural Design I	ARCG 120, ARCG 121	0	10	5
	ARCG 211	History of Architecture I		2	0	2
	ARCG 212	Climate and Architecture	PHYCS106	2	2	3
	ARCG 213	Architectural Construction I		1	2	2
	ARCG 214	Computer Aided Architectural Drafting	CSC 100	1	2	2
	CEG 211	Statics	MATHS102	3	0	3
				9	16	17
Sem. 4	ARCG 220	Architectural Design II	ARCG 210	0	10	5
	ARCG 221	History of Architecture II	ARCG 211	2	0	2
	ARCG 222	Theory of Architecture I	ARCG 210	2	0	2
	ARCG 223	Architectural Construction II	ARCG 213	1	2	2
	ARCG 224	Sanitary Installations in Buildings	ARCG 210	2	0	2
	CEG 225	Theory of Structures	CEG 211	2	3	3
				9	15	16
Sem. 5	ARCG 310	Architectural Design III	ARCG 220	0	10	5
	ARCG 311	Housing	ARCG 220	2	0	2
	ARCG 312	Theory of Architecture II	ARCG 222	3	0	3
	ARCG 313	Architectural Construction III	ARCG 223	2	2	3
	ARCG 315	Computer Aided Architectural Design	ARCG 214	1	4	3
	CEG 315	Structural Design I	CEG 225	2	3	3
				10	19	19
Sem. 6	ARCG 320	Architectural Design IV	ARCG 310	0	10	5
	ARCG 321	Indigenous Architecture in Bahrain	ARCG 221	2	0	2
	ARCG 322	Interior Design	ARCG 310	1	4	3
	ARCG 323	Islamic Architecture	ARCG 221	2	0	2
	CEG 325	Structural Design II	CEG 315	2	3	3
	ISLM 101	Islamic Culture		3	0	3
				10	17	18

	Course	Title	Pre-Req.	Lec	Lab	Cr
Sem. 7	ARCG 299	Industrial Training (Summer)	85 Credits			
	ARCG 410	Architectural Design V	ARCG 320	0	10	5
	ARCG 411	Contemporary Architecture	ARCG 323	3	0	3
	ARCG 412	Working Drawings I	ARCG 320	0	8	4
	ARCG 413	Contracts & Implementations of Documents	ARCG 320	3	0	3
	EEG 205	Electrical Installations	ARCG 310	2	0	2
				8	18	17
Sem. 8	ARCG 420	Architectural Design VI	ARCG 410	0	10	5
	ARCG 421	Landscape Architecture	ARCG 410	1	4	3
	ARCG 422	Architectural Acoustics and Illumination	ARCG 410	2	2	3
	MEG 435	Mechanical Installations	ARCG 410	2	2	3
	HIST 121	Modern Bahraini History and Culture		3	0	3
				8	18	17
Sem. 9	ARCG 510	Architectural Design VII	ARCG 420	0	10	5
	ARCG 511	Graduation Project : Program Stage	ARCG 420	2	0	2
	ARCG 512	Working Drawings II	ARCG 412	0	8	4
	ARCG XXX	Elective	ARCG 420	3	0	3
	ARAB 110	Classic Arabic Literature		3	0	3
				8	18	17
Sem. 10	ARCG 520	Graduation Project ; Design Stage	ARCG 511	0	14	7
	ARCG 521	Architectural Professional Practice	ARCG 512	2	0	2
	ARCG 522	Project Management	ARCG 413	1	2	2
				3	16	11

Total number of courses = 53
Total number of credits = 166

List of Electives:

Elective courses are to be selected from one on the following disciplines:

Course	Title	Pre-Req.	Lec	Lab	Cr
ARCG 550	Advanced Topics in Computer Applications	ARCG 315	3	0	3
ARCG 551	Building Technology	ARCG 313	3	0	3
ARCG 552	Standardization in Buildings	ARCG 313	3	0	3
ARCG 553	Urban Design	ARCG 311	3	0	3
ARCG 554	Urban Planning	ARCG 311	3	0	3
ARCG 555	Energy Conservation in Buildings	ARCG 212	3	0	3
ARCG 556	Environmental Design	ARCG 212	3	0	3
ARCG 557	Conservation of Buildings	ARCG 321	3	0	3
ARCG 558	Visual Perception	ARCG 322	3	0	3
ARCG 559	Behavioral Factors in Architecture	ARCG 312	3	0	3
ARCG 560	Research Methods in Architecture	ARCG 410	3	0	3
ARCG 561	Special Topics in Architecture	ARCG 420	3	0	3

Industrial Training: There will be a compulsory industrial training courses, Students who have completed at least 85 credits will be allowed to register for industrial training. There will be no credits for industrial training and grade will be S or U (Satisfactory or Unsatisfactory).

Appendix 9.1: Bahrain Land Use 2006

Governorate boundary
Proposed project

Residential
Historic area
Existing community

Mixed use
Mixed use

Tourism
Resorts

Industrial areas
Existing industry
Oil fields/oil lines
Quarry
Airport
Port

Open space areas
Agriculture
Open space
Beach area
Public park / garden/ waterfront
Sports & recreation
Cemeteries
Archaeological site

Public use
Civic & community institution
Utilities
Defence
Transport facilities

Source: Ministry of Municipalities & Agriculture Affairs

5km

25 km²
2500 ha

NORTH

QIBLA

0   5km   10km

BAHRAIN 2006
LAND USE

Fasht Al Jarim

Undersea Cable

Bahrain - Saudi Arabia Boundary

MUHARRAQ
GOVERNORATE

Bahrain International
Airport

CAPITAL
GOVERNORATE

Khalifa bin
Salman Port

Shipping Channel

Tubli
Bay

NORTHERN
GOVERNORATE

CENTRAL
GOVERNORATE

Fasht Al Adhm

SOUTHERN
GOVERNORATE

Hawar Islands

Bahrain - Qatar Boundary

Appendix 9.2: Bahrain land use strategy 2030

BAHRAIN 2030
NATIONAL LAND USE STRATEGY
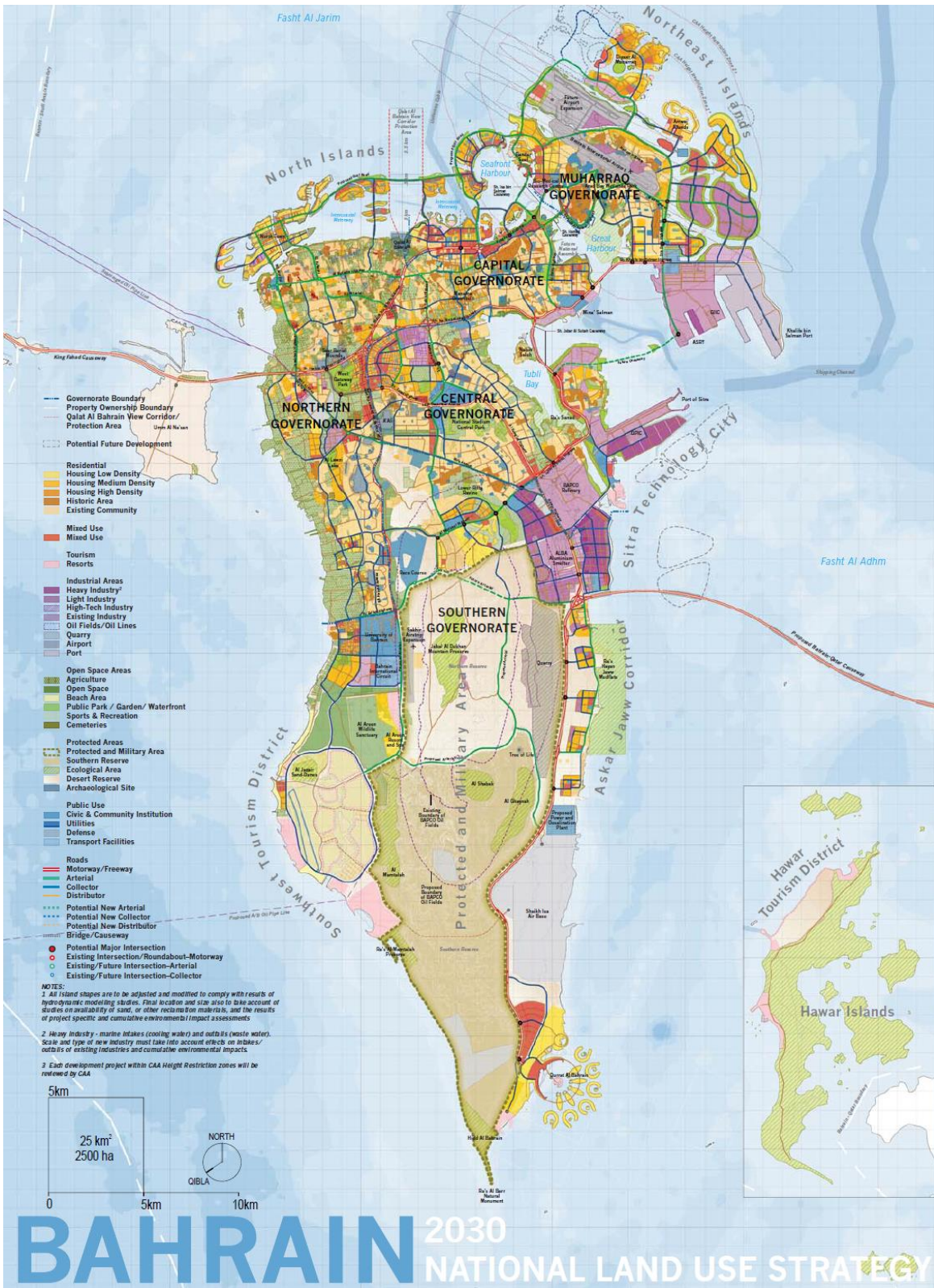
Appendix 9.3 The Ministry of Housing past projects

No.	Project	Block No.	No. of Units	Unit Type
Capital				
1	Al Qalah	444-438	67Houses	T3M
2	Burhama (Houses T8)	402-353	134 Houses	T8
Muharraq				
3	Busaiteen	228	327 Houses	T8
4	North East Muharraq	254	609 Houses	D10
5	Samaheeg(phase 2)	236-235	116 Houses	T3M
Northern				
6	Al Jasra Block 1004	55	Housing Construction	T8
7	Madinat Hamad Block 1212	1212	125 Houses	T3M
8	Malkiya	1033	406 Houses	T8
9	Budaya	552	52 HOUSES	T3M-D5
Southern				
10	Dar Kulaib	1048	156 Houses	D5-T3M
11	Zallaq	1056	200 Houses	T8
12	Safrah	944	72 Houses	V2
13	Madinat Zayed	718	217 houses	TE

Appendix 9.4 The Ministry of Housing Future projects

No.	Project	Block No.	No. of Units	Unit Type
Capital				
1	Jufair	341	60 Flat	Aljufair Building
2	Sitra (phase 3)	609	540 houses-438 flat	D11-AU
Muharraq				
3	Hidd	-	4570 Houses	-
Northern				
4	Aluwzi	-	832 houses	-
5	Almadeena Alshmalya	-	15628 houses	-
6	salmabad	712-744	1200 houses-2520 flat	D11-AU
Southern				
7	Bar Aldur	_	1560 Houses	D11
8	Ryade Asker	-	406 House	Aldanah
9	Alhajiate	939	150 houses-148 flat	D11-AU
10	Southern Governorate Housing Development	-	4000 houses	-

Appendix 9.5 The Ministry of Housing New Towns

No.	Project	Number of Units
Muharraq		
1	East Hidd project	4570
Northern		
2	Northern Town project	15628
Central		
3	East Sitra project	4500
4	Salmabad project	1200 Houses-1960 Flat
	Total	27858