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BAHRAIN HUMAN DEVELOPMENT REPORT 2018

Pathways to Sustainable Economic Growth in Bahrain

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PATHWAYS TO SUSTAINABLE ECONOMIC GROWTH IN BAHRAIN

MANAMA, KINGDOM OF BAHRAIN

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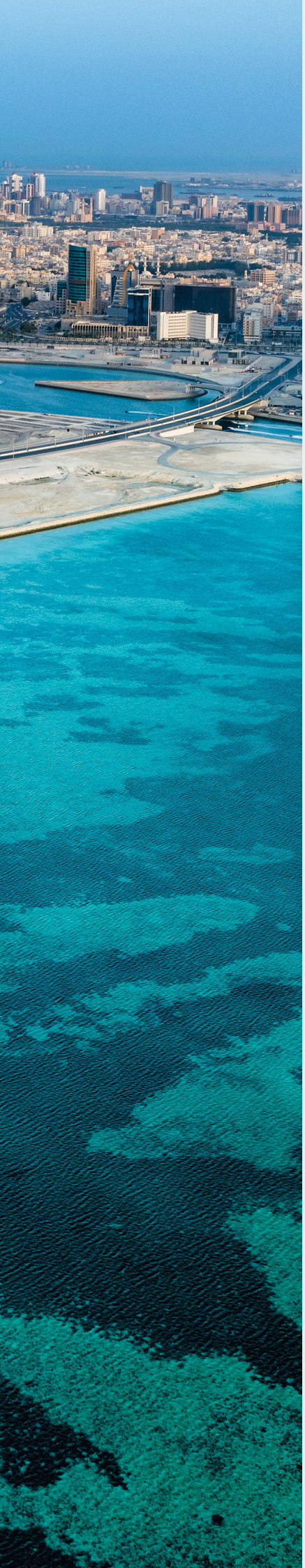

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LIST OF ACRONYMS	
BA	Bachelor Degree
MA	Masters Degree
MSc	Master of Science
PhD	Doctor of Philosophy Degree
AAOIFI	Accounting and Auditing Organization for Islamic Financial Institutions
ALBA	Aluminum Bahrain
AWS	Amazon Web Services
BACA	Bahrain Authority for Culture Antiquities
BAPCO	Bahrain Petroleum Company
BD	Bahraini Dinar
BDB	Bahrain Development Bank
BFB	Bahrain Fintech Bay
BIBF	Bahrain Institute of Banking and Finance
BTEA	Bahrain Tourism and Exhibitions Authority
BQA	Bahrain Education and Training Quality Authority
BWTC	Bahrain World Trade Centre
CSB	Civil Service Bureau
CAGR	Compound Annual Growth Rate
CBB	Central Bank of Bahrain
CCGT	Combined Cycle Gas Units
CEFR	Common European Framework of Reference for Languages
CIBAFI	Council for Islamic Banks and Financial Institutions
CSP	Thermal Concerted Solar Power
CSR	Corporate Social Responsibility
EC	European Commission
EDB	Bahrain Economic Development Board

EDIP	Enterprise Development and Investment Promotion
EU	European Union
EWA	Electricity and Water Authority
FDI	Foreign direct investment
FTA	Free-Trade Agreement
GAP	Government Action Plan
GCC	Gulf Cooperation Council
GCCIA	Gulf Cooperation Council Interconnection Authority
GDP	Gross Domestic Product
GER	Gross Enrollment Ratio
GHG	Greenhouse Gases
GIEI	Global Islamic Economy Indicator
GNI	Gross National Income
GPIC	Gulf Petrochemical Industries Company
GWh	Gigawatt hours
HDI	Human Development Index
HDR	Human Development Report
HEC	Higher Education Council
ICT	Information and Communication Technology
IFDI	ICD Reuters Islamic Finance Development Indicator
IGA	Information and e-Government Authority
IHDI	Inequality-adjusted HDI
IIFM	International Islamic Financial Market
ILO	International Labor Organization
IMF	International Monetary Fund
ISLI	Islamic Sukuk Liquidity Instrument
ISTE	International Society for Technology in Education

IT	Information Technology
ITPO	Investment and Technology Promotion Office
ITU	International Telecommunications Union
KWh/m^2	Kilowatt hours per meter squared
LMC	Liquidity Management Centre
LMRA	Labour Market Regulatory Authority
MENA	Middle East and North Africa
MGD	Million Gallons Per Day
MICE	Meetings, Incentives, Conferences and Exhibitions
MMBtu	One Million British Thermal Units
MOE	Ministry of Education
MSW	Municipal Solid Waste
NEEAP	National Energy Efficiency Action Plan
NOGA	National Oil & Gas Authority
NQF	National Qualification Framework
NREAP	National Renewable Energy Action Plan
NRS	National Research Strategy
NSAL	National Strategy for Applied Learning
OCGT	Open Cycle Gas Turbine
OECD	Organisation for Economic Co-operation and Development
PIRLS	Progress in International Reading Literacy Study
PPP	Purchasing Power Parity
PV	Photovoltaic Module
R&D	Research and Development
Sabic	Saudi Arabian Basic Industries Corporation
SBIB	Saudi-Bahrain Institute for the Blind
SCE	Supreme Council for the Environment

SCW	The Supreme Council for Women
SDGs	Sustainable Development Goals
SEC	Sustainable Energy Center
SIDS	Small Island Developing States
SMEs	Small and Medium-sized Enterprises
ST	Steam Turbine units
STEM	Science, Technology, Engineering and Mathematics
TIMSS	Trends in International Mathematics and Science Study
TIP	Trafficking in Persons
TRA	Telecommunications Regulatory Authority
TVET	Enrolment in Technical and Vocational Education and Training
TWh	Terawatt hour
UAE	United Arab Emirates
UIS	Institute of Statistics
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNWTO	United Nations World Tourism Organization
USA	United States of America
USD	United States Dollar
UNDP	United Nations Development Programme
VAT	Value-Added Tax
VNR	Voluntary National Report
WEF	World Economic Forum
WTTC	World Travel and Tourism Council

FOREWORD

BY
THE CHAIRMAN, DERASAT

The 2018 Bahrain Human Development Report (BHDR) represents a crucial milestone for our country, as a comprehensive stand-alone report on and for Bahrain, produced according to international standards set by the United Nations Development Programme, with a wealth of descriptive, analytical and policy related content relevant to the Kingdom's future path towards sustainable human development for all Bahrainis.

Ten years ago, the Government of Bahrain presented to the country the Economic Vision 2030, a strategic vision for Bahrain's future, based on the pillars of sustainability, competitiveness, and fairness. In 2015, the Sustainable Development Goals (SDGs), based on principles very similar and compatible with those of the Economic Vision 2030, were agreed upon by all countries in the world, including Bahrain.

The Government of Bahrain has fully supported the building process to define the 2030 Agenda for Sustainable Development, including its SDGs. And while we are on the right track, our task is to continue to align ourselves and our actions with the SDGs and the 2030 Agenda for Sustainable Development.

But the world and Bahrain have changed since 2008, and while the Vision maintains its relevance, we are at a time of reflection and renovation of its principles and thrust, to be fine-tuned to today's reality and our aspirations for the future. This Report comes at a most timely moment, given two simultaneous processes that will guide key decisions and policies on Bahrain's future.

Firstly, we are concluding the elaboration of the next Government Action Plan, that will cover the 2019-2022 period and set the national priorities for Bahrain. Secondly, the recent presentation of Bahrain's SDG Voluntary National Review (VNR) at the 2018 High Level Political Forum in New York, which benefited from consultations with different actors of Bahraini society, opens the way to SDG alignment by all actors for our country to achieve the Goals by 2030.

The production of the Bahrain Human Development Report, titled "Pathways to Sustainable Economic Growth in Bahrain" has served as a backdrop for these processes, as it proposes further mainstreaming of the SDGs in our policies, to promote sustained growth for all, including generations to come.

In many ways, this Report will represent the first in-depth body of research on the contemporary economy of the Kingdom of Bahrain. As a compendium of cutting-edge thematic analyses assessing past and current economic trends, the Report relates successes as well as key bottlenecks and driving forces, filling a gap within existing literature on contemporary national economies in the Arabian Gulf. Building on these evidence-based assessments, opportunities and options are identified to promote sustainable growth.

The report is a co-production of Derasat and UNDP, with heavy involvement and consultations with national institutional stakeholders and key actors, chief among them the IGA, who provided us with extensive support in gathering the requisite data and ensuring compliance with the highest criteria.

I would like to express my deep gratitude to Tamkeen for the invaluable financial support that they made to this project, as well as for their broader support for the Bahrain economy. I would also like to recognize UNDP's office in Bahrain for its leadership and support, so that jointly with the Derasat team this pathbreaking Report could be produced. The HDRs produced globally under UNDP's lead are important instruments for inspiring the academic and political community on policy-making and debating issues, and our Bahraini report is no exception to that, as I believe it will help contribute to our progress and prosperity as a nation.

Abdulla bin Ahmed Al Khalifa
Chairman, Derasat.

PREFACE

BY
RESIDENT REPRESENTATIVE OF
UNITED NATIONS DEVELOPMENT PROGRAMME

The United Nations Development Programme (UNDP) is the agency of the United Nations that helps countries develop strong policies, skills, partnerships and institutions so they can sustain their progress. Since 1978 UNDP has worked in Bahrain to help promote the advancement towards increased wellbeing and prosperity for the population of Bahrain. Under its current Country Program, the UNDP office in Bahrain works with other United Nations agencies, funds and programs, and provides policy advisory, facilitation, and services, that focus on supporting the Government as well as other key actors in Bahrain, towards the implementation of the 2030 Agenda for Sustainable Development and the achievement of the SDGs.

Among its publications, the Human Development Report (HDR) is UNDP's flagship report. Originally inspired by Nobel laureate Amartya Sen's and Mahbub ul Haq's thinking, the human development approach promoted by UNDP in the HDRs places people at the center of the development process, and sees them as the real wealth of any nation. The approach is based on the idea that development hinges on expanding choices and freedoms and on creating an enabling environment for people to enjoy long, healthy and creative lives.

Since 1990 UNDP has published hundreds of global, regional, national, and local HDRs. Some 700 national HDRs have so far been published in more than 140 countries, two of those in Bahrain, the last one 17 years ago. Every HDR, be it at national or global, has a specific theme corresponding to key concerns and most pressing issues related to the geographic area covered. The main topic of this HDR is 'sustainable economic growth', addressing the three fundamental underlying principles of Bahrain's "Vision 2030", namely sustainability, competitiveness, and fairness. All these dimensions at least partially interface with the human development approach.

Moreover, those principles greatly relate to the 2030 Agenda for Sustainable Development with its underlying scaffolding of the Sustainable Development Goals (SDGs). 'These goals, approved globally in 2015 by 193 countries, are to be addressed as a whole following a holistic logic, as they apply to all countries and abide to the principle of 'leaving no one behind'. This principle maintains that all should be active participants of a country's development path, including those who have limited opportunity within society.

According to the Director of UNDP's Human Development Report Office, the Reports contribute to achieving the SDGs in at least three ways. Firstly they make an intellectual contribution through the aim of 'extending the frontiers of knowledge through human development'. Secondly, their data contributes to reviewing how a country is responding to the goals at a local and global level. Thirdly the reports can be utilized to enhance UNDP advocacy efforts for the 2030 Agenda.

The purpose of this Human Development Report entitled 'Pathways to Sustainable Economic Growth in Bahrain' is mainly to provide forward-looking, evidence-based recommendations regarding pathways to ensure economic growth with multi-faceted sustainability, to trigger and inform discussions specifically about the policies and investments. In order for this to happen, the report posits that economic growth needs to be intertwined with the dimensions of social, cultural and environmental sustainability. In doing so, this report mainstreams the SDGs, ensuring that in all its sections there is a link to one or more SDG (Goals or Target), indicating how promoting sustainable economic growth means also promoting the achievement of the SDGs.

True to the core principle of HDRs of supporting the development of national capacities across all its activities, this Report is a product of a truly joint and highly collaborative effort between UNDP and Derasat. I want to herewith expressly thank Derasat for the trust placed in UNDP to jointly produce this landmark report. The effort involved Bahraini scholars and researchers in interaction with international expertise, working as a select team of international and national researchers, experts, development practitioners and UNDP staff members.

It is our hope that this HDR will be the beginning of a series of Human Development Reports in Bahrain, that will contribute to address key development issues relevant to Bahrain, to help propel all its population towards a forward-looking, competitive, inclusive and sustainable economic growth path.

Amin El Sharkawi
Resident Representative
United Nations Development Programme
Kingdom of Bahrain

PRODUCTION PROCESS

The decision for Bahrain to produce a 2018 national human development report (NHDR) was made during the spring of 2017. Tentative groundwork commenced in April 2017, which included determining the primary partner organizations (Derasat, UNDP, IGA, Tamkeen, Ministry of Foreign Affairs), and designating the homegrown members of the authorship team from Derasat. The steering and project management committees were also created, and the theme of 'sustainable economic growth' was formally selected.

These initial steps were followed by several months of work in which UNDP familiarized the Bahraini members of the authorship and project-management team with the steps involved in the production of a NHDR. Two workshops were held during the summer of 2017 to build capacity and engage stakeholders on data and policy issues relating to sustainable development.

Once a firm action plan was put in place, the team initiated the process of selecting and hiring a suitable lead author, resulting in Craig Naumann joining the team during the autumn of 2017. In tandem, the team also determined the topics of the background papers that would support the writing of the main report, and suitable authors were found and commissioned. The selection criteria were expertise primarily, but the team also tried to balance domestic and foreign authors to ensure diversity of perspective.

Thereafter, the team's focus switched to executing the action plan. This process involved a cycle of meetings with key stakeholders, discussing ideas, planning chapters, and writing initial drafts. These steps were complemented by a series of workshops held during the spring of 2018 on the issues of technological development and economic diversification, granting the team access to various experts from inside Bahrain and from the broader UNDP and UN regional and global network.

As drafts of the background papers became available, the authorship team revised their own drafts of chapters. The opinions of key stakeholders regarding the content of the background papers were also solicited, offering the authors of the background papers and the report's authorship team the opportunity to refine their analyses. In the meantime, under the guidance of the Steering Committee, the statistics team started the work of compilation of human development indicators and data trends, to be displayed in the Statistical Annex.

During July 2018, complete first drafts of the reports and background papers became available, whereupon further feedback from key stakeholders was solicited. Peer reviewers were also selected, and the production and translation process commenced. The writing process reached its conclusion in November 2018 with the final printing, paving the way for a year-long series of follow-up workshops designed to discuss the results and maximize the impact of the Report.

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EXECUTIVE SUMMARY

Bahrain launched its Economic Vision 2030 in 2008, at a time when global financial markets were performing well, oil prices were buoyant, and the Bahrain economy was booming, including the realization of a persistent fiscal surplus. This indicates that the Vision was not a knee-jerk reaction to a transient crisis; instead, it is a measured and well-crafted series of principles that can realize a prosperous future for Bahrain. Further confirmation of the Vision's virtues appeared in 2015, when the Sustainable Development Goals (SDGs) were launched, as they shared many of the Vision's core tenets.

In 2018, ten years after the Vision's launch, much has changed. The Bahrain economy has faced some storms, most recently the 2014 oil-price crash. However, the need to adhere to the guidelines set out in the Vision remains pressing. This report takes stock of what has been achieved during the last 15 years, and makes proposals for future policies. The report's distinguishing trait–and its greatest source of added value–is that it is written by full-time researchers familiar with the cutting-edge insights emerging from the academic literature on economic development. This makes it an ideal complement to the plans, reports, and analyses produced by government agencies, scribed by people whose main focus is the day-to-day operations of the public sector.

The Report's theme is sustainable economic development, and the authorship team has chosen to emphasize two aspects of sustainability. The first is the importance of diversifying the economy, partially in response to oil's status as an exhaustible resource. The second is the importance of taking into account environmental concerns in an effort to ensure the highest living standards for future generations. Both aspects constitute central tenets of Bahrain's Economic Vision, and of the SDGs.

During the last 15 years, Bahrain has taken important steps toward realizing sustainable economic growth. Some of the most salient are as follows:

- The substantive diminution of the contribution of oil to the economy
- Successfully leveraging regional economic integration as a source of growth opportunities
- Establishing excellent ICT infrastructure, paving the way for a financial technology research cluster
- Building a successful Islamic finance sector with strong potential for further growth
- Significant advances in the contribution of women to the economy
- Innovative and effective labor market policies for dealing with the unique circumstances of an economy where 75% of the labor force is migrant workers.

While many of the associated policies reflect the adoption of existing best practices, such as telecommunications reform, others, especially in the domain of migrant workers, have required out-of-the-box thinking due to Bahrain's unique and internationally unprecedented circumstances. As a result, in certain contexts, Bahrain can rightfully market itself as a model to be considered by others.

Despite these achievements, several salient challenges must be confronted, including the following:

- A sustained over-dependence on oil, especially in the fiscal domain, where falling oil prices have created pressure on state finances.
- A manufacturing sector that is small and lacking in technological dynamism.
- Low levels of innovation and R&D.
- Significant environmental problems.
- An over-dependence upon migrant workers that undermines innovation in the private sector.

Moreover, in light of the launch of the SDGs, and the concomitant global prioritization of environmental issues, the need to realize green growth--economic growth based on the sustainable use of natural resources--is acute. After analyzing the issues in depth, and drawing on the latest scholarly contributions, this Report makes 40 recommendations, organized by theme, that policymakers may wish to consider over the coming years. The 40 recommendations are synthesized into the following six, which are considered to be the overarching lessons to be drawn from this Report:

1. Develop a strategically-chosen tradable goods sector that has the potential to interlink with other sectors; the potential to yield a regular flow of technological advancements that improve productivity in it and in other sectors; and the potential to produce output that can compete in global markets.

2. Work closely with the private sector to develop an environment where private companies voluntarily allocate greater amounts to R&D, without falling into the trap of direct government funding of the R&D, as the latter may yield research that has a negligible impact upon the economy.

3. Expand the markets to which Bahrain has access. That includes working with GCC partners to overcome existing barriers to economic integration, and securing free trade agreements with other countries outside the GCC.

4. Introduce a systematic and periodic analysis of the skills gap in the labor market, such that educational institutions and employers can better coordinate their organic efforts at ensuring that educational programs match employers' requirements.

5. Elevate the level of integration between economic and environmental policy, and in a manner that ensures transparent adherence to the SDG framework.

6. Dedicate a greater volume of national resources to the process of gathering high quality data that adheres to international criteria, especially those that fall under the SDG umbrella.

Despite its mundane and undramatic nature, the importance of this last recommendation should not be underestimated. High quality data is critical to the process of formulating, analyzing, and revising government policies. While the economic return to capacity-building in national statistics is often difficult to perceive, this should not be confused with the return being small. In principle, via its impact on effective policy-making, investment in ensuring the availability of high quality data relating to sustainable economic development will eventually pay for itself.

INTRODUCTION

To assist readers in navigating this sometimes technical report, this short introduction covers three broad areas. First, it provides a succinct overview of the Bahrain economy. Second, it briefly describes Bahrain's Economic Vision, and relates it to the Sustainable Development Goals (SDGs). Third, the Report's main theme--sustainable economic growth--is introduced. The introduction also formally describes the report's goals and outlines its content.

AN OVERVIEW OF THE BAHRAIN ECONOMY

The Kingdom of Bahrain is an archipelago of 33 islands located in the Arabian Gulf. The islands cover 770 km^2 of land and are connected to the Kingdom of Saudi Arabia to the west, through the King Fahd Causeway. With a population of approximately 1.6 million (2018), the country has a density of 2,100 (P/Km^2).

Bahrain is a constitutional monarchy, headed by HM King Hamad bin Isa Al-Khalifa. It has a bicameral parliamentary system comprising the Council of Representatives, who are elected by popular vote, and the Shura council, appointed by HM the King. The first elections were held in 2002. Bahrain joined the UN in 1971, and subsequently joined the Arab League; and when the Gulf Cooperation Council was formed in 1981, Bahrain was a member state.

In Arabic, the word Bahrain is a dual form of bahr, meaning sea. The name is derived from the topography of the island, as it surrounded by two kinds of water: sweet water springs and salty water. Bahrain's climate is hot and humid during the summer and pleasant with low levels of precipitation in winter. The predominantly arid, desert land mass leaves Bahrain with minimal agricultural land. However, the sea surrounding the island contains natural resources, which mainly

include fish and pearls. Oil and natural gas are also present in Bahrain.

Prior to the modern era, Bahrain's economy was highly dependent upon pearl-diving. Since the 1930s, Bahrain has shifted its economy to dependence on oil, and since the 1970s, it has diversified into other sectors, such as petroleum processing and refining, aluminum production, hospitality, retail, and banking and finance, especially Islamic finance. The Bahraini currency (Dinar) was officially pegged in 2001 to the US dollar.

The country's economy has been growing over the past decade, with a GDP recorded at $32 billion in 2016, and real GDP growth from the previous year being 3.2%. The next section describes the level of human development in Bahrain's economy.

HUMAN DEVELOPMENT IN BAHRAIN

The concept of human development reflects an effort at measuring human well-being in a manner that goes beyond economic measures; in particular, when measuring human development, health and education are considered central contributors. The headline human development index (HDI) is a composite index measuring average achievement in three basic dimensions of human development; namely, a long and healthy life, knowledge and a decent standard of living. The index is composed of the weighted average of four variables: life expectancy at birth; expected years of schooling; mean years of schooling; and GNI per capita. This section examines Bahrain's human development compared to three comparison groups: Arab states; small island developing states (SIDS); and the world. See also the **Special Box 1** on The State of Global Human Development in 2018, written by the UNDP Administrator.

Figure 0.3.1 shows the level of the HDI at four points in time: 1990, 2000, 2010, and 2017. Bahrain consistently lies in the "very high human development" category, and outperforms all three comparison groups. The gap between Bahrain and the global average

SPECIAL BOX 1: THE STATE OF GLOBAL HUMAN DEVELOPMENT IN 2018

We are living in a complex world. People, nations and economies are more connected than ever, and so are the global development issues we are facing. These issues span borders, straddle social, economic and environmental realms, and can be persisting or recurring.

From urbanization to the creation of jobs for millions of people, the world's challenges will only be solved using approaches that take both complexity and local context into account. For almost thirty years, UNDP's human development approach—with its emphasis on enlarging people's freedoms and opportunities rather than economic growth—has inspired and informed solutions and policies across the world.

Human development data, analysis and reporting have been at the heart of that paradigm. UNDP's Human Development Index (HDI) has captured human progress, combining information on people's health, education and income in just one number. Over the years, the HDI has served as a comparative tool of excellence, and as a reliable platform for vigorous public debates on national priorities.

Yet the simplicity of the HDI's story leaves much unsaid. Despite overall progress, large pockets of poverty and exclusion persist. Inequality and conflict are on the rise in many places. Climate change and other environmental concerns are undercutting development now and for future generations. Because our planet seems to be getting more unequal, more unstable and more unsustainable, offering detailed and reliable data has never been so important.

Consider inequality, which has become a defining issue of our time and in many places a cause of entrenched uncertainty and vulnerability. Inequality decreases the global HDI by one fifth.

Gender inequality remains one of the greatest barriers to human development. The average HDI for women is 6 percent lower than that of men, with countries in the low development category suffering the widest gaps.

Finally, as our environmental indicators show, today's progress is coming at the expense of our children. A changing climate, massive declines in biodiversity, and the depletion of land and freshwater resources pose serious threats to humankind.

While evidence remains the lifeblood of informed decisions, many policy-makers understandably struggle to know where to turn to for reliable and readily understandable information amidst the current avalanche of new indices, indicators and statistics. Collecting, integrating and filtering new data are needed to see the bigger picture and develop better solutions. This is an exciting period for human development reporting.

Achim Steiner
Administrator
United Nations Development Programme

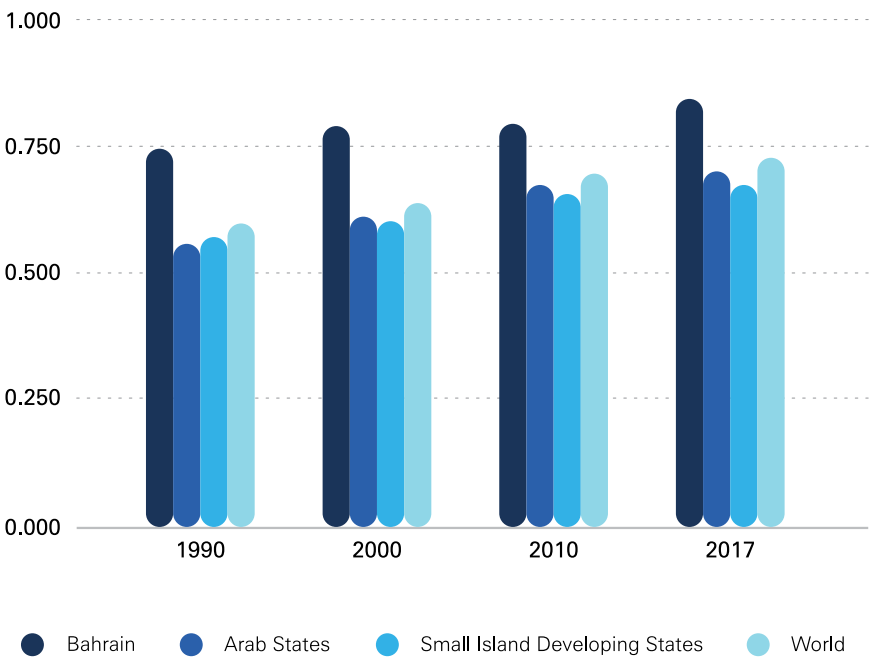

Figure 0.3.1
HDI for Bahrain and Comparison Groups, 1990-2017

Source: UNDP (2018)

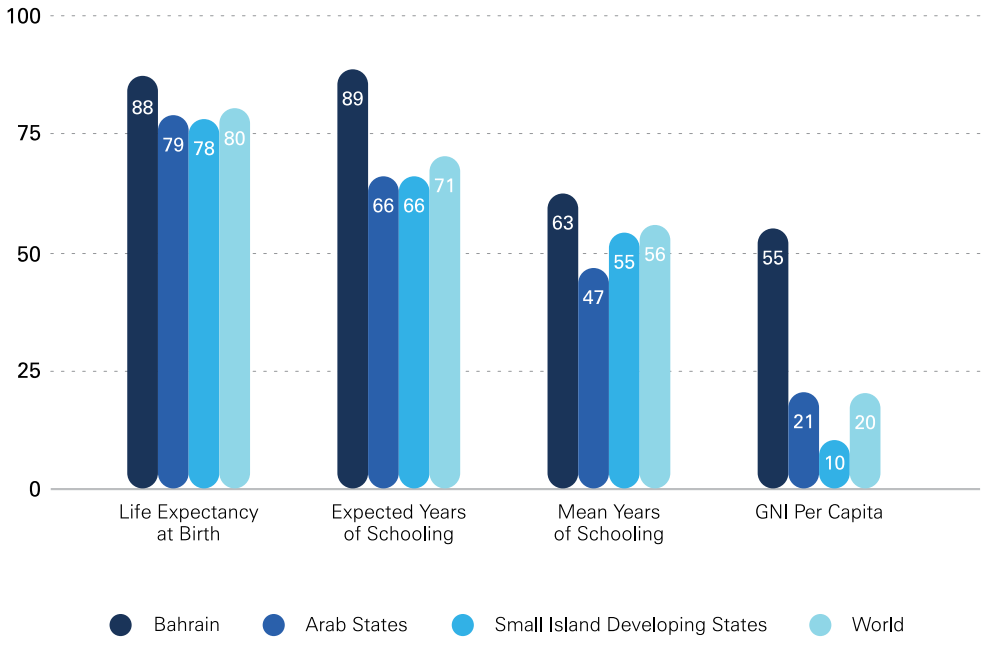

Figure 0.3.2
Breakdown of HDI for Bahrain and Comparison Groups, 2017

Source: UNDP (2018)

("World') shrunk over the period 2009-2010, but slightly expanded again from 2010-2017. The long-term trend has been positive in generally equal measure across the various groups.

Figure 0.3.2 breaks down Bahrain's human development in 2017 by its determinants. Bahrain outperforms the comparison groups in all determinants. The difference is most pronounced in expected years of schooling and GNI per capita. Across the categories of Arab states and SIDS, only a very small number of countries have a higher HDI. Among the "World" category, while the average value is lower compared to Bahrain's HDI, some industrialized nations outperform Bahrain. Bahrain's HDI value for 2017 is 0.846--which puts the country in the very high human development category--positioning it at 43 out of 189 countries and territories. Between 1990 and 2017, Bahrain's HDI value increased from 0.746 to 0.846, an increase of 13.4% (Source: Human Development Indices and Indicators: 2018 Statistical Update, Briefing note for countries on the 2018 Statistical Update - Bahrain, p.2).

In addition to considering health and education, the human development paradigm also emphasizes the consideration of measures of inequality, rather than focusing exclusively on averages. In 2010, the Inequality-adjusted HDI (or IHDI) was introduced by UNDP to complement the HDI, factoring in the degree of (in)equality across all three HDI dimensions and its four variables. It takes into account inequality by 'discounting' average values according to their respective level of inequality.

Due to a lack of data, Bahrain's HDI could not be adjusted for inequality. While data on income inequality is not available which

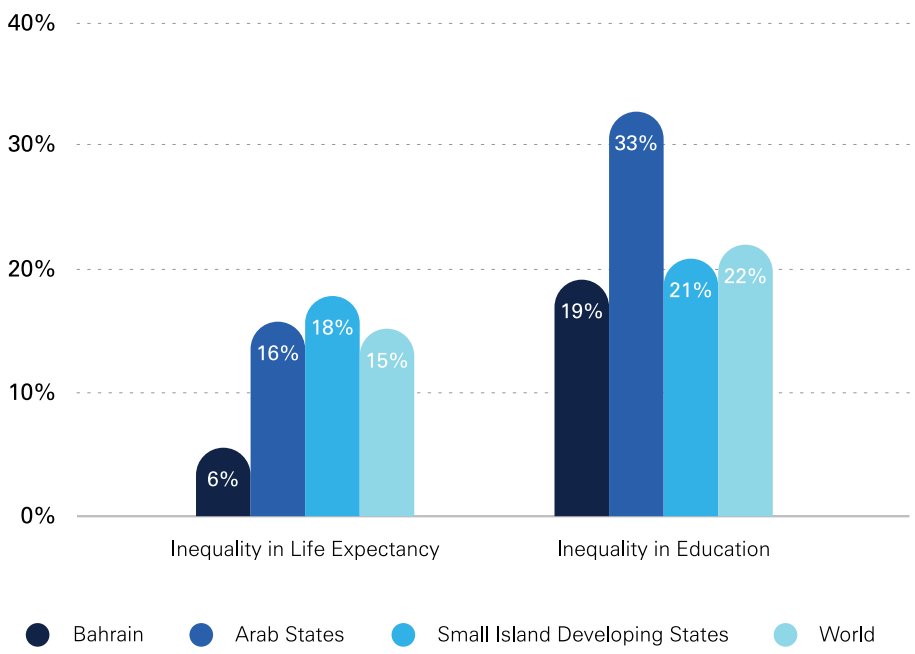

Figure 0.3.3
Inequality HDI for Health and Education for Bahrain and Comparison Groups, 2017

Source: UNDP (2018)

also makes it impossible to determine the overall IHDI, inequality can be calculated for education and health. **Figure 0.3.3** shows Bahrain's inequality in education and health compared to the comparison groups (data on income inequality is not available). In both cases, Bahrain outperforms the comparison groups, though in the dimension of education, Bahrain's advantage is very slim compared to the world (though not Arab states, which suffer from high levels of inequality in education).

Figure 0.3.4 shows the gender development index, which measures the homogeneity of human development for women versus men. In this dimension, Bahrain is slightly below the world average and that for small island developing states. However, it outperforms the Arab states by a considerable margin.

Figure 0.3.5 provides further details on human development for women in Bahrain and the comparison groups. In four of the five dimensions, Bahrain either outperforms the comparison groups, or performs comparably. The exception is the share of female seats in parliament, where Bahrain (15%) falls significantly short of all comparison groups. This may be the result of the relative youth of Bahrain's parliament, which will hold its fifth elections in November 2018 (they occur every four years). Chapter 5.1 examines the issue of women's participation in the economy in greater detail.

Overall, therefore, Bahrain performs well in terms of human development, though it must look to diminish the level of aggregate gender inequality, encourage greater participation of women in parliament, and ensure the availability of data on income inequality.

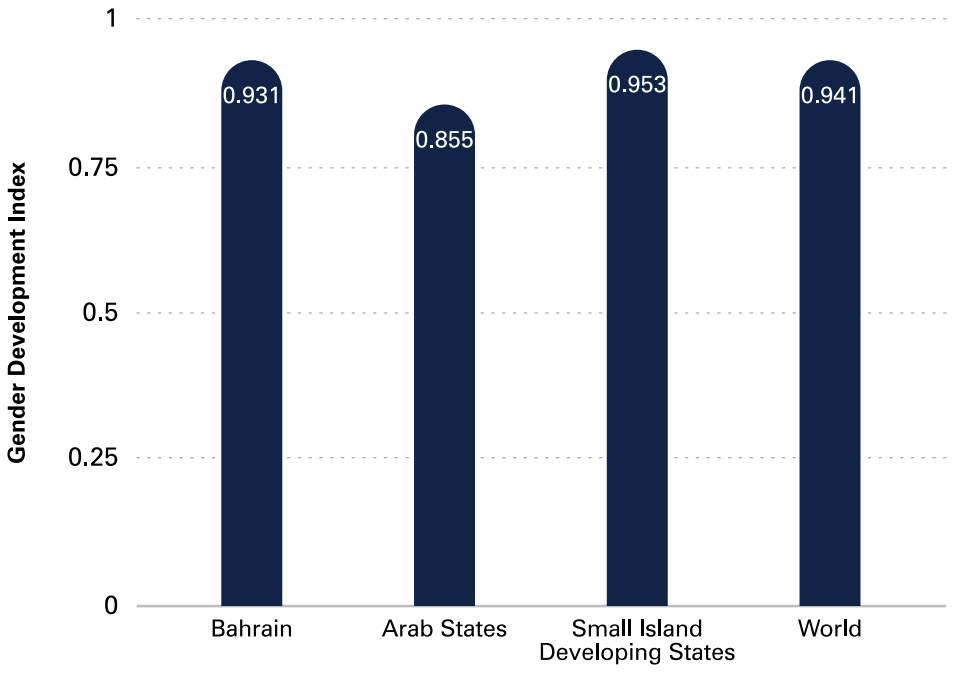

Figure 0.3.4
Gender Development Index for Bahrain and Comparison Groups, 2017

Source: UNDP (2018)

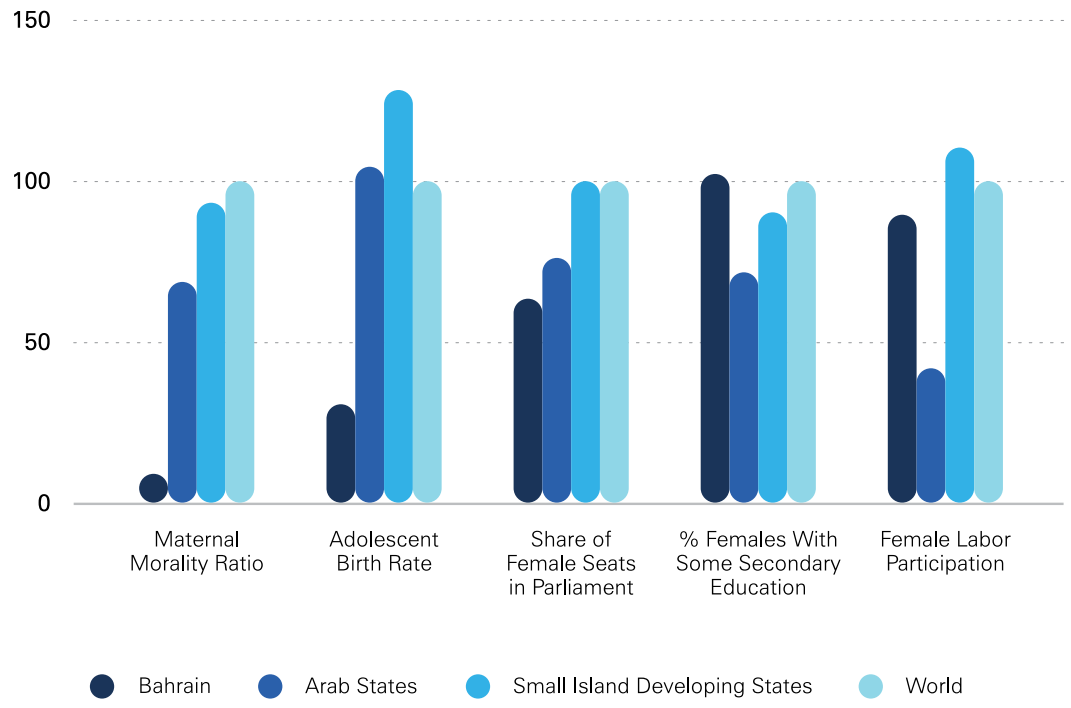

Figure 0.3.5
Human Development Indicators for Women in Bahrain and Comparison Groups where World is Normalized to 100 in Each Category, 2017

Source: UNDP (2018)

The report's theme (sustainable economic growth) is economic in its focus; moreover, a majority of the authorship team are researchers with a background in economics and technical fields. Consequently, this report will focus more on the economics dimension of human development. This tendency is exacerbated by data limitations relating to income inequality in Bahrain. However, as will be clarified in the section on sustainable economic development below, in an effort to satisfactorily explore human development, the report adopts a non-traditional, intertemporal view rather than a traditional, static one; meaning that the report will look at inequality across time (Bahrainis today versus Bahrainis tomorrow) rather than across space within time (inequality within Bahrain today).

BAHRAIN'S ECONOMIC VISION AND THE SDGS

The Economic Vision 2030

Since 2000, Bahrain has been undergoing a series of deep reforms reaching all aspects of daily life. These include economic reforms, many of which will be detailed in this report. In 2008, in an effort to organize the economic reforms and exploit synergies, Bahrain formally launched its Economic Vision 2030, with the long-term goal of transforming Bahrain from an economy dependent upon natural resource income, into a diverse, knowledge-based economy.

The Vision had three guiding principles: sustainability, competitiveness, and fairness, arguably rendering it a progenitor of the SDGs. The Vision's goals were organized under three domains: the economy, government, and society.

The economic goals emphasized making productivity and skills the drivers of the economy, and on diversifying by focusing on existing high-potential sectors.
The government goals focused on improving accountability and transparency, and the quality of government services, as well as diminishing fiscal dependence on oil revenues. Delivering world-class infrastructure was central, too.

The society goals emphasized comprehensive and equal access to high-quality education and health care, as well as social safety nets and a secure environment.

A key theme is transforming the public sector from a driver to an enabler of the economy, by shifting from the provision of services to their regulation; and in its stead, developing a dynamic private sector.

The Government Action Plan and the SDGs

Vision 2030 is a macroscopic document that refrains from laying out a detailed implementation agenda. That role is performed by a series of complementary government action plans (GAPs), the most recent covering

the period 2015-2018. It contains the specific strategic priorities of the government during that period, along with indicators that assist in gauging the government's success in realizing the goals laid out.

The most recent GAP coincided with the launch of the SDGs. Bahrain has historically sought--and continues to seek--to be a constructive member of the international community. This is reflected in its adoption of numerous UN resolutions, as well as its hosting of over a dozen UN organs, including the UNDP--a partner in the production of this report. Consequently, after the launch of the SDGs, the Bahrain government set about integrating the SDGs with the GAP. Due to the fundamental compatibility between Bahrain's Economic Vision and the SDGs, the overwhelming majority of the SDGs' targets and sub-targets were either explicitly or implicitly consistent with the GAP.

The Economic Vision, GAP, and SDGs in 2018

The Economic Vision, current GAP, and SDGs all contain a series of key performance indicators that can be used to track progress. Such an exercise does not lie within the scope of this report, falling instead to a series of complementary documents, including Bahrain's 2018 Voluntary National Review (VNR) on the SDGs. After presenting a short primer on the concept of sustainable economic growth, the next section will elucidate upon the overall goals of this Report, and on what readers should look to gain from reading it.

SUSTAINABLE ECONOMIC GROWTH: A SUCCINCT PRIMER

The concept of sustainable economic growth is intrinsically linked to the dimensions of environmental sustainability and human development. In retracing the introduction of the concept of sustainable development, an important related landmark was the so-called Brundtland Report ("Our Common Future", Oxford University Press 1987) which discussed interrelated and interdependent national sustainable development paths and built on the UN's 1972 Stockholm Conference on (human) environment, which had introduced environmental concerns to the formal political development discussion, by conceptualizing

"Sustainable development implies that economic growth should not be at the expense of environment. Bahrain, like other island states that are limited in size, faces unique environmental challenges because of limited land space and pressures from competing demands on the scarce natural resources, such as water and ecosystems. Adopting integrated approaches of the sustainable development goals and Agenda 2030 provides an opportunity to balance economic growth and environment protection. I believe that this human development report will trigger debate and actions to achieve progress in the economic prosperity of the Kingdom without compromising the environment and the well-being of its population."

- HE Mr. Sami Dimassi
(Director and Regional Representative, West Asia Office, UN Environment)

environment and development as intrinsically intertwined dimensions.

This addressed the shortfalls of literally all preceding economic growth concepts and theories that had either ignored or neglected the dimension of environmental sustainability. Other related key events include the 1992 Rio Earth Summit on Environment and Development, the 2002 Johannesburg Earth Summit on Sustainable Development, the 2012 Rio Earth Summit (Rio+20), and the 2015 Paris COP conference on climate change. The recently introduced 2030 Agenda embraces and reflects the goals and principles enshrined in the various declarations and action plans, and synthesized them in the form of a global set of Sustainable Development Goals along with targets that can be operationalized and measured, at the local (i.e., national and sub-national) level.

In following the definition coined by the Brundtland Commission, sustainable development means meeting the needs of the present without compromising the ability of future generations to meet their own needs. This implies an obligation of the current generation to future generations, thus incorporating the notion of intergenerational equity, responsibility and justice in terms of "doing business" in the economic realm. (See **Box A** for a discussion of sovereign wealth funds as a vehicle for realizing intergenerational equity.) This has obvious implications for consumption and lifestyle patterns and production processes and systems, including the use of finite resources and public goods, as well as the design and content of the education, health and social systems.

BOX A: BAHRAIN'S SOVEREIGN WEALTH FUNDS

A sovereign wealth fund (SWF) is a state-owned investment vehicle that invests in real and financial assets. The purpose of an SWF is to benefit the country's economy and citizens in terms of three main economic functions: development, stabilization, and growth. The overarching objective is to generate sustainable wealth for future generations. Bahrain has a range of SWFs whose purposes and mandates differ.

These include the Future Generations' Reserve Fund (FGRF), established in 2006 to reinvest revenues from natural resources in liquid financial securities abroad to build intergenerational equity; Bahrain Mumtalakat Holding Company, also established in 2006 to manage the government's stakes in 29 non-oil and gas state-owned enterprises, and to help diversify the Bahraini economy (www.mumtalakat.bh); the National Oil & Gas Authority (NOGA, www.nogaholding.com) established in 2007 to enhance the oil and gas and related sectors, while contributing to domestic economic development; and Osool, established in 2011 to grow national pension reserves through a multi-pronged investment approach (www.osool.com.bh).

With oversight from the Ministry of Finance, Bahrain's SWFs incorporate the Generally Accepted Principles and Practices of Sovereign Wealth Funds (the Santiago Principles) and operate in compliance with the Bahrain Code of Conduct. SWFs generally contribute to the national economy in line with their respective mandate. Notably, FGRF and Mumtalakat have recently been able to commit a share of their profits to support the country's national budget in 2014-2015 and 2017-2018, respectively, thus contributing to both diversification and sustainability of government finances.

A universal core principle of enlightenment reflected in the UN's core values, posits the equal worth of all people, ascribing each and everyone the right and entitlement to the conditions permitting the unfettered development of their innate capacities. Hence, human development refers to the promotion of equal life chances for all indiscriminate of class, gender, race, community and the generation in which one happens to be born (Anand and Sen, 2000). Human development is intrinsically linked to a sustainable use of finite resources and the reproduction of reproducible resources including human capital.

Progress achieved by current generations thus should not impinge on or reduce the choices available to future generations; which implies that development progress must be achieved in a sustainable way. The notion of sustainability is traditionally expressed in terms of the interface between the economic sphere and the limits of finite natural resources. A human development perspective, however, situates sustainability in the broader context of choices and capabilities. In line with this approach, the notions of human development and sustainable development are seen as mutually compatible since both are based on the universal values of equal rights and opportunities (Sen, 1999; Nussbaum, 2000).

The capability approach thus provides the theoretical underpinning for the concept of human development. It holds that how individuals relate to each other plays a key part in human progress since largely influencing if not dominating the conditions for the full development or flourishing of innate human capacities of each individual; and by extension, the full capacity of a nation which is composed of the various sub-components of the population.

Just like the capability approach, the human development approach maintains that the freedom of individual choice is central to sustainable development, based on the premise that human development is a process of enlarging individual choices and expanding individual capabilities or freedoms (UNDP, 1990). Under this approach, the objective of development can thus be defined as the expansion of the set of capabilities of each individual so that actions can be taken from a variety of choices. The exercise of these capabilities can then be gauged through such measures as the Human Development Index.

For a full discussion of sustainable economic growth and the associated challenges in Bahrain, see Kotilaine (2018b). In conventional economies, policymakers seeking to operationalize the concept gravitate toward environmental concerns by default: the depletion of a country's environmental resources, including its land, its air, its water, its energy, and so on, will likely bring about a diminution in the standards of living that future generations can experience. In fact, in light of increasing life expectancy, adverse environmental consequences may even be experienced directly by the generations that initiated the depletion.

In the case of Bahrain, in accordance with the norm in conventional economies, this report will place a strong emphasis on how environmental concerns should be taken into account by those crafting policies that target economic growth.

In addition to this consideration, the report also explores a related sustainable economic growth issue which tends to be uniquely associated with resource-rich countries: the depletion of non-renewable natural resources that are extracted and exported at scale. In the case of Bahrain, this refers to oil and gas, which make significant contributions to the economy when compared to western economies. The antidote to the depletion of non-renewable

natural resources is economic diversification, whereby the economy's base is widened in a manner that limits dependence upon the natural resource, thereby limiting both the need to--and the fallout from--depleting it.

While there are many other areas of interest that fall under the broad umbrella of sustainable economic growth, in the interests of parsimony, this report will focus on economic diversification and environmentally-friendly growth. Future research, including national human development reports, can explore the remaining issues.

Economic diversification and environmentally-friendly growth relate to the aforementioned intertemporal view of human development. When stakeholders assess the performance of the Bahrain economy, in addition to exploring intra-Bahraini inequality at a given point in time, they should also explore inequality across time: the quality of life of Bahrainis today versus Bahrainis several years in the future. This latter, intertemporal perspective of inequality will be the main human development emphasis of this report, since diversifying the economy and sustaining the environment--central pillars of the Economic Vision 2030--are all about the opportunities that Bahrainis tomorrow have to live prosperous lives.

HOW TO READ THIS REPORT

To summarize the above, Bahrain is a country that is small in size and that has a high standard of living, but with an over-dependence on petrochemicals. It has an ambitious Economic Vision that stresses the importance of sustainable growth via diversifying the economy, while respecting the environment. Bahrain's prioritization of these goals is reaffirmed by the country's commitment to the UN's mission, including the SDGs.

The goal of this report is to document what has been achieved in the domain of sustainable economic growth during the period 2005-2018, and to identify areas where specific interventions are still needed. Moreover, this report appraises those achievements, building toward a series of recommendations that stakeholders, including policymakers, may wish to take into consideration as they plan for the coming years. The recommendations are macroscopic, as the hope is that a series of follow-up workshops involving stakeholders can help transform these macroscopic recommendations into operationalizable action plans that contribute toward sustainable economic growth.

The key distinction between this report and reports that relate directly to the Economic Vision, 2015-2018 GAP, and SDGs is the nature of the authorship team and analysis. This report is written by expert researchers working in the fields of economics and energy. This affords them the advantage of being able to make use of the insights emanating from the academic literature on human development. This is a notable source of added value, since the scholarly literature is both dynamic and technical, meaning that expert researchers are necessary for the extraction of the latest contributions.

In fact, as part of the project, experts on the Bahrain economy were commissioned to write over a dozen, academic-style background

papers as a foundation for the main report, and to ensure its rigor. All are cited extensively throughout this report, and one hopes that other scholars will find them as useful references in their own investigations of the Bahraini economy.

The emphasis on background research makes this report highly complementary to the work produced by government agencies tasked with planning for Bahrain's future, as these latter reports naturally places a greater emphasis on the details of implementation based on the day-to-day challenges of economic policy.

The report is organized as follows. Chapter 1 examines the central issue of diversifying the economy, along with the related issue of regional economic integration. Chapter 2 explores the role of education, innovation, and information technology in expanding the economy's capabilities. Chapter 3 analyzes the issues pertaining to government finances and the macroeconomy, as well as the related issue of the Islamic finance sector. Chapter 4 is dedicated to greening the economy, including renewable energy, and environmental sustainability. Chapter 5 explores the interests of two important contributors to the Bahrain economy: women and migrant workers.

At the end of each of the five main chapters is a list of five-to-ten recommendations that may be of interest to stakeholders, including policymakers. The report's concluding section restates the 40 recommendations, including 10 priority recommendations, and then proceeds to synthesize the report.

The report also contains a series of boxes that elucidate upon points of interest in a self-contained manner. A statistical annex acts as a rich repository of data for researchers interested in conducting their own analysis of the Bahrain economy.

1. ECONOMIC DIVERSIFICATION, COMPETITIVENESS AND THE ROLE OF SMES: CHALLENGES AND OPPORTUNITIES

One of the central themes of Bahrain's Economic Vision 2030 is diversifying the economy and making it globally competitive. This chapter explores Bahrain's experience during the last 15 years, and discusses the challenges and opportunities going forward. The primary background papers are Cherif and Hasanov (2014), Kotilaine (2018a), and Al-Ubaydli and Jones (2018).

1.1. ECONOMIC DIVERSIFICATION AND ITS CHALLENGES, INCLUDING THE ROLE OF SMES

1.1.1. How Diversified is the Bahraini Economy?

1.1.1.1. The Conventional Measure of Diversification

When examining a natural resource dependent economy, the traditional and widely-deployed definition of economic diversification is the share of output (GDP) accounted for by the natural resource, according to the sectoral-breakdown in the national accounts. This definition generally yields data that are consistent with what can be gleaned from casual observation: countries such as Finland and the USA show up as having low dependence on natural resources (less than 5% of GDP); Australia and Brazil have intermediate dependence (5-10%); while Algeria and Kazakhstan have high dependence (more than 10%).

Figure 1.1.1.1.1 shows the data for Bahrain in the year 2017, while **Figure 1.1.1.1.2** shows the time series for the period 2005-2017. Note that in both cases, the mining sector includes crude oil, natural gas, and quarrying, but crude oil and natural gas together account for over 95% of the sector, with variation in quarrying representing a trivial percentage of the variation in mining. Therefore, mining is an effective measure of the direct, sectoral contribution of oil and gas to the Bahrain economy according to the national accounts.

Focusing on **Figure 1.1.1.1.1** (the 2017 data), Bahrain's economy clearly has a strong

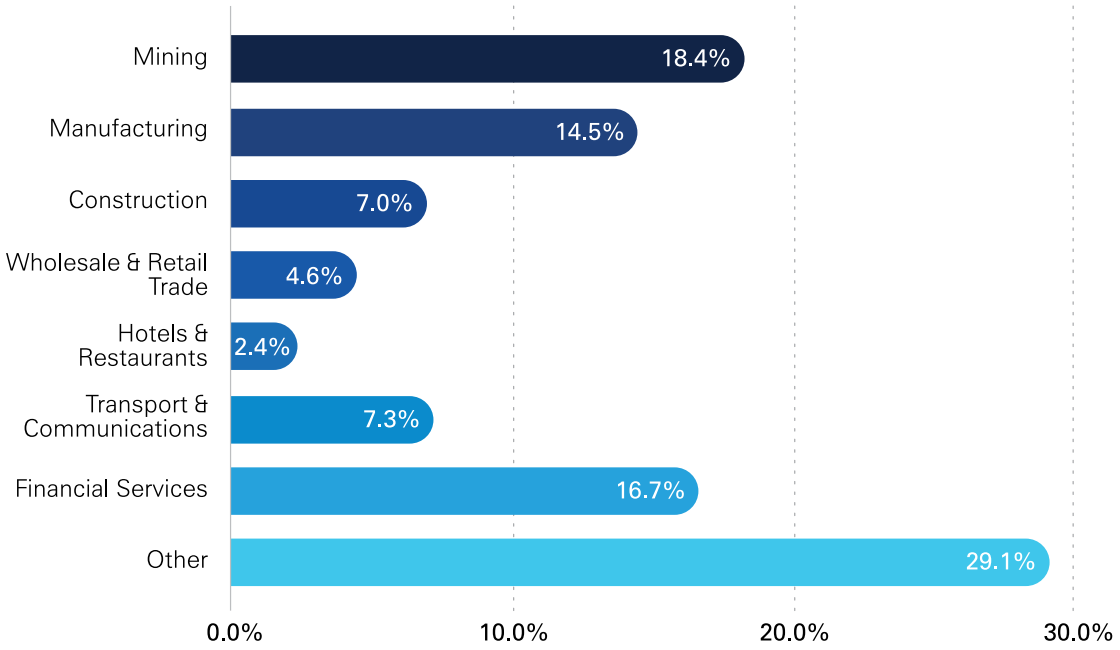

Figure 1.1.1.1.1
Sectoral Contributions (%) to Bahrain GDP (constant prices), 2017

Source: Information and eGovernment Authority

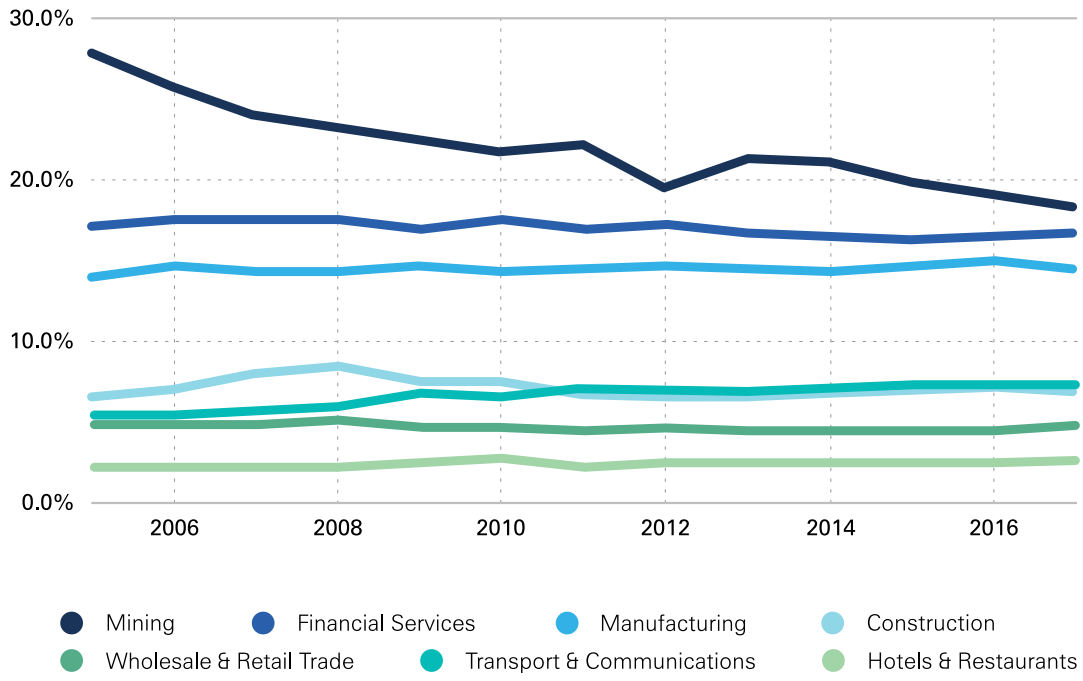

Figure 1.1.1.1.2
Sectoral Contributions (%) to Bahrain GDP (constant prices), 2005-2017

Source: Information and eGovernment Authority

dependence on oil and gas, equal to 18.4%. While data suitable for comparisons are not easy to come by for a large number of countries, Bahrain's figure places it in the list of highly-resource dependent countries, though outside the top bracket that features countries such as Angola, Azerbaijan, Kuwait, and Saudi Arabia. The other primary contributors to GDP are financial services (16.7%) and manufacturing (14.5%), with the latter being dominated by Bahrain's aluminum-related products. Both are covered in greater detail in other chapters of this report.

Turning to the time series in **Figure 1.1.1.1.2**, the only notable trend is a decline in the contribution of oil and gas, from 28% in 2005, to 18% in 2017. This represents a 36% decline in the sector's contribution--a remarkable figure for a 13-year timespan. None of the remaining sectors shown in the figure have absorbed the shrinking contribution of oil and gas; instead, growth in a combination of the numerous, small, residual sectors that are omitted from the figure accounts for the decline in the contribution of oil and gas. These include "electricity and water," "other goods industries," "business services," "other services industries," and "real estate".

The extraction and selling of crude oil are not the only oil-related activities in Bahrain. In fact, there is a significant downstream manufacturing sector that includes: refined petroleum products; basic chemicals, including fertilizers, in primary form; man-made fibers; and plastic products. To more accurately measure the contribution of petrochemicals to Bahrain's economy, one should also include these downstream sectors. **Figure 1.1.1.1.3** shows the percentage contribution of the petrochemicals sector, which includes these downstream manufactures. It confirms that crude oil and petrochemicals both follow a

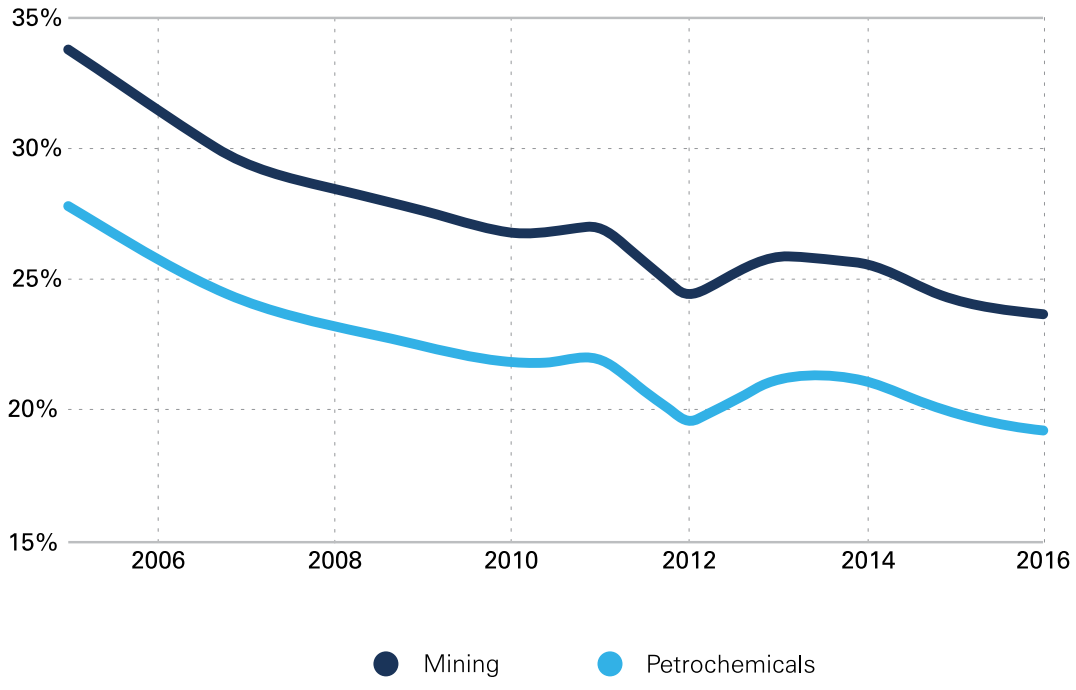

Figure 1.1.1.1.3
Contribution (%) of Petrochemicals to Bahrain GDP (constant prices), 2005-2016

Source: Information and eGovernment Authority

very similar trend, with the latter witnessing a decline in contribution from 34% in 2005 to 24% in 2016 (2017 data are as yet unavailable). For the remainder of this report, consideration is restricted to the mining sector.

Returning to **Figure 1.1.1.1.2**, **Figure 1.1.1.1.4** shows the absolute contribution of each sector, which allowing readers to get a better sense of the evolution. The most important feature of **Figure 1.1.1.1.4** is that all sectors exhibit consistent growth, with some brief interruptions in some sectors. This reflects the solid growth of the Bahrain economy throughout the period 2005-2017, which in turn has three primary causes.

First, the growth in oil prices, which was highly robust, with the exception of a sharp, temporary downturn in the wake of the global financial crisis of 2008, and an apparently long-term drop after 2014. Second, Bahrain's growth-generating economic policies, which the report elucidates upon further below. Third, the financial aid that Bahrain began to receive from 2012 onward in the form of the GCC Development Fund.

As a result, one can surmise that the declining contribution of oil and gas is being driven by the fundamentally positive factor that is faster growth in the economy's remaining sectors. **Figure 1.1.1.1.5** breaks down the cumulative growth by sector for the period 2005-2017.

As can be seen, the second and third most important sectors, manufacturing (75%) and finance (64%), grew at approximately the same rate as GDP (68%). Transport and communications grew at a substantially higher rate (128%), but represents too small a sector in the economy (7.3% in 2017) to make a significant dent in the contribution of oil and gas. Instead, it is growth in the "other" sectors

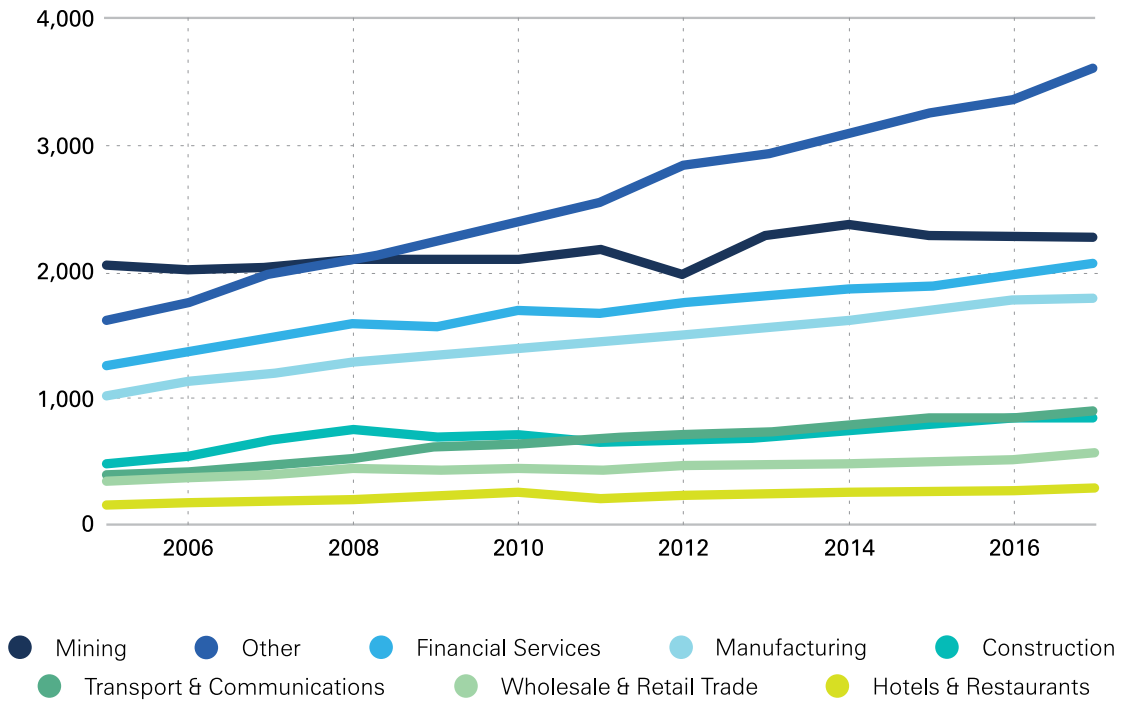

Figure 1.1.1.1.4
Bahrain GDP by Type of Economic Activity (constant BD million), 2005-2017

Source: Information and eGovernment Authority

(electricity and water, business services, real estate, etc.), which together account for almost one third of GDP, that made the biggest contribution toward marginalizing oil and gas. What accounted for these developments?

Before explaining the policies that have contributed to Bahrain's successful diversification efforts during the period 2005-2017, it is worth drawing attention to the technical absence of a role for variation in oil prices.

Oil prices went from around $40 in 2005, to $140 in 2008, down to $40 in 2009, before recovering to $120 in 2012, and finally dropping to around $50 during 2017. In principle, these large movements in oil prices--which have massive consequences for government revenues, and hence the economy more generally--have no direct effect on the contribution of the oil and gas sector to GDP. This is because the modern method of national accounts used to compile real GDP statistics uses quantity indices that hold prices constant, meaning that variation in economic activity induced by variation in the prices of commodities is not reflected in the relevant commodities quantity contribution.

In the case of Bahrain's national accounts, this means that, to a first approximation, movements in the output of the oil and gas sector only reflect movements in the volume of oil and gas produced and exported by Bahrain. This explains the 2012 dip in **Figure 1.1.1.1.4**: a technical disruption in the Abu Sa'fa oil field (that is shared with Saudi Arabia). The modest growth throughout the sample period reflects the successful deployment of enhanced oil recovery techniques in Bahrain's major onshore oil field in Jabal Al Dukhan.

The report discusses this and other weaknesses with the traditional measure of diversification in section 1.1.1.4 below, wherein alternative measures of diversification are proposed.

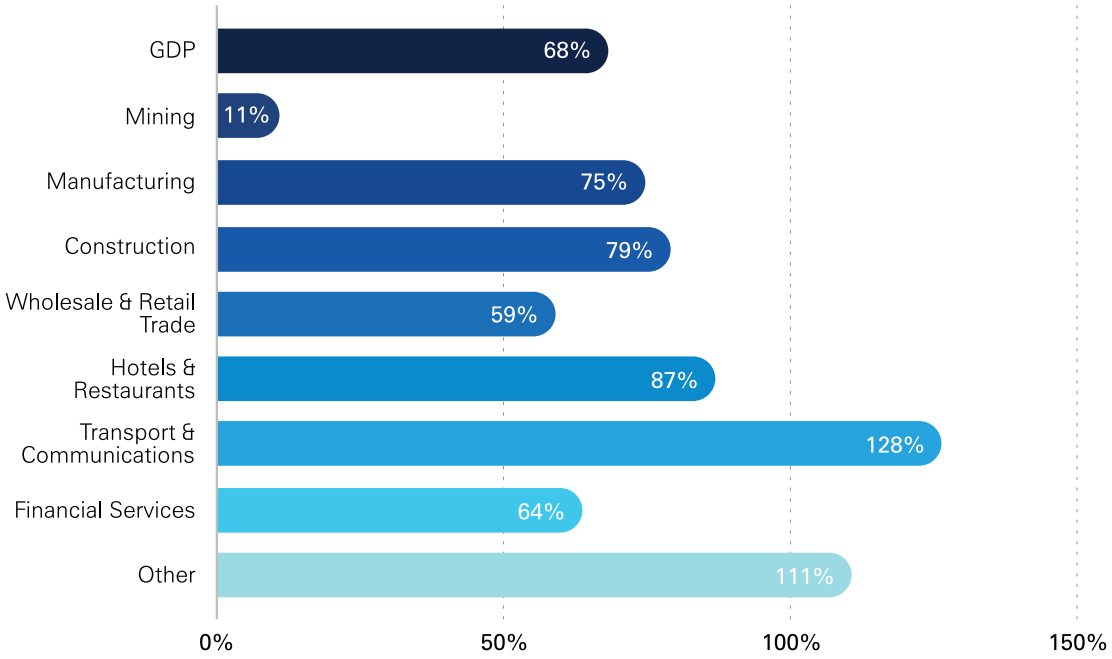

Figure 1.1.1.1.5
Cumulative Growth (%) by Sector of GDP, 2005-2017

Source: Information and eGovernment Authority

1.1.1.2. The Contribution of SMEs

In virtually all economies, SMEs account for at least 50% of corporations, employment, and GDP; and they play a leading role in innovation and job creation. SMEs in Bahrain exhibit some--but not all--of these traits. **Figure 1.1.1.2.1** shows the sectoral distribution of Bahraini SMEs in 2017 (see Kotalaine (2018a) for a full discussion of the definition of SMEs).

The two sectors with the largest representation are the highly generic group "trading", which accounts for 37% of active SMEs; and construction, which accounts for 16%. The typical SME in the former category is a small-scale merchant who imports ready-made goods and resells them in the retail market. The size of this sector is likely a legacy of the mercantile culture in the Arabian Peninsula: the harshness of the desert climate meant that for millennia, one of the few ways for nomads to eke out a living was to travel to more fertile lands, purchase goods, and to resell them at a markup elsewhere--the quintessential merchant. It may well be the case that this has become the default business model that entrepreneurs in Bahrain think of when considering the launch of a new enterprise.

The importance of construction in the SME landscape reflects the importance of sub-contracting to the delivery of construction projects (Kotilaine, 2018a). Many of the larger, traditional contracting powerhouses in Bahrain have a limited range of services in house, preferring instead to outsource to the large ecosystem of subcontractors focusing on a narrow range of services.

As mentioned above, SMEs in Bahrain have a somewhat atypical contribution to the

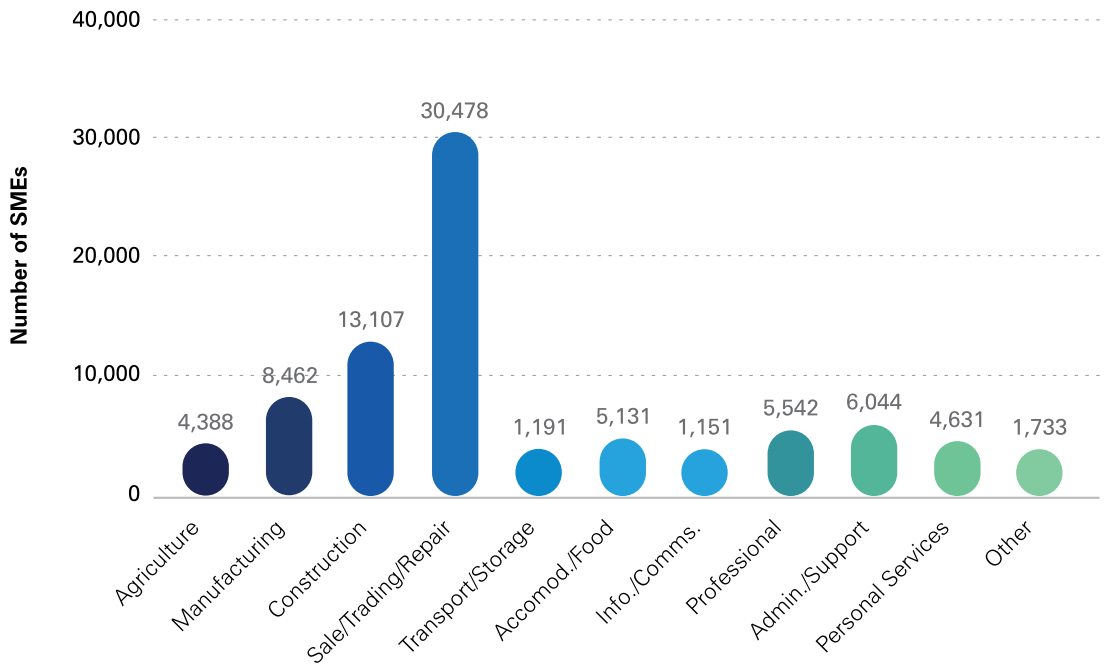

Figure 1.1.1.2.1
Number of SMEs by Sector, 2017

Source: Ministry of Industry, Commerce, and Tourism

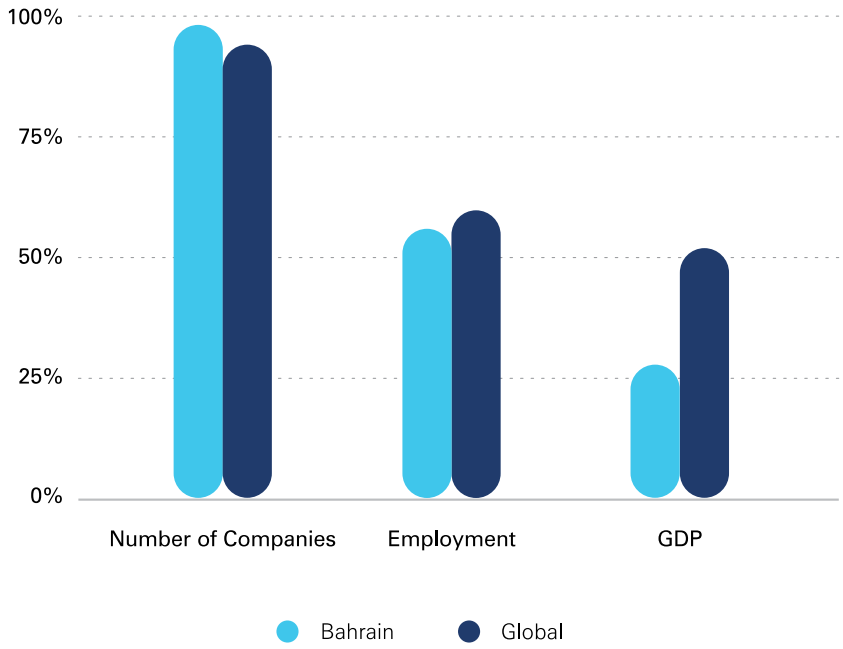

Figure 1.1.1.2.2:
SME Contributions (%): Bahrain vs. Global, 2017

Source: Ministry of Industry, Commerce, and Tourism; World Bank; OECD

economy. **Figure 1.1.1.2.2** compares Bahrain to the global average in three dimensions of SME contributions.

As can be seen, in terms of SME contributions to the number of corporations in the economy (99%), and to total employment (56%), Bahrain

"The focus of the Kingdom of Bahrain on diversifying its economy will indeed be a successful investment. For diversifying the economy, transformative policies must develop an environment that promotes market contestability and changes the incentives so that SMEs can tap the potential of technological change in the non-oil sectors of the economy. This may require reducing the direct role of the public sector, while increasing the contribution of the private sector. There are some promising sectors that could contribute positively to economic growth, employment creation and food security: fisheries, aquaculture, food processing and tourism."

- Dr. Mohamed Ahmed
(Policy Officer, Food and Agricultural Organization of the UN, Egypt)

is in line with the global average. However, the contribution of SMEs to GDP in Bahrain is 30%, which falls significantly below the global average of 46%. Kotilaine (2018a) proposes several factors that might account for this.

First, Bahrain's above-average (by global standards) dependence upon natural resources. Moreover, oil revenues accrue to the government, before being redistributed via a combination of public sector hiring and large government projects, neither of which is associated with SMEs.

Second, Bahrain's financial sector plays a central role in the economy, and financial institutions have stringent capital requirements imposed upon them both at the Central Bank of Bahrain's initiative (the financial regulator), and also due to global financial accords. Such requirements are typically inconsistent with microenterprises, as they may require a large scale of operations for compliance to be feasible.

Third, the abundance of low-cost labor distorts the business model, and undermines the incentive for SMEs to focus on productivity enhancements as ways of growing the business. The report will discuss the impact of low-cost labor in greater detail below; for now, attention is drawn to the fact that citizens

BOX B: BAHRAIN'S BOURSE

The Bahrain Bourse (BHB) was established as a closed shareholding company in 2010, replacing the Bahrain Stock Exchange (BSE) that had started operations in 1989. Bahrain differs from other open-market economies in that the BHB is regulated and monitored by the Central Bank of Bahrain (CBB), which also regulates the (inter-)banking money markets and payment systems. The CBB formulates policies related to the orderly growth and development of both the money and capital markets. This includes setting standards and protecting investor interests via rules that promote disclosure and transparency.

In 2016, the CBB issued its approval to establish an equity market that allows closed SMEs to float shares under more flexible regulations than usual, and independently from the primary market open for companies from Bahrain and overseas. In 2017, the Bahrain Investment Market (BIM) was launched. Several professional advisory firms have already registered as authorized service providers within the BIM. This concrete stepping stone is expected to raise the contribution of SMEs and start-ups to Bahrain's national economy.

The BSE and its successor, the BHB, have served as a financial hub, diversifying financial products and creating depth in the capital market. Currently, there are 43 equities, 34 bonds and sukuk (Islamic securities) treasury bills, and 19 mutual funds listed. Market capitalization stood at BHD 8.15 billion (equivalent to US$ 21.7 billion) by the end of 2017.

The Bourse has an automated trading system (ATS) and a digital clearing, settlement and central depository system (CDS) which ensures fast and efficient trading. Shares in commercial banks typically account for the largest proportion of transactions by value, with significant contributions coming the the investment sector, the services sector, and the industrial sector.

represent only 11% of workers in the SME sector.

Finally, the corporate finance sector is relatively embryonic by global standards, meaning that there is limited scope for the activities of a small business to grow via mergers and acquisition, and to subsequently exploit economies of scale in production; see Kotilaine (2018b) for more details. See **Box B** for information about Bahrain's stock exchange.

Despite these challenges, the Economic Vision 2030 confirms that the government appreciates the importance of SMEs to a successful and diverse economy, and that it is committed to adopting policies that lead to an expansion of SMEs' contribution. **Figure 1.1.1.2.3** shows the number of new commercial registrations for the period 2005-2017.

These data suggest that since 2016, the government's interventions have begun to bear fruit. See **Box C** for a discussion of social media's role in creating SMEs. In the next section, the report discusses the policies that have contributed to Bahrain's successful diversification of the economy, and to the expansion of SME activity.

1.1.1.3. Successful Diversification and SME Policies

Though the conventional measure of diversification is imperfect, as remarked above, overall it yields an indicator of resource dependence that is consistent with what one would expect based on casual observation of the economies in question. Therefore, whatever flaws exist in the measure, with some degree

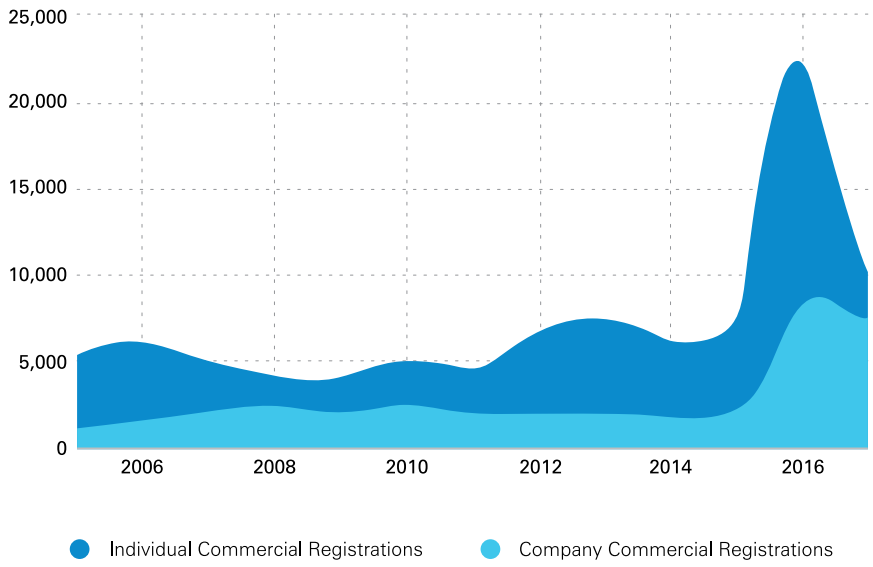

Figure 1.1.1.2.3
New Commercial Registrations by Year, 2005-2017

Source: Ministry of Industry, Commerce, and Tourism

BOX C:
SOCIAL MEDIA AND BUSINESS

Bahrain has one of the highest internet penetration rates in the region, while social media penetration is estimated at 78%. According to the "Arab Social Media Report" in 2015 , the most used social platforms in Bahrain include Whatsapp at 85%, Facebook at 81%, Instagram at 51%, Twitter at 47% and Youtube at 44% (Wpp.com, 2015).

Social media has opened new opportunities for both new entrepreneurs and established businesses. These online platforms allow direct engagement for current and potential customers. Mining accessible users' profile data can help boost business growth, understand customer preferences and customize marketing strategies at a relatively low cost. Firms specializing in social media marketing campaigns have flourished in Bahrain, providing further opportunities in this growing sector.

This has led to the phenomenon of "Instagram businesses" in Bahrain and the Gulf region more broadly. The social media platform became the preferred platform for many home-based and one-person businesses ranging from clothes, accessories, food and beverages to design and translation services. To respond to this phenomenon and better regulate it, the Ministry of Industry Commerce and Tourism launched "Sijili" in 2017. Sijili allows any citizen to legally operate a businesses within 39 specified commercial activities without having to register an office address. Instagram and online businesses have simplified business processes, and enabled greater economic inclusion by reducing the cost of opening and operating a business (Bahrainedb.com, 2016). Moving forward, as Bahrain focuses on the knowledge and digital economy, social media is expected to continue to play a huge role in business development.

of confidence, one can conclude that Bahrain has successfully decreased its dependence upon oil and gas during the period 2005-2017, and that as a result, one should search for possible explanations.

Bahrain has been committing resources toward diversifying its economy for decades, but these efforts accelerated during the new millennium, even during the period prior to the launch of the Economic Vision 2030 in 2008. Four policies stand out.

The first, which receives greater coverage in Al-Ubaydli and Jones (2018), is Bahrain's efforts at attracting FDI, especially FDI from the rest of the GCC region. **Figure 1.1.1.3.1** shows the stock of FDI in Bahrain during the period 2009-2017.

These data exhibit several notable features. The total value of FDI in Bahrain is very large by international standards, when dividing by GDP. Throughout most of the sample period, FDI stocks exceed 80% of GDP. By comparison, using OECD data, the corresponding figure for the EU as a whole is around 50%, though smaller economies such as Luxembourg (351%) and Estonia (83%) occupy some of the higher rankings. This confirms the importance

"Economic diversification is not a new strategy for the Kingdom of Bahrain, having been a core part of our Vision 2030 since its launch in 2008. By encouraging private sector growth, adapting regulations to suit the modern world, and strengthening our educational institutions, Bahrain has remained resilient in the face of global economic challenges, and has enjoyed uninterrupted economic growth for generations despite fluctuations in the price of oil. Today, technology is changing many economies around the world, with entire industries being disrupted. The focus should now be on how we can leverage this digital transformation to uncover new growth opportunities."

- HE Mr. Khalid Al-Rumaihi (CEO, Bahrain Economic Development Board, Bahrain)

of FDI to Bahrain's economy, and the success of the government's FDI strategy.

Further, FDI stocks are dominated by the GCC countries, which account for 66% of stocks on average. When this is further broken down by country, Kuwait and Saudi Arabia are the dominant contributors, with a significant contribution from the UAE, too, versus modest contributions from Oman and Qatar. With the exception of a blip in 2011, GCC FDI stocks are increasing persistently both in absolute terms and as a proportion of the total FDI.

As Al-Ubaydli and Jones (2018) demonstrate, these investments were almost exclusively in the financial sector, and likely account for the sector's robust growth throughout the period. Moreover, the downstream sectors, which include the residual general category of "other services", likely experience augmented growth as a result of the incoming FDI, despite its narrow focus at the entry point. For example, CBB data confirm that in 2018, the Bahrainization rate in the financial sector was around 65%, creating a multiplier effect for investments in that sector: earnings and employment of Bahrainis increase, which in turn lead to greater spending by those Bahrainis. Moreover, many of the banks themselves invest the capital in real estate projects, which are part of the "other" sector.

Bahrain's successful wooing of regional capital was not accidental: in 2000, the EDB was established precisely for this purpose. Arguably its most important contribution has been consolidating the steps necessary to invest in Bahrain, and coordinating between the various governmental organizations to

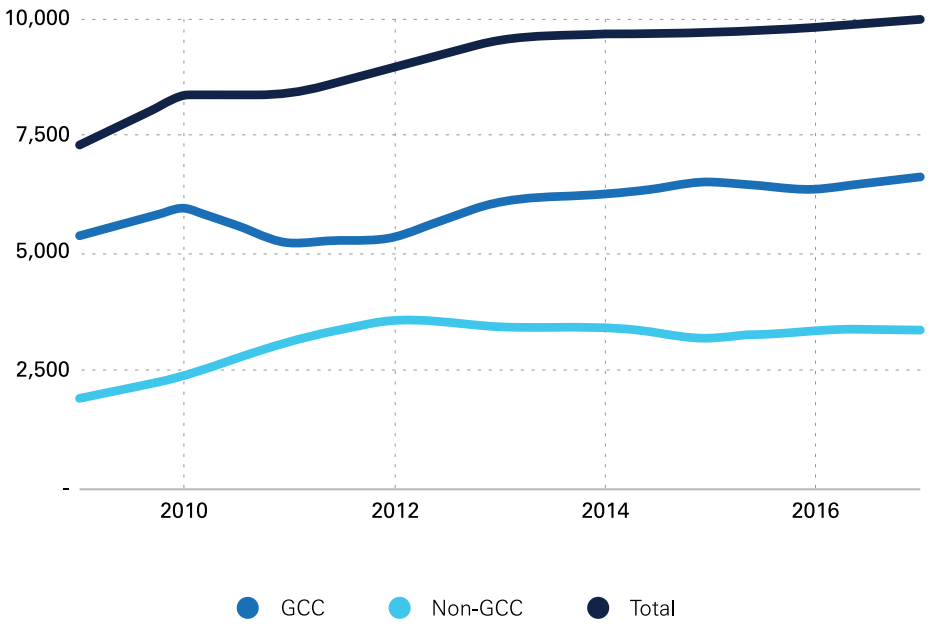

Figure 1.1.1.3.1
FDI Stocks in Bahrain (BD million): GCC versus Non-GCC, 2009-2017

Source: Information and eGovernment Authority

make the process of investing in Bahrain as straightforward as possible. As a result of these efforts, setting up a business in Bahrain across various sectors, particularly in terms of licensing and registration, has significantly been streamlined over the years. The World Bank's "Doing Business" report reflected this improvement, as Bahrain's score increased from 76.2 in 2016 to 87.8 in 2017.

Bahrain's second diversification policy has been its integration with the GCC economy, in the background, while the EDB has been working in the foreground attracting capital. GCC economic integration has created the legal framework necessary for accepting capital from other Gulf states. The GCC customs union was launched in 2003, followed by the single market in 2008. And while the process of implementing these decisions has been imperfect (Abdulghaffar et al., 2013), the data paint a clear picture of substantive economic integration, including the FDI flows that have contributed to Bahrain's economic diversification (Al-Ubaydli, 2018).

The third important policy has been the liberalization of the telecommunications sector, which has been a pivotal step in enabling the growth of the telecommunications and transport component of GDP that has partially displaced oil and gas. In 2002, in the wake of the UK's successful privatization of its telecommunications provider, Bahrain established the Telecommunications Regulatory Authority (TRA), with the EDB playing an important role in promoting the idea. The TRA subsequently oversaw a sequence of liberalization steps, including allowing two foreign providers to enter the market (Zain, a

Kuwaiti company in 2003; and Viva, a Saudi company in 2008). The aforementioned macroeconomic expansion in activity in the sector has been mirrored by a variety of microeconomic indicators, such as mobile phone usage, internet usage, and so on; see chapter 2.2.

Liberalizing the telecommunications sector was not an arbitrary policy. Though it predated the Economic Vision 2030, it can arguably be considered its precursory standard bearer, as it contains all of the Vision's key elements: encouraging enterprise, accountability, access, competition, sustainability, and the government as regulator rather than provider. Other GCC countries have used Bahrain's experiences as a model for their own liberalization efforts in the telecommunications sector, while Bahrain itself is keen to continue liberalizing other sectors based on the lessons it has learned from the TRA.

The fourth important policy has been the

BOX D: EMERGING ECONOMIC SECTORS AND ACCELERATORS

Since the launch of its Economic Vision of 2030, Bahrain has invested in a number of legal and economic frameworks to support a robust entrepreneurship ecosystem. The number of SME startups has increased by 46% in the last three years (International Finance, 2018).

Some of the institutional frameworks that Bahrain has set up to support entrepreneurship include government and semi-governmental agencies such as; the Bahrain Development Bank (BDB), which provides funding and advisory services for start-ups and SMEs; and Tamkeen, which is the semi-governmental agency responsible for ensuring the growth of the private sector as the main engine for economic growth.

Some of the startup incubators and accelerators in Bahrain include the Ebdaa Bank for micro-financing; the Bahrain Fashion Incubator; the Bahrain Business Incubator Centre (BBIC); and the Riyadat program for women entrepreneurs. In addition, there are a number of accelerators specialized in technology-related startups including Bahrain FinTech Bay, C5 Accelerate, CH9, Level Z, Rukn, The Hive, and Brinc.

Another key initiative in the entrepreneurship ecosystem is "Start-up Bahrain," which is a "community initiative made up of startups, corporates, investors, incubators, educational institutions and the Bahrain government to promote startup culture" (StartUp Bahrain, n.d.). All of these factors have indeed helped Bahrain create a strong startup culture. A survey by Ernst and Young found that 70% of Bahraini youth participants were interested to start their own business, a percentage higher than in any other Gulf country (Ernst and Young, 2015, p.25).

Bahrain's economic strategy is based on diversifying its economy by investing in non-oil sectors such as banking and financial services; real estate; tourism; logistics; and information and communication technologies (ICT). Further investments in these emerging economic sectors, and in SME growth will help Bahrain further grow its economy.

establishment of the labor fund, Tamkeen, in 2006. The semi-governmental organization's goal is to make the private sector the key driver of economic development, making it a very unique entity on the global stage. Tamkeen tries to realize this goal via over 300 programs structured around three themes: improving the skills of Bahrainis in the labor market, mostly via financially supporting accredited certification and training programs; increasing productivity in companies operating in the private sector, via financially supporting operational activities, and providing expert advice. Its diverse programs have assisted over 170,000 Bahrainis and businesses.

Given the importance attached to SMEs in the diversification process, Bahrain's SME policies generally fall under the umbrella of the aforementioned diversification policies. The most salient is the establishment of Tamkeen, as much of the organization's efforts is directed toward SMEs, providing prospective business people with much-needed support in a variety of dimensions.

Though Tamkeen is very much a unique organization globally, the SME component of its mission builds upon the groundwork laid by the Bahrain Development Bank (BDB) which was established in 1992. The BDB funds nascent commercial projects and operates various incubators across the country. See **Box D** for a discussion of local incubators.

In terms of the acceleration in commercial registrations shown in **Figure 1.1.1.2.3**, as Kotalaine (2018a) explains, a primary cause has been the general economic recovery that has followed the post-2008 slowdown. But there

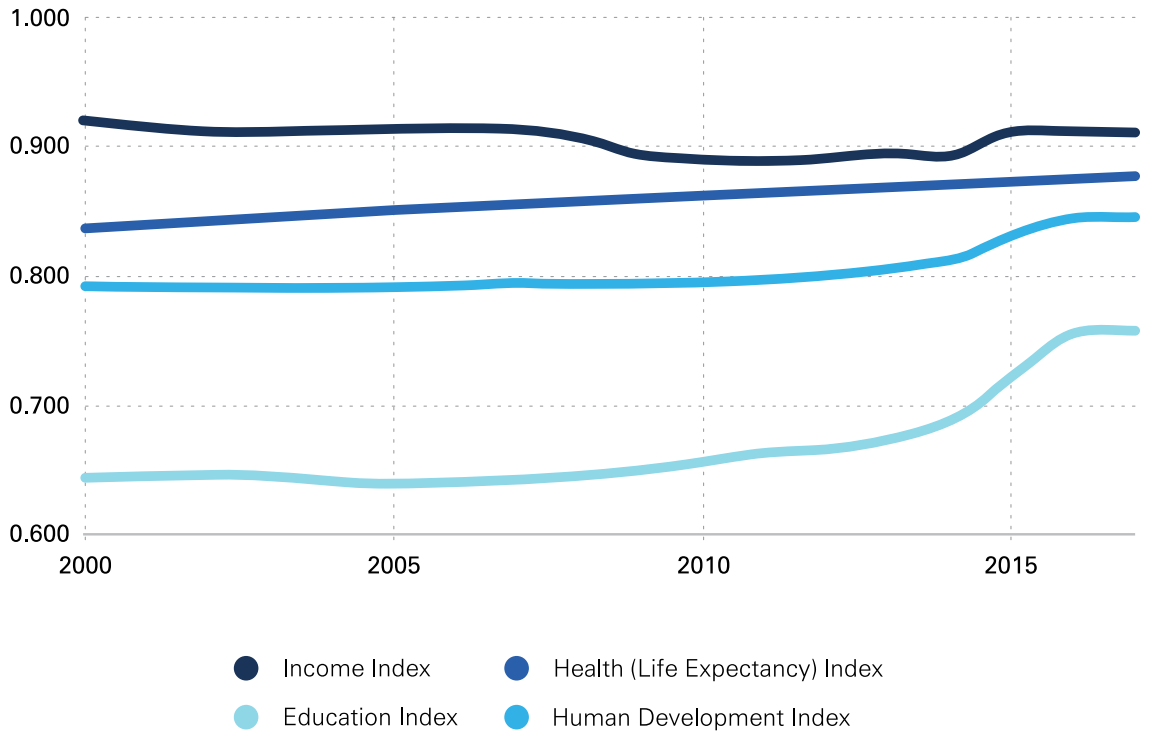

Figure 1.1.1.3.2
Bahrain HDI Components, 2000-2017

Source: UNDP

has also been a role for specific policies, too, such as the electronic, streamlined registration process Sijilat, that was introduced by the Ministry of Industry, Commerce, and Tourism in 2016, and accounts for the sharp rise in registrations that year (see **Box E**). Moreover, authorities have reduced--and in some cases eliminated--minimum capital requirements, which ultimately resulted in lower costs and made it easier to set-up and operate businesses in Bahrain. Amendments in the Commercial Companies Law has also resulted in enabling foreign investors in Bahrain to acquire 100% business ownership across various sectors, including residency, food, real estate activities and many more.

On the financial side, the benefit credit bureau has expanded its coverage to include companies, as opposed to only individual debtors. The subsequent reversion to the mean in 2017 was largely the result of an attempt by the government to eliminate inactive registrations; looking forward, it is likely that the post-2016 level of annual registrations will persistently and substantively exceed the pre-2016 level. As a result of these reforms, the number of active companies in Bahrain increased by 43% (approximately 23,000).

Bahrain's diversification and SME policies have successfully increased the economy's diversification and the contribution of SMEs, but they have had results at the aggregate level, too. **Figure 1.1.1.3.2** shows Bahrain's performance in the major components of its global HDI score.

As can be seen, all indices, including the HDI itself, exhibit an upward trend, with the exception of GNI per capita, which declines. Thus, broadly speaking, government policy in the post-2000 period has contributed to improved quality of life in Bahrain, and not just to a more diversified economy. The report returns to the issue of falling per capita GNI in the next section.

1.1.1.4. More Sophisticated Measures of Diversification

As argued above, the fact that GDP is a quantity index means that using the natural resource sector's contribution to GDP is an imperfect measure of the degree of diversification. Nevertheless, until recently, the absence of an operationalizable alternative has left analysts with little choice but to continue using it as a gauge of diversification.

Cherif and Hasanov (2014) recently proposed a feasible and complementary measure of diversification, which is the relative contributions of natural resources and tradable, non-oil goods to exports. The traditional measure (natural-resource share of GDP) treats total economic activity as the sum of multiple, independent sectors, meaning that the contribution of natural resources can be ascertained by isolating the natural resource sector and comparing its size to that of the remaining sectors. This definition suffers from two important flaws, however.

The first is its modular treatment of the economy: the different sectors that comprise GDP are treated as independent and non-interacting entities. If, for example, 20% of Guinea's GDP is from natural resources, then the implicit interpretation of the conventional measure of diversification is that if this sector were to halve, due to a technical disruption to natural resource production, than Guinea's GDP would contract by 10% only, with the 80% of GDP that is outside the resource sector remaining unaffected.

In fact, the economy's sectors have deep interlinkages. Changes in the volume of activity in the natural resource sector directly affect the remainder of the economy. To see this, note that in Bahrain, as in many other resource-dependent economies, resource revenues

BOX E:
SIJILAT ONLINE REGISTRATION SYSTEM

On December 8, 2016 the Ministry of Industry, Commerce and Tourism introduced 'Sijilat', a one-of-its-kind commercial registration system which is specifically geared towards aspiring Bahraini entrepreneurs. The initiative's primary focus is on supporting and encouraging small, individual projects. Bahraini citizens can choose among around 39 commercial activities without the need to register the property's title office or headquarters. This means that any Bahraini of legal age can start their own business without physically setting up a shop. It provides a legal status for fledgling entrepreneurs or experienced professionals who want to strike out on their own, either in parallel to or instead of being employed as salaried staff in the private or public sector. Applicants should not already own an individual commercial enterprise or a single person company. Directors or members of existing trading companies are also not eligible. However, salaried staff can use 'Sijili' to set up their own business.

The 39 classes of commercial activity include:

- Professional, scientific, and technical activities
- Information and communication activities
- Educational activities
- Leisure, entertainment, and arts activities
- Personal service activities
- Administrative and support service activities
- Simple manufacturing industry
- Trade activities

The system greatly simplifies the procedure of registering a business and as such is likely to serve as a stepping stone if not springboard, especially for home-grown businesses and small, low-capital start-ups. 'Sijili'-issued licenses do not come with a permit to hire foreign laborers. For that to be granted, additional approvals are required from specific licensing bodies, depending on the nature of the business. The new initiative is expected to bring more Bahraini businessmen and women into gainful employment.

accrue to the government, which then recirculates them in the economy via public sector jobs and government projects (including mega-projects). When oil revenues decrease, either due to falling output or falling prices, government expenditure must concomitantly fall, eventually (countermeasures such as government borrowing can provide temporary relief). That means that the sectors reliant on government spending, such as the contractors that deliver the government projects, or the restaurants that serve the public sector workers, will also contract, meaning their absolute contribution to GDP will also fall.

In fact, if the fall in oil revenues is caused exclusively by a fall in the price of oil, then the adverse effect on the economy will materialize only in the non-oil sector due to GDP being an output index (see the discussion in 1.1.1.1).

As a result, the percentage contribution of the natural resource sector to GDP can provide a misleading picture of the effect of declining resource revenues, by systematically understating the impact upon downstream sectors. In the case of Bahrain, as a member of the GCC, this flaw in the measure is amplified by the dependence of its GCC neighbors on

oil. To see this, note that the real estate sector, which has a strong dependence upon GCC capital, is nominally unrelated to the Bahrain oil sector. However, when oil prices fall, Bahrain government projects fall, shrinking the parts of the real estate sector dependent upon Bahraini government spending; and GCC capital tightens, shrinking the parts of the real estate sector dependent upon GCC capital.

The second flaw in the traditional measure of diversification is that it does not talk about the fundamental sources of economic growth, especially the ability of the economy to grow when oil income eventually starts to decline persistently. In particular, two economies might exhibit the same contribution of the natural resource sector to GDP, but could differ vastly in the extent to which the remaining sectors grow independently of activity relating to the natural resource sector. For example, it could be that one of the economies has 80% of GDP coming from high tech industries, while the other has 80% coming from agriculture: the former economy is likely to grow persistently for many years, as high tech industries are dynamic; while the latter is likely to stagnate, as the agriculture sector is not predisposed to technological development, and hence economic growth.

Cherif and Hasanov's (2014) alternative is the contribution of natural resources to exports vis-a-vis the contribution of tradable goods. Their measure is based on a rigorous empirical assessment of the sources of economic growth: they find that in the case of resource-rich countries, the sophistication of exports is a key determinant of the economy's capacity to grow sustainably, which translates to a dynamic tradable exports sector.

There are good theoretical reasons that underlie this empirical regularity. In the modern era, for an economy to grow sustainably, it needs to constantly produce new goods, and to adopt and develop new technologies. Learning-by-doing, which means acquiring the necessary skills by actually performing the associated tasks, is a critical ingredient to this process: at present, humans learn through active execution much better than they do by passively observing or inspecting the work of others. The quickest way to learn how to produce a computer is to be involved in producing computers, not to read schematics and attend lectures.

Moreover, learning from a stagnant set of products ultimately leads to economic decline, as the usefulness of the skills acquired eventually expires once the goods become obsolete. That is why it is important for an economy to constantly produce new goods, as this keeps the knowledge base growing. In the case of small economies, including Bahrain, exploiting learning-by-doing at scale, and developing new products at a satisfactory rate, requires exporting, as the domestic market is simply too small to facilitate the requisite economic growth.

In this context, tradable goods are more important than non-tradables, such as basic services, because at the present stage of global human development, tradables lend themselves to technological progress more than non-tradables. Consider the case of cars: vehicles produced in 2018 are demonstrably superior to those produced as recently as 2008, with increased technological sophistication in virtually all components (suspension, computer, transmission, brakes, electronics, aerodynamics, temperature control, etc.). In contrast, a haircut in 2018 is essentially identical to a haircut in 1988, let alone 2008. To make this comparison even starker, in the USA, an MP3 player in 2018 costs less than a haircut, yet the former has advanced massively during the last 10 years, including a multiple-fold increase in memory, improvements in battery life, decrease in size, increase in screen size and clarity, and so on.
Naturally, some services have improved technologically, too. For example, the Islamic finance sector in Bahrain involves the development of new products that reflect the sector's increasing reach, and its need to deal

with new situations. However, as a general rule of thumb, for the time being, tradable goods are the engine of technological progress.

Another advantage of tradable goods is that they create what economists refer to as "knowledge spillovers": when technology is developed for a new tradable good, it is typically the case that the knowledge is useful for the development of other products, in closely related and in unrelated sectors. For example, when a new water-resistant material is developed for an underwater camera, it is useful in many other products unrelated to cameras, such as computers, vehicles, radios, submarines, and so on. In contrast, developing a new stand-up comedy routine--a technological advance in the entertainment industry--is unlikely to confer any technological benefits upon other services or goods.

Finally, tradable goods typically exhibit greater interlinkages with the rest of the economy, reinforcing the aforementioned knowledge spillovers. When an intermediate product, such as gasoline, is produced more efficiently, many downstream sectors benefit from the cheaper input (the entire transport sector), while upstream sectors benefit from the higher demand when its price falls (crude oil production, gasoline retailing). While similar dynamics exist in services, technological leaps are usually not as dramatic, while the links to other sectors are not as dense and far-reaching, limiting the impact.

To summarize, the contribution of the natural resource sector to GDP--the traditional measure of diversification--is a useful first approximation of the economy on natural resources, but it is relatively uninformative about how well the economy will grow as natural resource income declines. The share of tradable goods in exports, in contrast, is highly predictive of the economy's performance as the contribution of natural resources diminishes. Consequently, while diversification policies that target decreasing the contribution of the natural resource sector to GDP are effective, even more effective are those that target increasing the share of tradable goods in exports.

Cherif and Hasanov (2014) illustrate this point by comparing Bahrain to Singapore. Both exhibit comparable contributions of the mining sector to GDP, whereas Singapore exhibits considerably higher levels of export diversity. **Figure 1.1.1.4.1** exposes the latter. These data are from 2008 due to limitations in data availability in Bahrain at the time the paper was written. The IGA have made 2016 data available, and they indicate a significant diminution in the contribution of oil, and a rising contribution of other sectors such as metals. However, the main message is altered by using more recent data: Bahrain needs to increase its non-oil tradable exports.

Moreover, Cherif and Hasanov (2014) put forward the additional point that Bahrain's non-oil tradable exports are also a suboptimal source of sustainable economic growth. For example, the manufacturing sector is strongly based in aluminum, which happens to be a commodity that has few linkages to the remainder of the Bahrain economy, and that is not conducive to new products.

If Bahrain realizes further gains in its efforts at creating a diverse, dynamic, and globally competitive tradable goods sector, then this will contribute to improving the trajectory of per capita income shown in **Figure 1.1.1.3.2**. Ultimately, the most reliable source of sustainable economic growth is technological progress, and the associated growth in labor productivity across a wide range of sectors. By carefully studying the successes of resource-rich countries such as Norway and Malaysia, and avoiding the mistakes committed by other resource-rich countries such as Indonesia, all of which are covered in detail by Cherif and Hasanov (2014), Bahrain policymakers can refine their diversification policies and ensure a rosier post-oil future for the economy.

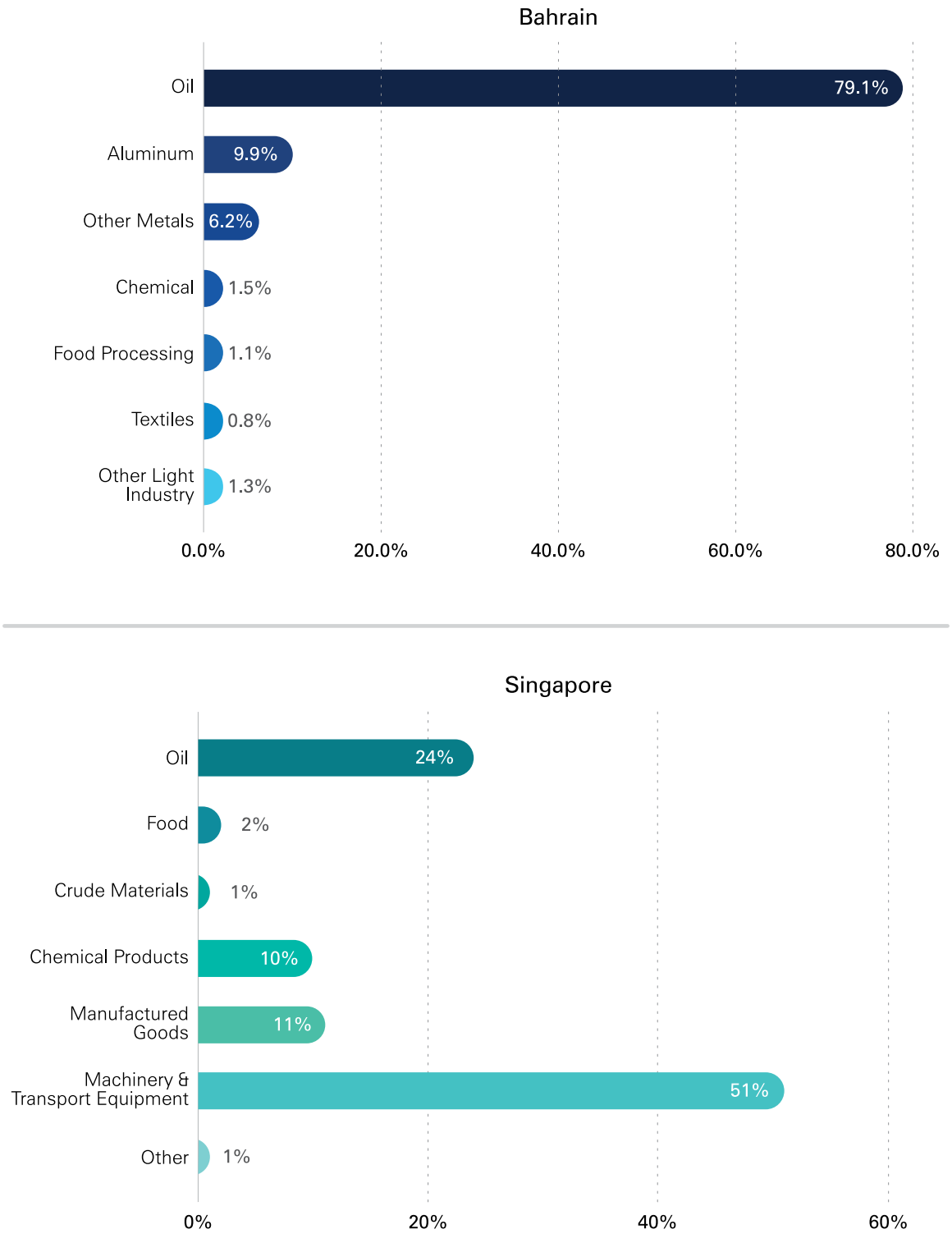

Figure 1.1.1.4.1
Bahrain Goods Exports (Top 50 goods; top figure) and Singapore (All goods; bottom figure), 2008

Source: Cherif and Hasanov (2014)

1.1.2. Recommendations for Bahrain

Bahrain's existing suite of diversification policies have delivered significant successes, both in terms of decreasing the contribution of the oil sector to GDP, and in terms of improving levels of human development. However, there exist potentially fruitful refinements drawn from an analysis of the more sophisticated gauges of diversification. The report explores these policies in this subsection, with the exception of tourism, which merits its own section below.

1.1.2.1. Understanding the Limitations in the Current Model

The key challenge facing Bahrain is the development of a globally-competitive tradable goods sector, which is a form of industrialization. Some economies, such as the UK or Norway, discovered significant natural resources after the development of vibrant tradable goods sectors, allowing policymakers to focus on fine-tuning the economy to minimize any adverse impacts of the natural resource sector on the rest of the economy. In the Gulf countries, including Bahrain, the discovery of significant oil deposits predated the development of a competitive tradable goods sector, and such a sector is yet to materialize at the necessary scale.

Policy suites such as the Economic Vision 2030 certainly represent an important step toward diversifying the economy. As discussed above, they include improvements in the business environment, investment in infrastructure, and the reduction of regulations. The National Assembly (parliament) has also played a role in enacting the reforms necessary to improve the business environment; see **Box F** for more details. As a result, Bahrain today boasts globally competitive infrastructure, and a government bureaucracy that is conducive to the growth of the private sector. For a discussion of Bahrain's ports, see **Box G**.

However, as Cherif and Hasanov (2014) explain, these policies are insufficient for realizing the goal of a dynamic tradable goods sector. In particular, they must be supplemented by additional interventions to ensure that the private sector responds to the improvements in the business environment by spawning a tradable goods sector. As argued above, the benefits of a tradable goods sector are largely in the technological and commercial spillovers to other sectors; these are factors that private businessmen fixated on their bottom line do not take into account when making commercial investment decisions. Moreover, in the case of Bahrain, there are several aspects of the commercial environment that systematically push the private sector away from the toil of establishing a tradable goods sector.

One such factor is the persistent presence of a large public sector. In all economies, the difficulty of measuring productivity in the public sector means that inputs (most notably educational qualifications) and years of service acquire a much larger weight in wage determination. This causes wage compression compared to the private sector, where productivity is usually easier to measure: low-skilled workers in the public sector earn more than they would earn in the private sector, whereas highly effective public sector workers earn less than they would in the private sector.

In the low-skilled range, this hamstrings the private sector in its attempts to hire low-skilled workers, as they have access to an artificially attractive alternative in the public sector. Moreover, it distorts the incentives to acquire

BOX F:
THE NATIONAL ASSEMBLY

In the Kingdom of Bahrain, the government is divided into legislative, executive and judicial powers, exercised in accordance with the constitution. Legislative powers are vested in his Majesty The King and the National Assembly. The National Assembly is formed of two independent chambers, the Upper Consultative (Shura) Council and the Lower Council of Representatives, both with 40 members. The Shura Council is appointed by Royal Order, while members of the Council of Representatives are elected through universal suffrage in a secret and direct election. Running for the lower council is an option available to almost all Bahraini citizens who wish to represent and campaign for the needs of their fellow citizens.

Both councils have power to propose, debate and approve laws. Since the creation of the National Assembly, both councils have contributed to the development and enactment of laws and amendments that are in practice today. This includes amendments to the existing Commercial Companies Law, such as allowing foreign investors to be able to acquire 100 percent business ownership in a multitude of sectors, encouraging investment in Bahrain.

Another example is the amendment that alters all references to 60 days in the Commercial Companies Law to 15. Consequently, it is now possible to complete processes in a quarter of the time that was previously demanded. For example, if a company wanted to change its type, in the past it would have to wait the 60 day period prior to any conversion taking place. Now, as the timeframe is only 15 days, and as changes are processed on the online system, Sijalat, companies can benefit from a more efficient and user friendly experience. Equally, the digitalization of the service means that staff who work with the portal have the opportunity to do so more efficiently. Through supporting such changes, both the upper and lower councils are directly supporting Vision 2030, contributing to the intent to attract businesspersons to invest, generate rewarding jobs, and thus spur economic growth for the Kingdom.

Another key area of action by the National Assembly has been that of protecting the development of women's rights. In 2016, members backed a Royal Decree that removed any legal reservations in relation to the UN Convention on the Elimination of all Forms of Discrimination against Women (CEDAW), which Bahrain joined in 2002. In April 2018, the Shura Council put forward a proposal for a unified family law to protect the interests of all women and children in Bahrain.

skills that are useful for the modern labor market from the education sector, as public sector work is invariably administrative rather than technical, and does not offer an environment conducive to technological progress. In most economies, these adverse consequences of public sector hiring are limited due to the small role of the public sector in the labor market. However, in Bahrain, the public sector plays a large role in the labor market, especially for nationals, amplifying these difficulties, even though the government's intention was to

BOX G: BAHRAIN'S PORTS

Mina Salman port, located a few kilometers south of Manama, used to be Bahrain's main sea port and customs point for all types of containerized and general cargo. It opened its first deep-water wharf in 1962. Cargo throughout increased exponentially in the seventies and led to severe congestion problems at the port. Heavy investments by the government to expand and modernize the site made Mina Salman the first port in the gulf with a dedicated container terminal. Ship-repair facilities were added and Mina Salman played a key role in supporting Aluminum Bahrain (Alba). Nowadays, it handles LCL ("less than container load") shipments and accommodates government as well as private customs warehouses. Mina Salman is the naval base of the Royal Bahrain Naval Force (RBNF) and serves as a base for the British and American navies.

In the late 90s, the government of Bahrain launched a project to manage the ever-growing traffic and serve the needs of the modern maritime industry. A total area of 830 hectares of land was reclaimed on the southeastern part of Muharraq island bordering on the town Al Hidd. A huge industrial area was set up, comprising a 95-hectare cargo distribution free zone for a new port built on 110 hectares (Gateway, 2007).

Khalifa Bin Salman port (KBSP) was opened in 2009 to replace Mina Salman as the main container port. KBSP has roll-on/roll-off ramps and general cargo facilities, mainly handling containers, as well as a passenger terminal for cruise ships. Its deep-water berths and approach channel enable it to dock the largest ocean-going ships. KBSP serves both as a domestic cargo and transshipment hub for the region. The port is designed to handle 1m TEU per year (Kaul, 2018). KBSP is connected to Mina Salman port by the Sheikh Khalifa Bin Salman Causeway Bridge which links the west coast of the Hidd peninsula with the mainland. The Saudi Arabian mainland can be reached by a 30 km drive via the King Fahad Causeway (Ministry of Transportation and Telecommunications, 2018).

A concession agreement between the Government of Bahrain and APM Terminals (a global container terminal operator owned by the Danish business conglomerate Maersk) requires the latter to manage KBSP for 25 years (as of 2009). Mina Salman has been managed by APM Terminals since 2006 (Gateway, 2007). The company is planning an initial public offer (IPO) for the port in 2019. Currently 80% of shares are owned by APMT and the Bahraini Kanoo group holds 20%, but the share offering means APMT's stake will be reduced to 64% (Kaul, 2018).

Sitra Wharf is located south of Manama on Sitra Island, which is connected to the main island by Sitra Causeway (Road Traffic Technology, 2018). It is used for the importation of bulk raw materials by manufacturing industries and the export of manufactured and petrochemical products.

In addition to the ports, Bahrain has over 40 licensed private jetties. They serve a variety of industries including manufacturing, marine infrastructure, construction and shipping, concentrated in Bahrain's main industrial zones, including North Sitra Industrial Area, Mina Salman Industrial Area, Salman Industrial Area and Ras Zuwayad (Ministry of Interior Custom Affairs, 2018)

provide a comfortable standard of living for its citizens via such jobs. Notably, while all GCC governments, including Bahrain, have pledged to roll back public sector hiring, such efforts are yet to be reflected in the gross employment levels in the public sector.

The other, related factor is the availability of low-cost, foreign labor, especially in the low skills category, in volumes that are unseen in industrialized, western economies. While the openness of Bahrain's labor market confers many advantages upon the economy, one of the disadvantages is that it skews the incentives that managers have to develop the sort of labor-saving technologies that characterize a dynamic tradable goods sector that benefits the rest of the economy. Not only is the labor input unusually low in cost; it is also highly flexible, with companies being able to rapidly increase and decrease their payroll of migrant workers without the pressure applied by trade unions and labor market regulators in western economies.

Thus, in western Europe, hiring and laying off workers can be expensive and difficult processes, forcing employers to be creative and technologically innovative when faced with the ups and downs of the business cycle. Employers in Bahrain and the Gulf, in contrast, can expand or reduce their migrant worker payroll at minimal cost due to the fact that their contracts are usually capped at two years; this undermines the incentive to innovate technologically.

These two channels tend to affect the smaller companies operating in the private sector. An additional factor, which is the dominance of government projects, undermines the incentive that the larger conglomerates have to be dynamic. In a conventional economy, government-led investment is limited in scope, meaning that if the private sector seeks high rates of return, it must take risks, including the dynamic tradable goods sector. In contrast, in the GCC, including Bahrain, the government regularly spearheads infrastructure megaprojects. While the intention is certainly good, an inadvertent byproduct is the crowding out of private sector investment in tradable goods: private investors prefer the relative certainty of investing in direct partnership with the government, or indirectly via the high-yield bond offerings used to finance the projects. In effect, the government accidentally skews the risk-return tradeoff faced by the private sector, making the conglomerates that benefit from high levels of liquidity less likely to invest in technologically dynamic industries.

There are some notable exceptions to this dynamic, which arise when the government spearheads megaprojects in tradable goods. Saudi Arabian chemical manufacturing giant, Sabic, is an example, as is Gulf Petrochemicals Industries in Bahrain. However, these projects are invariably in the petrochemicals sector (albeit downstream), limiting their contribution to the economy's diversification efforts.

As a result, outside the petrochemicals sector, Bahrain and the Gulf countries get stuck in a cycle that keeps them behind the technological frontier: in certain sectors, they import technology and low-cost labor; the citizen workforce underinvests in STEM educational qualifications; and private investors prefer to follow the government's lead. Entrepreneurs have little incentive to try to break this cycle. Breaking this cycle requires the government build upon the basic principles laid out in its Economic Vision, which include investing in STEM education, and by changing society's incentive structure.

1.1.2.2. Changing Society's Incentive Structure: Macroscopic Recommendations

Before providing the proposals tailored to Bahrain's circumstances, it is worth reviewing some of the overarching lessons gained from countries such as Indonesia, Malaysia, and Mexico, all of which have attempted to diversify their economies during the last 40 years, with varying degrees of success (Cherif and Hasanov, 2014).

One popular strategy in development economics literature is import-substitution (IS): when the government selects an industry currently dominated by imports, and tries to generate a domestic replacement via a combination of targeted investment and protectionist measures, such as tariffs on foreign imports. Some countries have successfully executed this policy, while for others, it has been an unmitigated disaster, resulting in a bloated, inefficient domestic industry, combined with angry trade partners.
One key determinant of the success of import-substitution policies is the emphasis on exports. Where the government strategy is to fortify the domestic sector through protectionist interventions, and to create an industry that relies on this captive market, the result is usually an inefficient industry reliant on being shielded from foreign competition, and with little to no incentive to innovate.

Successful import substitution usually requires the government to have a long-term strategy that includes creating an industry capable of exporting in a globally competitive market, rather than merely servicing a protected local one. This in turn requires carving out a technological niche and equipping the industry with the ability to continually innovate to maintain its global competitiveness. This typically involves selecting the most basic component of a production chain and then laying plans to scale the value ladder as the industry begins to reap the benefits of learning-by-doing.

Latin America between the 1950s and 1980s provides a good example of an unsuccessful import-substitution strategy (Rodrigues, 2010), due to an excessive emphasis on restricting access to the domestic market to local companies, while failing to expose those same companies to global competition. As has happened in many cases, the local companies exerted much more effort corruptly lobbying for protectionist measures than on developing technologically advanced products that can compete on the global stage. In contrast, Mexico's investment in automobile manufacturing was a well-executed import-substitution strategy, because exporting automobiles competitively was always considered a central plank. Today, it has higher numbers of workers working in automobile production than the USA.

Once the government has absorbed this lesson, and selected its key industries for import substitution, it faces a choice regarding the means for nurturing that industry. The traditional means that there are price distortions: tariffs on foreign imports, or subsidies to domestic production. The experience of the various countries suggests that encouraging supply of key inputs is a superior option to price distortions. That means building high quality infrastructure; providing skilled labor at globally competitive wages; and building local consulting capacity to support the industry as it grows. While Bahrain's Economic Vision reflects an appreciation of this suite of recommendations, the report elaborates on some simple fine-tuning below that may contribute to more favorable outcomes.

A final, overarching lesson concerns the role of low-cost labor. It is tempting--especially in a country with open labor markets like Bahrain--to target labor-intensive manufacturing, in an effort to exploit low-cost labor. However, the experience drawn from many attempts at deploying this strategy suggests that this is not a sustainable source of growth. While it might provide a short-run boost to manufacturing, it ultimately fails because it places insufficient emphasis on technological development

as the source of the industry's competitive advantage. As argued above, tradable goods are important to the economy because they require technological dynamism, which then spills over on to other sectors, spawning a virtuous cycle. Low-cost labor as a foundation for manufacturing leads to a stagnant set of products, capping the benefits that can be extracted from learning-by-doing, and limiting the extent to which other sectors benefit directly and indirectly from the manufacturing sector.

The case of China is instructive. At the outset of its economic transformation into a global manufacturing powerhouse, China benefited hugely from the abundance of low-cost labor domestically, as poverty was prevalent. However, the government took care to emphasize technological dynamism as the ultimate source of its competitive advantage. It wisely selected an export-led growth strategy, forcing its industries to test themselves against the global cutting edge, while launching a parallel strategy of technological enablement. This included producing world class universities capable of technological breakthroughs, tying them with industry, and placing its own leading talent in the world's technological centers to accelerate the process of catching up to the technological frontier. This is why China is today capable of producing advanced electronics, and why Chinese wages have grown massively. Had China sought to exploit low-cost labor exclusively, it would be barely above its initial development level. With these macroscopic recommendations in mind, the report now turns to the recommendations tailored to Bahrain's specific circumstances.

1.1.2.3. Changing Society's Incentive Structure: Bahrain-Specific Recommendations

Some of the GCC-specific recommendations presented in Cherif and Hasanov (2014) have already been adopted by Bahrain through Tamkeen, such as training people in the fields that are required by the private sector, and supporting the salaries of Bahrainis working in the private sector as a way of encouraging employment therein. However, Bahrain should consider deepening its commitment to such policies, especially if rigorous evidence of their success in Bahrain is forthcoming. The report classifies the recommendations into three broad areas: labor market reforms; SME reforms; and reforms to the government's investment strategy.

"Our future prosperity depends upon our ability to continue diversifying our economy. We must always strive to empower the Kingdom's youth with the support needed to start their own businesses through national initiatives, that enable them to contribute to our economic growth."

- Mr. Soubah Al-Zayani
(Chairman, Future Society for Youth, Bahrain)

Starting with labor market reforms, the government must make a stronger commitment to decreasing public sector hiring. **Figure 1.1.2.3.1** shows public sector employment in Bahrain.

As can be seen, 10 years after the launch of the Economic Vision 2030, total public sector employment has grown by 8%. Moreover, for citizens, the growth in public sector employment has been 14%, meaning that the government's efforts at decreasing public sector hiring have been successful primarily for migrant workers (18% decrease). As a percentage of employed Bahrainis, the public sector has consistently accounted for around 35%. This figure is relatively low when compared to other GCC countries, but it remains higher than the corresponding figure for advanced economies, which is approximately 20%.

The budgetary difficulties induced by the 2014 collapse in oil prices have initiated a downward trend in the number of nationals employed by the government. Moreover, since 2013, the government has successfully shifted Bahrainis from the public sector to the private sector. However, the government must consider additional measures as the public sector remains too dominant a force in the labor market. It continues to make it harder for the private sector to attract nationals, and it continues to distort the educational investments of nationals.

A combination of temporary measures such as hiring and salary freezes, and early retirement offers (see the fiscal balance plan in chapter 3), are likely the only way to rectify the previous over-hiring in the public sector. However,

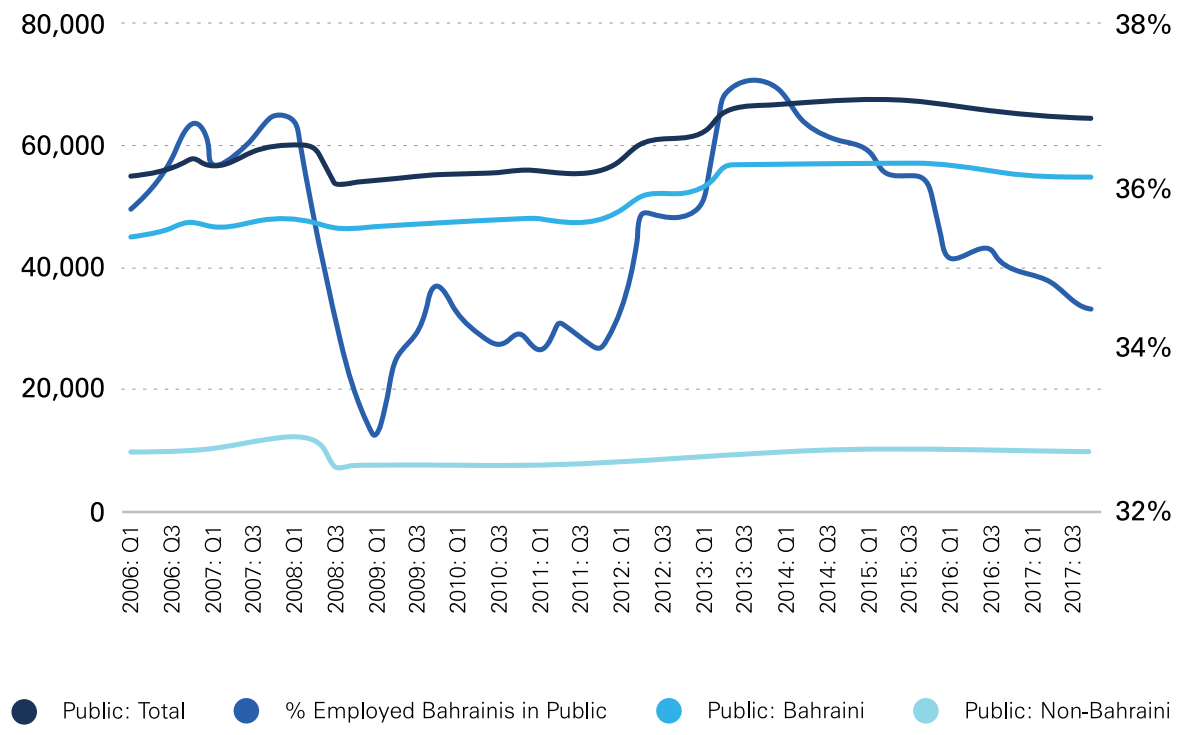

Figure 1.1.2.3.1
Public Sector Employment in Bahrain by Citizenship, 2006-2017

Source: LMRA

especially in the case of early retirement packages, the Civil Service Bureau must balance the goal of decreasing employment with the goal of retaining the experience and talent necessary for important government operations. A homogenous retirement package will be systematically more attractive to more productive workers, as they are the ones who are more likely to secure alternative income sources from the private sector.

Educational and training reforms also fall under the labor market umbrella. The government of Bahrain has, like many, acknowledged the need to improve the quality of its educational system, and founded the Education and Training Quality Authority precisely for that purpose. However, it may be the case that a stronger emphasis on early education is necessary, even if that comes at the expense of standards and secondary and tertiary education. This is because much of the latest education research points to the existence of a significantly higher rate of return to quality improvements in early education vis-a-vis subsequent stages, due to the greater responsiveness of cognitive ability to interventions at ages below eight years (Heckman, 2011).

The role of vocational educational needs to be enhanced, too, as it plays an important role in providing the private sector with the practical skills necessary for many positions. The system used in Belgium and Germany, whereby citizens are given vouchers for trade and professional schools, may be worth emulating, as it helps maintain the benefits of competition between trade schools. Admittedly, Bahrain already features various vocational training options, such as Bahrain Polytechnic, Bahrain Training Institute, and the National Institute for Industrial Training; however, high school graduates continue to exhibit a strong preference for studying at the University of Bahrain and other conventional higher educational institutions, suggesting that the existing system of vocational education may need some fine-tuning. The Bahrain Institute for Banking and Finance--a highly successful, private sector led financial training institute--should be leveraged as a model for other sectors, because creating tailored educational institutions is a key step in developing a comparative advantage in specific sectors.

Part of the aversion to vocational training is surely cultural, as the manual labor that is prevalent in such occupations is often viewed as socially undesirable. The government should, therefore, consider programs that seek to develop more constructive cultural attitudes. These might include social projects that encourage work ethic and entrepreneurship, along with programs that encourage prospective entrepreneurs to decrease their reliance on low-cost foreign labor, and to focus their creative talent instead on contributions to the tradable goods sector.

An additional policy lever that can help redirect Bahraini human capital from the public sector to the dynamic parts of the private sector is income subsidies for workers in the private sector. Such a policy, along with many of the other labor market suggestions above, already exists, with Tamkeen often being at the forefront of such efforts. However, it may be that the government needs to consider committing a greater volume of resources to such nascent programs, to realize returns at a higher scale. This underscores the importance of continually assessing existing policies during and after their execution, using rigorous empirical techniques; Bahrain's limited natural resource income means that it does not have as much leeway to experiment with ineffective policies as some of the other countries in the region.

Successful labor market policies will hopefully create a new wave of willing and competent entrepreneurs and private sector workers,

paving the way for effective SME interventions. In this respect, Kotilaine (2018a) emphasizes an evolutionary approach, based on the need to continue developing the existing SME ecosystem.

One key recommendation is the need to create a greater focus on exports. Part of this should be the explicit inclusion of achieving higher non-oil exports as a strategic goal for the government, to alert businesses, including SMEs, to the importance of the issue. See **Box H** for a discussion of the Alba expansion. Thereafter, the government should consider boosting administrative and legal support on how to export from Bahrain's overseas diplomatic missions and the Ministry of Industry, Commerce, and Tourism. Promising SMEs should be more frequently included in official government delegations that visit potential trade partners, and an export identity similar to the tourism identity should be created. The government may also consider financial support, especially relief from a range of fees that SMEs currently pay, based on the volume of exports.

Tamkeen and other organizations should continue to develop their programs designed to advise SMEs and provide them with useful information (customer service engagement, mentoring programs, etcetera), beyond that associated with building exports. These programs should also act as vehicles for cultural change in the commercial sector. Outdated habits such as the aforementioned fixation on the basic mercantile business model should be ushered out, and in its place, a productivity-centric SME-mindset should be encouraged, and the virtues of tradable

BOX H: ALBA 6

Alba is an illustrative example of how Bahrain was able to invest in a non-oil sector and achieve improvements in production and innovation. Bahrain does not have natural reserves of aluminum, but it was able to develop a world-class aluminum smelter that exports aluminum to international markets.

Alba was established in 1971 as a 120,000 tonnes per annum smelter. Today, it produces more than 971,000 metric tonnes per annum of the highest grade aluminum products including standard and T-ingots, extrusion billets, rolling slab, properzi ingots and molten aluminum (Albasmelter.com, n.d.).

Alba is currently working on an expansion of its production capacity through the "Alba Line 6 Expansion Project," which is expected to be operational by January 2019, and will make Alba the world's largest single-site aluminum smelter (Albasmelter.com, 2018).

Alba has also been able to nationalize most of its workforce, providing opportunities to train and invest in local talent. The total number of employees in the company reached 2,700 in 2017, 84% of which were Bahraini (Albasmelter.com, 2017).

goods extolled. StartUp Bahrain, which is a multi-stakeholder effort in improving the local entrepreneurial climate, was launched in 2017, with a key role being played by the EDB; and the Al Waha Fund of Funds was also launched to help overcome funding challenges. Such efforts need to be built upon and deepened.

Another welcome effort has been the launch of the SMEs development board (SDB), an entity headed by the Minister of Industry, Commerce, and Tourism. The SDB's strategy for the coming five years includes increasing SME contribution to GDP to 40%, increasing the SME contribution to exports to 20%, and increasing the number of Bahrainis working in SMEs to 43,000. The plan focuses on assisting in access to finance, access to the market, streamlining the business environment, fostering the development of skills, and fostering innovation. Authorities must ensure that such efforts receive the requisite backing from the highest levels of government, while those in charge of the initiatives must ensure that they have been tailored to the unique economic environment of Bahrain, rather than simply importing solutions that only work well for western economies. Engaging local stakeholders throughout the design process is a crucial factor in ensuring the success of such programs, as they possess much of the Bahrain-specific knowledge required to tailor policies correctly.

In addition to the aforementioned homegrown efforts in improving the performance of SMEs, there is also an important role for those that fall under the UN umbrella, such as the Enterprise Development and Investment Promotion (EDIP) program. It was launched by the Arab International Center for Entrepreneurship and Investment, and its activities are coordinated by the UNIDO Investment and Technology Promotion Office (ITPO) in Bahrain. In collaboration with the Ministry of Industry, Commerce, and Tourism, and the BDB, the program has provided support to 8,500 Bahraini entrepreneurs; thereby leading to the creation of 2000 new enterprises and the creation of 15,000 jobs. The overwhelming success of EDIP-Bahrain Model has led ITPO/AICEI to implement in 52 countries around the world.

The success of the Sijilat digitization process, and of the electronic government as a whole, should continue be extended in the commercial domain to further assist SMEs. One such successful program is Tamkeen's provision of cloud computing credits to companies, after the decision by Amazon Web Services to use Bahrain as its regional hub. Such efforts should be combined with steps to make the process of SME support more data-driven, meaning that notions of effective and ineffective policies should be updated based on the latest data emerging from the marketplace. In late 2018, the Ministry of Industry, Commerce, and Tourism launched a parallel program known as the eCommerce Academy, designed to work with entrepreneurs to equip them with the essentials of ecommerce. This may play an important role in increasing non-oil exports, as ecommerce helps Bahrainis reach remote markets that might otherwise be inaccessible. Kotilaine (2018a) makes the additional suggestion that Bahrain should consider importing foreign entrepreneurs in much the same manner that it presently imports low-skilled migrant workers and foreign professionals working in specialized fields. He cites Singapore as an example of how such a policy can improve the performance of domestic SMEs and entrepreneurs.

The final area for recommendations is the government's investment strategy. Cherif and Hasanov (2014) emphasize the need for the state to improve its performance as a venture capitalist. This need stems from the private sector's underappreciation of the importance of developing a dynamic tradable goods sector.

GPIC is an example of a highly successful, government-led investment; authorities must consider how to replicate the experience but in other sectors. See **Box I** for more on GPIC.

To build private sector capacity in the domain of strategic, commercial investment, new projects based on a partnership between the private and public sectors should be emphasized. These need to target high value-added sectors that offer opportunities for sustained productivity growth and large knowledge spillovers to other sectors. The ongoing Fintech project is an example of a forward-looking attempt at developing a commercial niche; the report discusses it in greater detail in chapter 2, though it is worth noting that as a service, some of the spillover benefits associated with tradable goods might be absent, underlining the importance of investing in manufacturing, too.

BOX I: GPIC

Founded as a joint venture in 1979, the Gulf Petroleum Industries Company (GPIC) is equally owned by the Government of the Kingdom of Bahrain; Saudi Basic Industries Corporation, Saudi Arabia; and Petrochemical Industries Company, Kuwait. GPIC uses natural gas as a feedstock for the production of fertilizers and petrochemicals, including Ammonia, Urea, and Methanol totaling 1.4 million tonnes each year. Today the company contributes over $271 million annually to the Bahraini economy (GPIC, 2018)

GPIC serves as a success story in training national employees and investing in local talent. At present, 90% of the company's 444 total employees are Bahraini, and the company actively funds scholarships and in-house professional training programs to train its employees. More recently the company has also set up the Equal Opportunities Committee to empower women.

The company has become a local and regional model for sustainable and holistic approaches to industrial refinement and manufacturing. To reduce its green-gas house emissions, GPIC established the region's first Carbon Dioxide Recovery (CDR) plant in 2010. Further, the company's site itself hosts a bird sanctuary, fish farm, palm tree plantations, and a herbal garden as part of its environmental sustainability strategy.

GPIC has a robust Health, Safety and Environmental Management System. In March 2018, the company announced that it had maintained an accident-free record since 2002, and achieved a new record of more than 27 million hours with no accidents (TradeArabia News Service, 2018).

The company has won many accolades in recognition of its high-level performance, and occupational health and safety and environment management systems, including the Sir George Earle Trophy from the Royal Society for Prevention of Accidents (ROSPA) in the UK, and the R.W. Campbell award from the National Safety Council in the United States. It is worth noting that these two awards have never been held jointly by any other company, which shows GPIC's extensive efforts to implement best practices at all levels. The company has also won numerous regional and global awards highlighting its innovation, environmental sustainability, social responsibility and corporate excellence.

One area worthy of consideration is vertical inputs into the oil sector--a policy pursued successfully by the Norwegian government as it sought to maintain its economy's dynamism after the discovery of significant oil deposits. On the manufacturing side, components such as machinery, metals, and pipes constitute products that the government could develop initially for domestic and regional needs, before targeting extra-regional exportation. On the services side, software and consulting both occupy valuable links in the oil production chain.

To attract the requisite domestic and foreign private capital for the realization of its venture capital projects, the government should continue its experiment with special economic zones, and to develop it based on the demonstrated successes both within and beyond the region.

In parallel to these labor market, SME, and investment policies, the Bahrain government must strive to continue expanding its market by negotiating new FTAs, both bilaterally and as part of the GCC bloc. Ultimately, one of the largest impediments to the success of the Bahrain economy is the issue of scale. Small economies in the European Union have overcome this problem through the European single market, while Singapore and Hong Kong have agreements with huge markets such as China. Integrating with the GCC has helped Bahrain significantly but it needs access to bigger markets; the realization of a FTA with the EU would present many great opportunities to the Bahrain economy.

1.2. THE TOURISM INDUSTRY FOR BAHRAIN

1.2.1. Tourism as a Way of Diversifying the Economy

As a first approximation, by virtue of tourism being an activity that is superficially unrelated to the domestic petrochemicals sector, developing the tourism sector constitutes a way of decreasing the Bahrain economy's dependence on oil and gas. In his summary of the existing literature, Al-Ubaydli (2018) draws attention to several other virtues of tourism as a way of diversifying the economy.

First, it is a relatively labor-intensive industry, especially compared to the capital-intensive industries relating to oil and gas, which is important for the case of Bahrain, where creating jobs is central to the Economic Vision. Moreover, tourism can exhibit decent interlinkages with the rest of the economy, allowing growth in tourism to stimulate growth in the related sectors, such as transport and retail trade.

Second, tourism is a globally competitive industry, and it is much harder to create a protected domestic market where operators are shielded from global competition than in the case of agriculture or manufacturing. This helps to ensure that tourism service providers are fixated on developing their service range and quality in an attempt to capture new customers.

Relatedly, since it is an export, tourism brings in foreign currency, which is important to Bahrain because it has a fixed exchange rate with the US dollar. Moreover, Bahrain's small size and limited non-oil natural resources means that the country is extremely dependent upon imports, including essentials such as food and medicine, and so exports are necessary to fund those imports.

Third, tourism is a sector that can be developed without needing fundamental legislative and regulatory reforms. Though Bahrain's business environment is good and improving due to the efforts of the EDB and other organizations, such transformations take many years to bear fruit, and can be costly to implement. In contrast, many of the reforms necessary for boosting tourism are relatively straightforward to execute.

Despite these advantages, there are some disadvantages associated with using the tourism sector as a means of achieving sustainable growth in Bahrain. The first is that, as a service, the scope for technological progress is quite limited; see section 1.1 for a fuller discussion. There is no doubt that the quality of tourism products today are higher

than they were 20 years ago: flights are more accessible and entertaining; culinary products are more varied; attractions feature multimedia integration; but absent are the physical advances typical of the tradable goods sector, such as microprocessors that are multiple orders of magnitude faster, or assembly robots that can cut labor costs drastically New products appear, allowing learning-by-doing benefits to accrue, but not at the same rate as in the tradable goods sector. Tourism should be part of a diverse, dynamic economy, but it cannot be the flagship sector if the goal is sustainable growth.

The second drawback is a related one, which is that even when technological improvements do arise in the tourism sector, they are less likely to exhibit the technology spillovers that Cherif and Hasanov (2014) emphasize as being central to a growing economy.

Finally, in Bahrain, tourism's superficial separation from the oil sector is somewhat misleading. As will be shown below, GCC citizens account for the majority of inbound tourists in Bahrain, and their purchasing power and propensity to travel are strongly linked to the strength of their economies, which is in turn a function of oil prices. This underscores the importance of diversifying Bahrain's tourist base if the goal is genuine diversification of the economy, rather than the superficial diversification associated with different categories in the national accounts.

With these theoretical pros and cons in mind, the report now turns to a description and analysis of Bahrain's tourism sector.

1.2.2. Bahrain's Tourism Sector

Bahrain markets itself as both a family and cultural tourist destination: its primary amenities are hotels, spas, restaurants, shopping malls, family entertainment facilities and water sports facilities. Bahrain is also home to two UNESCO sites ("Qal'at al-Bahrain – Ancient Harbour and Capital of Dilmun" in 2005; and "Pearling: Testimony of an Island Economy" in 2012), archaeological sites, several museums and cultural sites, and traditional marketplaces (souqs); see Al-Ubaydli (2018) for more details on the existing amenities, and see **Box J** for more on the ancient history of Bahrain. Throughout most of the past 40 years, it has been significantly less conservative than neighboring Saudi Arabia, which has made it a popular destination for Saudi Arabians.

1.2.2.1. General Indicators

Al-Ubaydli (2018) presents a comprehensive and detailed set of statistics on the Bahraini tourism sector, drawn from a combination of the World Travel and Tourism Council (WTTC) and the UN's World Tourism Organization (WTO).

The departure point is an examination of the macroeconomic data. When calculating the contribution to GDP, the WTTC distinguishes between the direct and indirect impact. The direct impact is calculated by isolating the GDP generated by industries that deal directly with tourists, including hotels, travel agents, airlines and other passenger transport services, and the activities of restaurant and leisure industries that deal directly with tourists (WTTC, 2018).

The indirect impact is based on three downstream classes of economic activity. First, capital investment by all industries directly involved in travel and tourism. Second, government spending in support of general tourism activity, such as tourism promotion

BOX J: DILMUN

Ancient records mentioned Dilmun as early as 4,000 years ago, but the name had disappeared from mainstream use until about 150 years ago, when Sumerian cuneiform writings were deciphered. Poems tell about a sacred island paradise with an abundance of fresh-water springs and where death and sickness did not exist. It is the place where the epic hero Gilgamesh searched for the secret of eternal life (Lewis, 1984).

Other archaeological finds show that Dilmun was also the name of an important trading hub. The Dilmun civilization covered a vast area comprising the surface of present-day Bahrain, Kuwait and Qatar, as well as the coastal regions of the Eastern Province of Saudi Arabia. Bahrain is nowadays believed to have been the center of this empire.

In the late 1950s, a team of Danish archaeologists discovered settlement sites and made finds that proved the commercial connection to the empires of that time. From the mid-third to the mid-first millennium BC, Dilmun's sailors and merchants set up a hub of far-flung trade networks with commercial ties to ancient sites in Mesopotamia, the coastal areas of Arabia, Persia, Syria and Turkey, and the Indus Valley in South Asia with what is nowadays Afghanistan as its north-eastern limit of expansion (Hirst, 2018). Dilmun's port served as a trading hub for copper ingots and presumably silver, tin, woolen textiles, pearls, dates, olive oil and grains (Moorey, 1994). These items were traded against cotton textiles and domestic fowl, timber and precious woods, ivory, lapis lazuli, beads and gold from the Indus region (Hirst, 2018).

Dilmunite seal stones were found in Mesopotamia as well as the Indus valley and the weights and measures used at Dilmun were identical to those used by the ancient Indus civilization (McIntosh, 2008 and Tews, 2011). The existence of a great number of artesian wells made Dilmun an oasis of fertility with abundant palm-groves and gardens and a supplier of fresh-water for the ships sailing on the trading route (Rausch, Dirks und Trautmann, 2008). Dilmun laid the foundation for a long history as a trading port, with a very active commercial and political presence throughout the entire region.

On the northern tip of the island, at the Qal'at-al-Bahrain (qal'at meaning fortified place), remnants of seven successive levels of settlements, three of these consecutive Dilmun cities, have been unearthed by archaeological expeditions (UNESCO, 2005). The site is a national monument and a UNESCO World Heritage Site. It is testament to the continuous human presence from about 2,300 BC to the 16th century AD (Crawford, 1998). At the Saar heritage site, an Early Dilmun town with remarkably well-preserved buildings has been excavated and offers visitors a glimpse of daily life in Bahrain 4,000 years ago (Smith, 2013). Together with other sites (the "Burial Ensembles of Dilmun and Tylos", the Hamad Town tumuli moundfield and the Barbar temple), they testify to the ancient civilization of Dilmun, potentially a future World Heritage Site (UNESCO, 2001 and UNESCO, 2008).

and visitor information services. Third, supply-chain effects, which are purchases of domestic goods and services by travel and tourism industries as inputs into final tourism (WTTC, 2018).

Note that the WTTC data suffers from several flaws, due in part to the subjective aspects of the definitions. Bahrain now has rigorous, locally-produced data on the tourism sector, but it is unavailable for the earlier part of the sample period (before 2010), and so in the interests of being able to conduct temporal comparisons, the report will use the WTTC data.

Figure 1.2.2.1 shows GDP and employment contributions of tourism in Bahrain for the year 2016 as percentages of total GDP and total employment, compared to the Middle East region, and compared to the world.

These data indicates that Bahrain's tourism sector is already making a substantive contribution to the economy: 4.1% of GDP in direct terms, and 9.9% in indirect terms; 4% of employment in direct terms, and 9.6% in indirect terms. These figures are uniformly higher than for the Middle East, and comparable to the world averages.

As shown in Al-Ubaydli (2018), these figures are quite stable over the period 2005-2016. However, interpreting this as indicative of a static tourism sector would be an error; these figures are shares, and as shown in **Figure 1.1.1.1.5**, all sectors have been growing.

As an illustration, in 2015, according to official government figures, the number of total arrivals in Bahrain was approximately 12 million. The corresponding figure for 2005 was 6 million, implying an average annual growth rate of 6.3% (compared to an average annual population growth rate of 4.4% for the same period). These figures do not correspond exactly to tourists, as not all arrivals represent inbound tourists; however, they give a useful indication

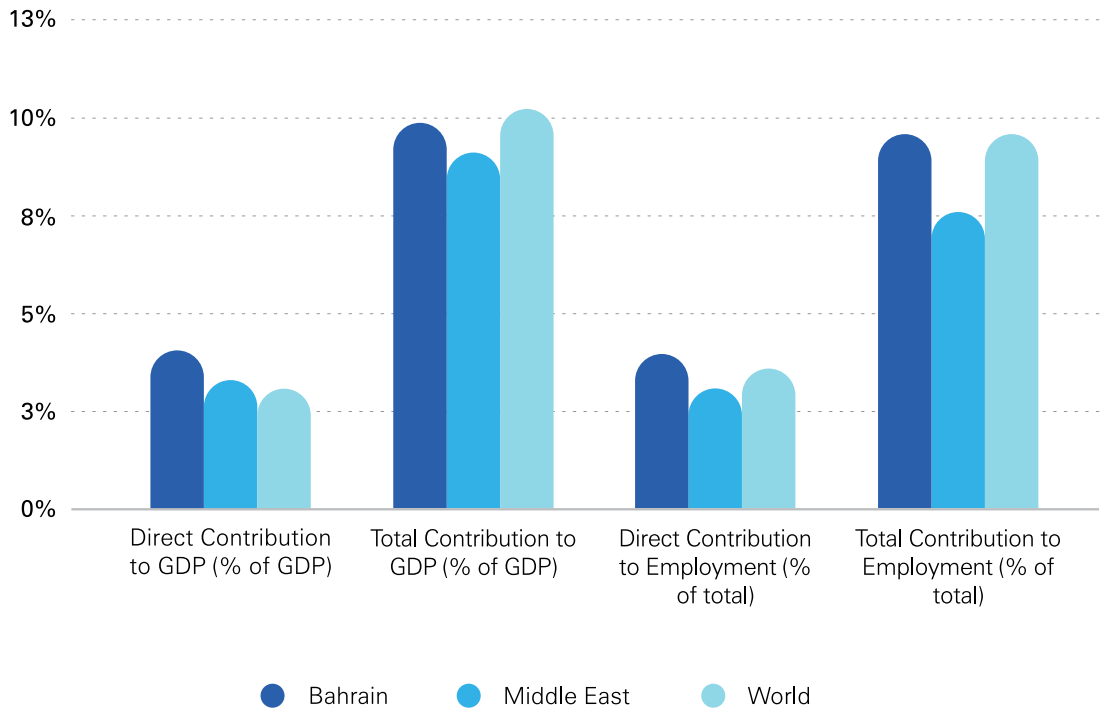

Figure 1.2.2.1
Contribution (%) of Tourism to GDP and Employment, 2016

Source: WTTC via Al-Ubaydli (2018)

of the growth in tourism. Precise tourism data is calculated by the BETA; **Figure 1.2.2.2** explores the visitors' origin by nationality for the year 2017, and by port of entry.

Saudi Arabians accounted for almost 87% of tourists in 2015, while GCC citizens are also the main contributors to the category of Middle Eastern tourists. The prominence of intra-GCC travel is unsurprising in light of the geographical proximity, and the ability of GCC citizens to travel between member states using their personal ID cards. Bahrain's labor market and commercial ties to South Asia likely account for the region's strong representation among visitors.

The most important port of entry was the King Fahd Causeway (89%), reflecting Bahrain's physical and administrative integration with the rest of the GCC, as the 25km causeway represents a highly convenient way of entering Bahrain, especially for those residing in Saudi Arabia's Eastern Province. See **Box K** for more on Bahrain's causeways.

In 2012, 45% of arrivals in Bahrain represented leisure tourists, whereas for non-GCC arrivals, this figure was only 16%, implying that Bahrain has historically not been an established tourist destination for those residing outside the GCC (Karolak, 2014). This point will be expanded upon below. Returning to the issue of the tourism sector's absolute size, further confirmation of its sustained growth can be seen in **Figure 1.2.2.3** (hotel capacity) and **Figure 1.2.2.4** (sundry tourism statistics).

These data confirm that hotels, rooms, beds, the occupancy rate, and the available capacity have all exhibited robust growth throughout the last five years. This growth was partially to satisfy the growing demand: as mentioned above, the number of visitors was increasing

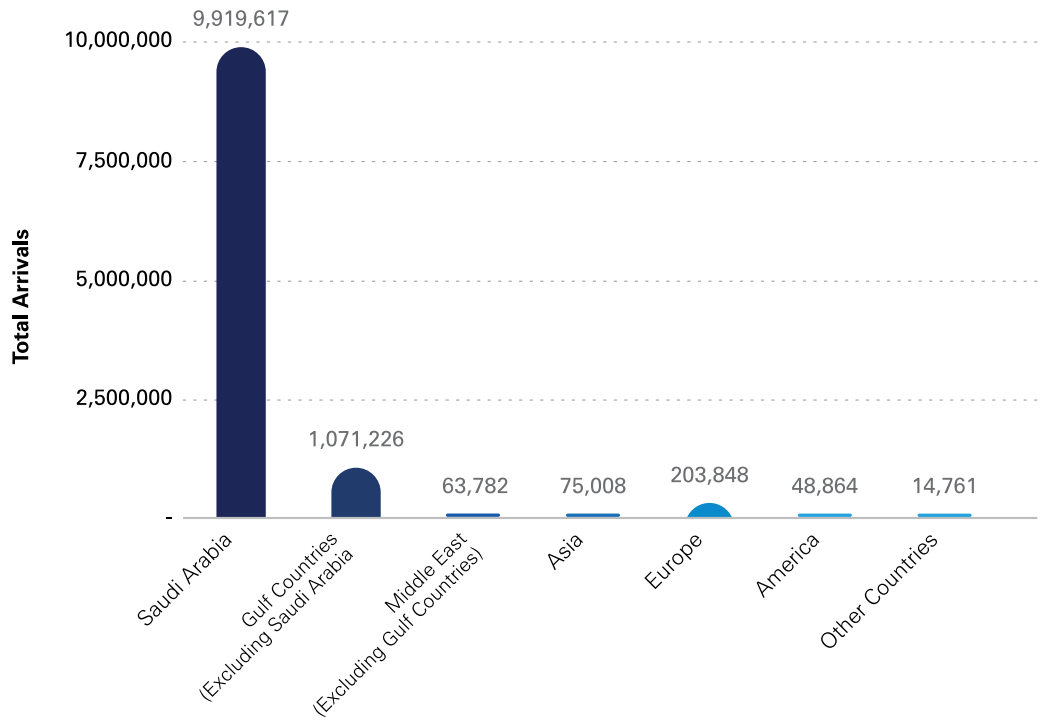

Figure 1.2.2.2
Total Arrivals in Bahrain by Origin, 2015

Source: World Tourism Organization

BOX K:
CAUSEWAYS: KING FAHAD, KING HAMAD, RAIL BRIDGE

The King Fahad Causeway is a four-lane highway between Al-Jasra, west of Manama, in Bahrain and Al-Aziziyyah, located south of Al-Khobar City, in Saudi Arabia. It is 25km long and 25m wide, and comprises five bridges and seven embankments (Globalsecurity.org, 2018). The idea of building a causeway to connect the two countries had been considered since the 1950's. In 1965 it was officially decided to realize the immense project. After 17 years of planning and four years of actual construction the causeway was opened in 1986 (King Fahad Causeway Authority, 2018).

The total cost of the causeway and its ancillaries was $800 million, paid for by Saudi Arabia. Countless workers built the bridge under the guidance of many contractors, the two major firms being Dutch ones with special knowledge and equipment for causeway and bridge building (Alghanim, 2018).

The Border Station is located on the biggest of the embankments, composed of two connected islands designated to Bahrain and Saudi Arabia respectively. In addition to all the buildings necessary to process the border formalities, there are two mosques and two Coast Guard Towers, as well as two tower restaurants. The King Fahad Causeway Authority is also stationed on the embankment. It is an organization set up by Saudi Arabia and Bahrain on equal terms to supervise the managerial, financial and technical business related to the Causeway. About 5,000 people work on the causeway in three shifts, around the clock (Toumi, 2016).

Ever since its inauguration, the authorities have recorded a rise of traffic with an annual increase of about 6% within the recent past. In 2017, more than 10 million vehicles and an average of 70,000 passengers per day crossed the causeway in both directions with a peak of 140,000 passengers on the 13th November 2016. Most commuters are either Saudi Arabian or Bahraini nationals, or Bahrain-based foreigners who work in Saudi Arabia. Family links between Gulf citizens through intermarriage also contribute to the traffic over the causeway (Bahrain News Agency, 2016).

Drivers have to go through both Bahraini and Saudi crossings, which often results in heavy traffic congestion. Preparations are underway to reduce the waiting time by implementing a one-stop concept, allowing drivers to go through only one post for passport control, car clearance and customs. The process for dealing with large vehicles is going to be upgraded as well. In 2017 the measure was initially applied and tested in the VIP lane and is supposed to be extended to cover all other lanes (Toumi, 2017).

The King Fahad Causeway is due to undergo an expansion which will almost double its capacity. Under new engineering designs, the number of arrival lanes is being increased from 17 to 33 allowing crossing the border in less than 20 minutes (venturesonsite.com, 2017).

To reduce traffic on the King Fahad Causeway, Saudi Arabia and Bahrain plan a second connection running parallel to the existing one. The King Hamad Causeway is expected to accommodate passenger trains, freight trains, and vehicles, linking Bahrain's Khalifa bin Salman Port to the Saudi Arabian railway network. A feasibility study estimated the budget at four to five billion dollars. The cost, risks and profits of the project are supposed to be shared by the private and public sectors under a public private partnership (PPP) arrangement over 25-30 years (Asharq Al-Awsat, 2018).

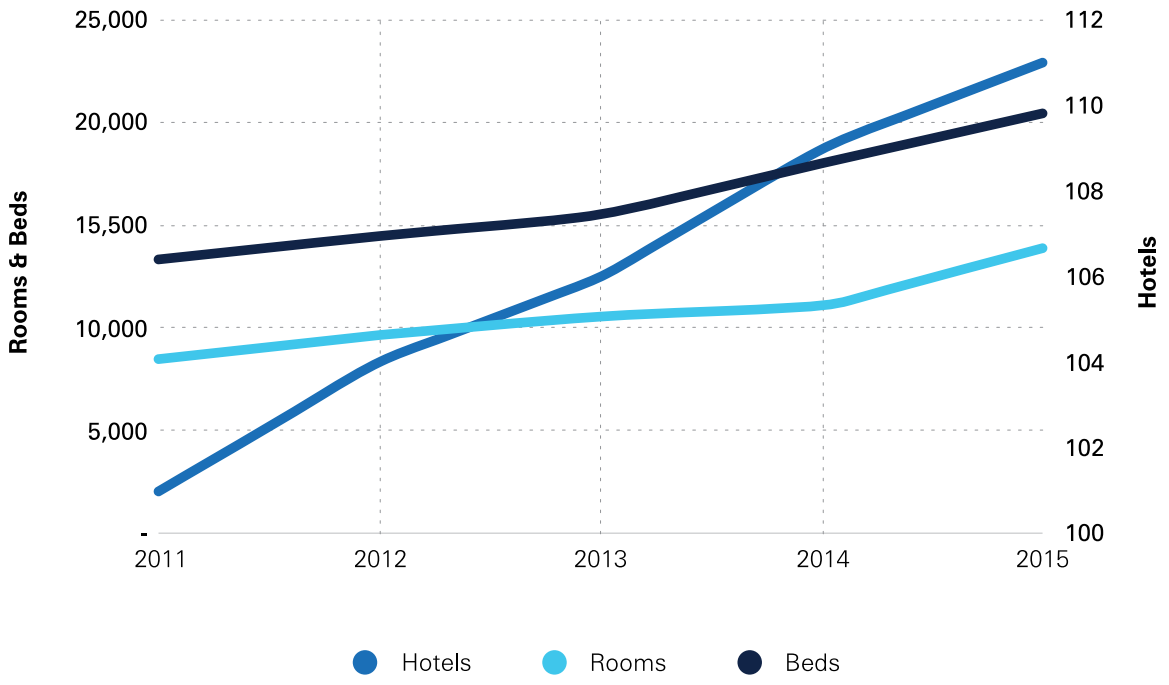

Figure 1.2.2.3
Hotel Capacity in Bahrain, 2011-2015

Source: BTEA, IGA, and World Tourism Organization

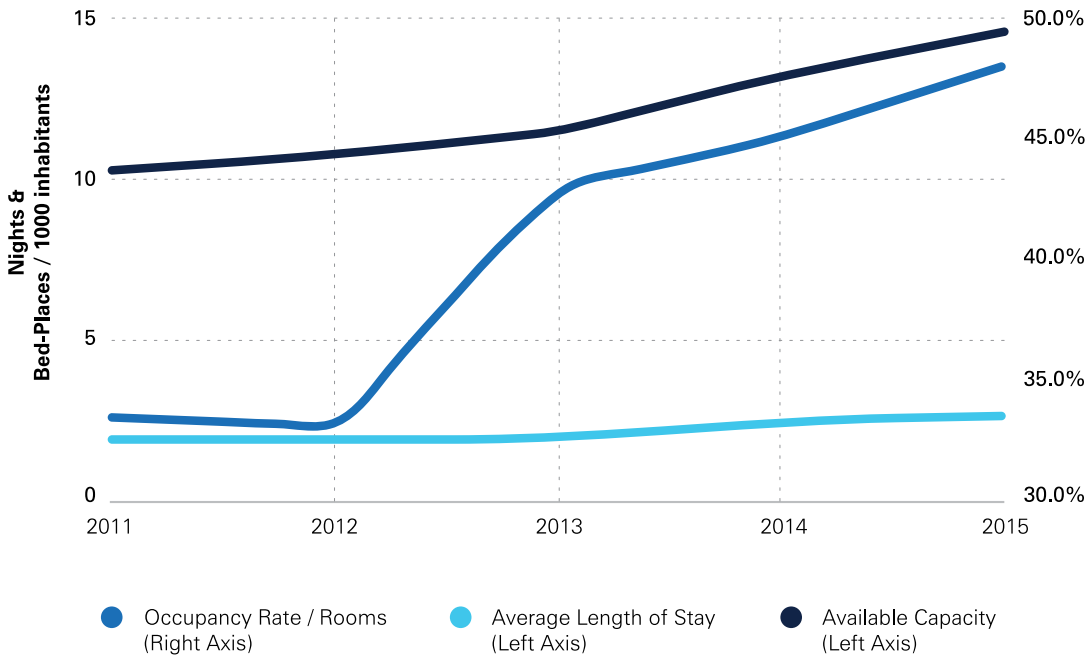

Figure 1.2.2.4
Tourism Statistics for Bahrain, 2011-2015

Source: World Tourism Organization

at an average annual rate of 6.3% in the period after 2005. The exception to this wide-ranging growth in the sector is the average length of stay; some international comparisons are presented in **Figure 1.2.2.5**.

The comparison includes three countries that have similar population levels to Bahrain: Cyprus, Estonia, and Trinidad & Tobago. The latter also has the advantage of being an oil economy. Ecuador is significantly larger population-wise, but is included because it is also an oil economy. The project contributors were unable to find GCC data to use for comparisons.

The data suggest that Bahrain has low average stays: Cyprus, Ecuador, and Trinidad & Tobago all exhibit figures that are at least twice as large. Bahrain performs better than Estonia, but the Baltic state is at a disadvantage touristically due to its lack of warm weather.

The relatively low average stay figure for Bahrain is partially reflective of the fact that Saudis making day trips across the King Fahd Causeway are the median tourist. In this sense, it could be that Bahrain has access to a class of tourists usually unavailable to other countries, meaning that the low figure might not be a cause for concern. The possible reasons are explored below.

As a closing remark, the process of interpreting this microeconomic tourist data, especially the time series, is impeded by the lack of pre-2011 data. This problem will diminish over time as professional data-gathering processes for the tourism sector have been instituted by the relevant authorities (see below).

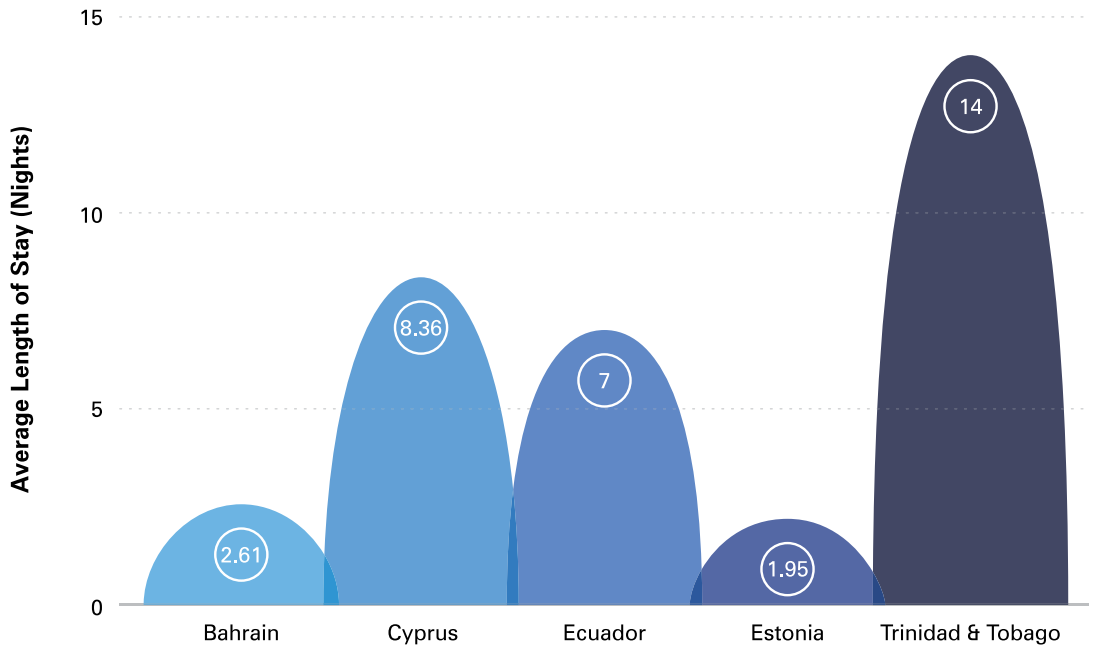

Figure 1.2.2.5
Average Length of Stay (nights), 2015

Source: BTEA, IGA and World Tourism Organization

1.2.2.2. Assessing Bahrain's Fundamentals

The data above confirm Bahrain has a robust tourist industry, but a statistically unremarkable one when compared to the global average. The sector's strengths and weaknesses are described below, starting with the former. Further details are in Al-Ubaydli (2018).

Tourist destinations are typically associated with warm climates, which constitutes Bahrain's most salient tourist amenity. Its climatic advantages are complemented by its convenient geographical proximity to Europe and Asia, as well as its central location in the GCC. However, these factors are common to many other countries, and do not represent the driving force behind Bahrain's attractiveness to foreign visitors.

Bahrain's most important touristic amenities lie within the domain of history and culture. Owing to its acting as a commercial center linking Mesopotamia to the Indus Valley, Bahrain boasts a rich collection of archaeological sites. This allows it to carve out an important niche compared to GCC neighbors, some of which emphasize amenities from the modern era. The role of history and culture in Bahrain's tourism is reinforced by the relatively high representation of citizens in the population (approximately 50% compared to less than 20% in several other GCC states), including a significant proportion that work in the tourism sector and interact with tourists directly.

Bahrain's position on ancient trade routes, and the presence of aquifers, have led to the presence of a stable, non-nomadic population that has been regularly interacting with foreign civilizations since antiquity. As a result, Bahrain has been historically more liberal than many other countries in the region, allowing it to attract tourists from more conservative countries, and to host global events such as the Middle East's first Formula 1 race. Bahrain's history underlies the country's reputation as having a hospitable and friendly culture that is welcoming to foreigners.

Bahrain has also exhibited high levels of peace and political stability during the last two centuries, which is an important distinguishing trait when compared to other countries in the Middle East, many of which have been blighted by prolonged bouts of violent conflict, including civil wars and invasions.

Bahrain's tourism sector also possesses several logistical advantages. It has low labor costs compared to other countries in the region due to the relative quality of homegrown human capital, especially those who can interact with tourists in both Arabic and English. The fact that Bahraini women are willing to work in the tourism sector also helps keep costs lower than some of the other GCC countries, as it means that employers have access to a larger labor pool, and are more likely to be able to procure the necessary talent locally. At the same time, Bahrain retains a cost advantage over countries that have similar per capita income levels, due to the openness of its labor markets to migrant workers at all skill levels.

Bahrain's strengths in its tourist fundamentals are partially offset by a series of weaknesses, though some are currently being addressed by the country's 2016 tourism strategy, which are expanded upon in the next section. The most prominent deficiency in terms of tourism is that historically, people outside the Arab/Islamic world are unaware of the country's existence, let alone its status as an enjoyable tourist destination. This is partially attributable to its small size and population: countries such as Armenia, Equatorial Guinea, and Estonia have comparable population levels and likely suffer the same problem. However, until recently, a major cause was the absence of a systematic effort to promote Bahrain as a tourist destination beyond the Middle East.

The historic lack of cheap flights to Bahrain has reinforced this weakness in its ability to attract tourists.

Bahrain's conventional tourist amenities, such as its hotels, restaurants, and shopping malls, are of good quality by international standards, but the superior wealth of some of Bahrain's GCC neighbors has enabled them to more regularly modernize their own infrastructure, which creates robust competition for prospective tourists. Moreover, despite being an archipelago, the volume of high quality, developed beaches accessible to tourists is limited.

Bahrain must look to develop its non-GCC tourist base, to avoid the conventional issues associated with overdependence on a single source of demand, such as volatility and uncertainty. Moreover, diversification of the tourist base will assist the government in its broader economic diversification efforts since, as mentioned above, demand for travel in the GCC is related to the strength of the economy, and therefore to oil revenues.

Bahrain's labor market both supports (see above) and hinders the tourism sector. While nationals are willing to work in the sector at higher rates than in the remaining GCC countries, they are still quite reluctant to work there due to a variety of cultural reasons, and because of the limited pay. This latter issue is reflective of the limited scope for technological improvements in the sector, as a steady stream of increased productivity is the best way to consistently improve compensation.

A final weakness in Bahrain's tourism sector is that prior to the most recent period, the government has not given tourism policy the weight and support necessary for the tourism sector to reach its potential. The strategy developed post-2015, to be described below, represented a significant evolution in this regard. This is reflected in the comparative lack of detailed tourism data prior to 2015--the sort of data required to measure the performance of various initiatives in the tourism sector.

1.2.2.3. Bahrain's Post-2015 Tourism Strategy

In 2015, two government entities were established by royal decree in an attempt to address some of the aforementioned weaknesses in Bahrain's tourism: the Bahrain Tourism and Exhibitions Authority (BTEA), and the Bahrain Authority for Culture Antiquity (BACA). The report here highlights some of the most important steps taken.

Extensive marketing has been deployed to improve global awareness of Bahrain as a tourist destination. The efforts have included establishing satellite offices in key markets (UK, Russia, China, etc.) to market and attract tourists, with performance-related contracts based on objective indicators. Moreover brand 'Bahrain. Ours. Yours.' was created to capture the spirit of Bahrain's cultural attractiveness. Marketers also attend foreign exhibitions more frequently and systematically than before, and provide up-to-date calendars that keep tourists abreast of the festivals and events in Bahrain.

Authorities have also taken several important steps to facilitate the arrival of tourists. These include the ongoing construction of a new international airport that will expand capacity by almost 50%, and will upgrade the shopping and entertainment facilities that travelers experience when visiting Bahrain. Policymakers have also been working with the Ministry of Interior to tackle congestion on the King Fahd Causeway, which is the primary

source of incoming tourists, and to making visa acquisition easier for tourists both in terms of the bureaucratic steps and the cost.

Bahrain's tourism amenities are undergoing a significant upgrade as part of the new strategic tourism plan (see the website http://www.bahrainexhibitions.com/ for full details). Projects include increasing the number and quality of beaches, transforming the Hawar Islands into a tourist nature resort, building new conference and exhibition facilities, and building new hotels and modernizing existing ones. These latter investments are part of the BTEA's efforts at expanding Bahrain's MICE (meetings, incentives, conferences, and exhibitions) tourism. The BTEA also has a long-term strategy for attracting more cruise ships, a relatively untapped source of tourists, and has been developing the local, traditional handicrafts to cement Bahrain's cultural amenities, and ensure that water-based tourists and others regard Bahrain as a location worthy of visiting.

BACA has also continued its long-term development of the UNESCO-listed "Pearling: Testimony of an Island Economy", and various heritage sites on the island of Muharraq, boosted by Muharraq's designation as the Capital of Islamic Culture in 2018. The National Theater, which was opened in 2012, has allowed traditional programs, including the annual Spring of Culture Festival and the International Music Festival, to improve significantly. The Al-Hidaya school, the first school in the Gulf (see chapter 2.1), is also undergoing renovation that will allow tourists to explore the country's unique educational history.

One of the most important, overarching steps has been the development of a coherent, country-level tourism strategy. The level of inter-organizational cooperation among governmental entities has improved dramatically, with the BTEA, BACA, and the EDB coordinating their efforts. A critical improvement has been the launch of a formal tourism statistics program within the IGA, as this provides authorities with precise feedback on the relative efficacy of Bahrain's tourism projects.

1.2.3. Recommendations for Bahrain

Bahrain's current tourism strategy represents a significant improvement over previous versions, and it contains many of the ingredients necessary for a prosperous tourism sector. However, the global tourism market is highly competitive, and the Middle East region is undergoing considerable changes, creating a need to constantly revise the strategy and to reconsider which areas to focus on. With this in mind, the report presents several recommendations that policymakers may wish to consider going forward.

First, authorities must appreciate the importance of patience and discipline to a successful tourism strategy. Bahrain is trying to transform from a country that most westerners and Asians have never heard of, to one that they seek to visit as a tourist destination. Building the requisite image and reputation takes many years of disciplined investment. The government has taken the right initial steps; now the challenge is to maintain the coherence of tourism policy.

Second, the government must persevere in its efforts at diversifying the tourist base. At present, the dependence upon the GCC is too large; this diminishes the sense of certainty that investors in the tourism sector crave. Moreover, GCC tourism is indirectly dependent

upon oil, undermining the ability of tourism to truly diversify Bahrain's economy. Again, authorities have taken the right first steps, including the seven satellite offices. The next step is to study the data gathered relating to the performance of these offices, and relating to tourists in Bahrain more generally, and to use it to refine the tourism strategy. Flexibility in the deployment of Bahrain's tourism resources is critical.

The Saudi Vision 2030 requires Bahrain to modify its tourism strategy, as one of the Saudi Vision's goals is to redirect Saudi tourists from outside Saudi Arabia to internal Saudi tourism. Moreover, initiatives such as permitting cinemas in Saudi Arabia might undermine demand for Saudi visits to Bahrain to watch films in the cinema. However, it will also potentially mean Saudis enjoy the cinema more, which may well raise aggregate demand for visits to the cinema, including demand by Saudis visiting Bahrain. Allowing Saudi women to drive may introduce a new source of demand, too. Moreover, if Saudi Arabia's reforms are successful, their economy will grow, amplifying demand for tourism. The third recommendation is that Bahraini policymakers ensure they are ready to seize these opportunities, which again requires a flexible and responsive tourism strategy.

1.3. GCC ECONOMIC INTEGRATION AS A VEHICLE FOR DIVERSIFICATION

Chapters 1.1 and 1.2 have made regular reference to the central role that GCC economic integration has played in Bahrain's economy in general, and in its diversification efforts in particular. This section furnishes readers with a more detailed description of the present state of economic integration in the GCC. It also describes some of the key challenges that need to be addressed by Bahrain and the Gulf countries for economic integration to deliver its potential as a vehicle for diversification. It draws heavily from Al-Ubaydli and Jones (2018).

1.3.1. GCC Economic Integration: A Descriptive Overview

1.3.1.1. Formal Steps

The GCC was established in 1981, and shortly thereafter, in 1982, a free trade area was established. Explicit plans for a single market appeared in 2001, and came into effect from the start of 2008. These included an agreement to establish a customs union in 2003. At present, under the GCC single market, each of the six member states is required to treat all GCC citizens equally in the following domains (Al-Kila'i et al. 2009):

1. Travel and residency
2. Employment in government and private sectors
3. Pensions and social insurance
4. The pursuit of professions and trades
5. Engagement in all economic activities, investments and services
6. Real estate ownership
7. Movement of capital
8. Taxation
9. Trading shares and establishing companies
10. Education, health and social services

As will be discussed below, in practice, adherence to these requirements has not been absolute. Nevertheless, there has been significant progress in terms of integrating the economies, as reflected in GCC integration data.

Economic theory unequivocally predicts positive effects of such measures, as firms gain access to a larger market, and at the same time face stiffer competition for that market (Baldwin and Venables, 1995). Larger markets mean an opportunity to exploit economies of scale, which, as discussed above, is critical to the establishment of a vibrant tradable goods sector. Moreover, intensified competition helps force companies to innovate in the pursuit of survival and expanded market share. Economic integration also boosts innovation by making it easier for FDI to act as a conduit for knowledge transfer (Borensztein et al., 1998). Finally, economic integration can help countries realize higher levels of food and water security; see **Box L**.

BOX L: CLIMATE CHANGE, WATER AND FOOD SECURITY

Climate change's multifaceted effects present particular challenges for attaining water and food security in Bahrain. The challenge lies in finding long-term, sustainable, and cost-effective methods to secure continuous access to fresh water as well as safe and affordable food.

In the case of water security, due to the island's arid weather, rare rainfall, and high evaporation rates, water is scarce, and over-reliance on groundwater aquifers has led to their near depletion. While seawater desalination technology provides a solution to the problem of water scarcity, it is an energy-intensive process. The cost of desalination is closely linked to global energy prices as Bahrain continues to use fossil fuel to power its desalination plants. This has a negative environmental impact, including green-gas house emissions that contribute to rising temperatures.

One way to reduce the carbon footprint is to adopt solar-powered desalination plants, a project that neighboring Saudi Arabia is piloting through the Al-Khafji solar-power desalination plant (Water-technology.net, 2018). Substituting fossil fuel with solar power can likely reduce costs and greenhouse gas emissions significantly for water desalination. Other power sources for desalination plants could include wind energy, energy generated through cracking or pyrolysis of urban waste, the fermentation of biomass, and so on. Bahrain and other Gulf countries have the opportunity to invest in research and innovation for water desalination that can have global effects. Another way to increase the efficiency of water use is to implement water subsidy reforms, specifically for agriculture, which makes a modest contribution to the economy despite consuming a significant proportion of the water produced.

Local agriculture is important to food security, however, as it contributes substantially to local food consumption, creating a potential tradeoff between food and water security. According to the World Food Programme (2018), food security relies on three factors: food availability, access and utilization. Current stocks of essential foods such as rice, sugar and flour would be sufficient to cover local needs for a few months. By May 2018 for example, stocks were sufficient for eight months (Ministry Of Industry, Commerce and Tourism, 2018). However, it is important to note that Bahrain imports most of its food, and it is yet to establish a strategic food reserve that would increase its food security in cases of major price disruptions, or economic or environmental crises that would compromise Bahrain's trade-based food security.

1.3.1.2. Statistical Indicators

A comprehensive look at the statistical indicators associated with GCC economic integration is beyond the scope of this chapter (see Al-Ubaydli and Jones (2018) for full coverage). Instead, the report highlights some of the most salient metrics, starting with the most commonly cited one: intra-GCC trade, shown in **Figure 1.3.1.2.1**.

Intra-GCC trade has been growing robustly since 2005, reaching $125 billion in 2014, over three times the 2005 figure. However, this equaled only 8% as a percentage of GCC GDP, compared to around 40% for the EU, meaning that the GCC countries have some way to go before they exhibit the degree of economic interlinkages seen in other single markets. Admittedly, this is partially the result of the homogeneity of the GCC economies, which weakens the opportunities for trade.

For Bahrain, the figures are much higher: in 2014, trade with the GCC equaled 56% of Bahrain's GDP, with most of it coming from Saudi Arabia (import crude oil, export aluminum products) and the UAE (import gold and precious jewels, export aluminum products).

One sector that stands out in terms of GCC economic integration is electricity. In 2001, the six member states jointly created a GCC Interconnection Authority tasked with creating a GCC electricity grid (Al-Asaad, 2009). The project proceeded in three phases which were completed in 2012. **Figure 1.3.1.2.2** describes the usage of the grid by the member states in terms of the number of times it was accessed and the implied value of savings.

At present, the grid functions only to prevent emergency outages; the data in **Figure 1.3.1.2.2** indicates that it has performed this function successfully, consistent with significant levels of economic integration. For example, in 2016, the grid was accessed over 150 times, and this

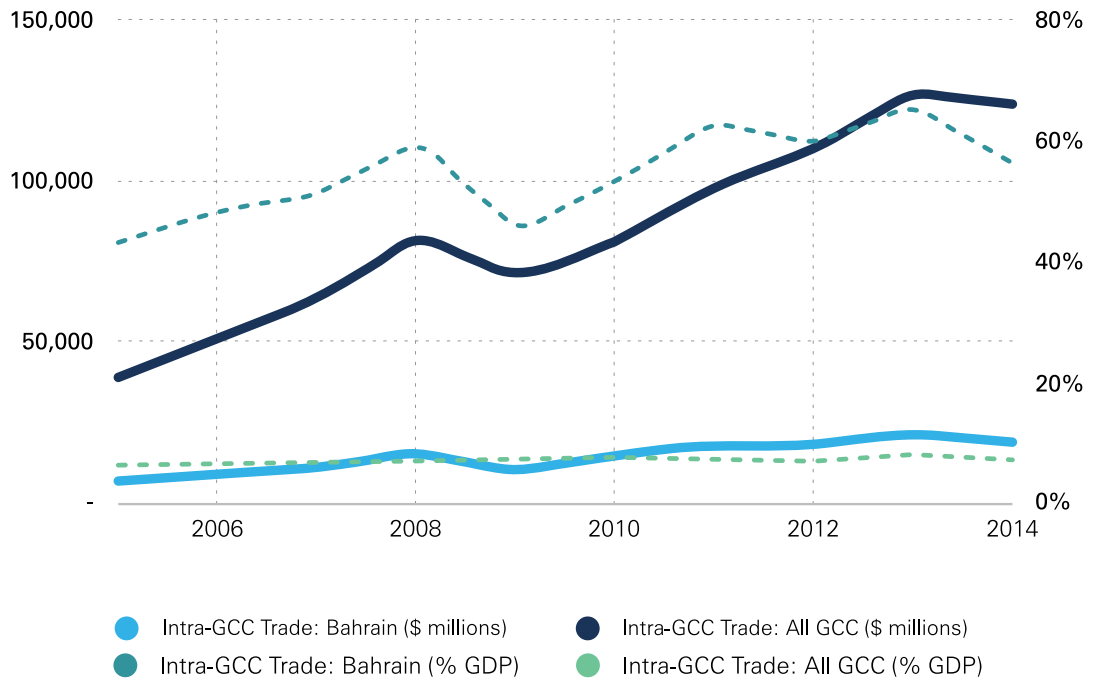

Figure 1.3.1.2.1
Intra-GCC Trade ($ millions/% of GDP), 2005-2014

Source: GCC Secretariat General

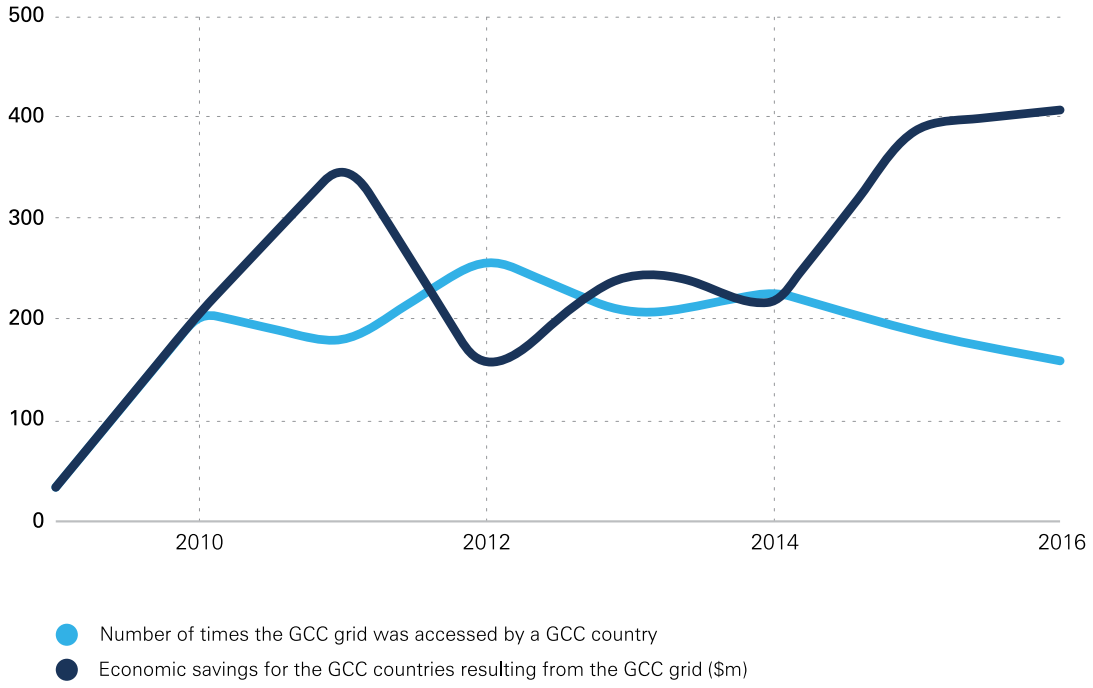

Figure 1.3.1.2.2
GCC Electricity Grid Usage, 2009-2016

Source: GCC Interconnection Authority Annual Report, 2017

generated savings with a value of over $400m. At present, the member states are expanding the grid to allow for electricity trading. In fact, according to the GCCIA 2017 annual report, 2016 saw 734.4 GWh of traded electricity within the GCC.

As discussed in chapter 1.2, Bahrain's tourism sector has benefited greatly from GCC integration. The number of GCC visitors to Bahrain rose from 4.4 million in 2005 to 6.6 million in 2014. Given that Bahrain represents around 2.7% of the GCC population, these data confirms the popularity of travel to and from Bahrain. Throughout the sample period, GCC citizens have been able to travel between GCC member states using only their personal ID card, without the need to carry a passport, decreasing the cost of travel (Al-Kila' et al., 2009).

As mentioned above in chapter 1.1, FDI has played an important role in Bahrain's economic strategy since the turn of the millennium, with an emphasis on GCC FDI (see the discussion accompanying **Figure 1.1.1.3.1**).

The picture emerging from an assessment of the integration statistics is that Bahrain and the GCC have integrated significantly over the last 15 years. Though economic theory (see above) unambiguously argues that the effects are positive and strong, demonstrating the benefits empirically is difficult, especially in a country with limited microeconomic data such as Bahrain, and this is due to a variety of methodological reasons discussed fully in Al-Ubaydli and Jones (2018). The absence of the data neither dilutes nor reverses the firm conclusion, however, that Bahrain has indeed benefited hugely from GCC economic integration, and that access to the GCC single market is central to its diversification plans.

1.3.1.3. Incomplete Integration

The tangible progress in economic integration realized by the GCC has been uneven in certain dimensions. A report by the Federation of GCC Chambers (2012), elucidated upon by Abdulghaffar et al. (2013), draws attention to various interruptions to GCC economic integration that impede the flow of goods, services, and capital between member states. These include fees and extra paperwork being needlessly imposed upon goods and services at the border between two GCC countries; restrictions on the ability of a GCC citizen to operate a business or purchase property in another GCC country; or overt preference for citizens of the home GCC country over other GCC citizens in job postings.

As Abdulghaffar et al. (2013) explains, these interruptions are the result of administrative delays in the process of implementing the accords. As Al-Ubaydli and Jones (2018) argue, both of these reasons can ultimately be traced back to the absence of a formal accountability mechanism that features tangible punishments for non-compliant organizations and states.

To see this, consider the case of the European single market, wherein the European Commission is clearly designated the title of policeman, and is endowed with the power to fine violators. Proceedings are transparent and public. In contrast, in the GCC, violators are detected and informed privately, and the organizations overseeing the process are denied the power to fine or punish violators tangibly. This is due to the GCC being much closer to an intergovernmental forum than a proto-confederation; the bloc's political underpinnings differ significantly from that of the EU, and it is also a significantly younger system.

Nevertheless, the complaints expressed by businesspersons in Bahrain and the rest of the GCC reflect the existence of unrealized gains from economic integration, a matter that policymakers in Bahrain must pay attention to if they want to maximize the likelihood of successfully diversifying the economy.

1.3.2. Recommendations

Access to larger markets is critical to Bahrain's Economic Vision 2030. The easiest way to realize such access is to continue to integrate with the remaining GCC economies, which includes ensuring the proper implementation of existing integration measures.

The first important step to take in this regard is improving the quality of data on economic integration, especially in the commercial domain. As Al-Ubaydli and Jones (2018) explain, the job of businesspeople, researchers, and compliance officers is rendered more difficult by the lack of high quality data. In particular, data on variables such as profit margins, production costs, and price dispersion would be of great value in demonstrating the benefits of economic integration to the relevant stakeholders. Data on violations of GCC single market directives, including the violations' perpetrators, would also assist those seeking to hold violators accountable.

Accountability requires additional steps, however. Al-Ubaydli and Abdulla (2016) discuss how this can be achieved without the need to fundamentally restructure and centralize the GCC, or introduce a formal punishment mechanism, but transparent data on violation is a must. Alternatively, as Al-Ubaydli and Jones (2018) argue, the GCC countries have the option of pursuing a more heavy-handed approach to ensuring compliance that relies on a mixture of sanctions and conditional access to the single market.

Finally, part of the ability of organizations and governments in GCC member states to impede the process of economic integration without facing a backlash from the wider public is that normal citizens struggle to appreciate the benefits of economic integration. Critically, as Caplan (2011) shows, this is a global phenomenon, and not just a GCC-specific one. Therefore, policymakers should be attentive to the need to explain the benefits of GCC integration to their domestic populations. Educational programs at the grassroots level would be a welcome method, and offer Bahrain the opportunity to become a world leader in overcoming the widespread ignorance surrounding the effects of economic integration on living standards.

1.4. SUMMARY AND RECOMMENDATIONS

During the last 15 years, Bahrain has made substantial progress in diversifying the economy, including the development of a robust tourism sector. However, maintaining the rate of progress may require some additional structural reforms and modifications to the existing plans. Widespread public sector employment and the availability of low-cost foreign labor have hamstrung the private sector's capacity to be a dynamic force in the economy. Moreover, there needs to be a greater appreciation of the importance of manufacturing and exporting tradable goods. This requires the government to play a more prominent role as a venture capitalist, and for it to develop a more sophisticated strategy for promoting exports.
With these points in mind, the report presents the following recommendations for policymakers

Recommendation 1.1: Structure public sector hiring in a manner that takes into account the fact that generous and abundant public sector jobs undermine the private sector's job-creation capabilities.

Recommendation 1.2: Ensure that migrant worker policies take into account the fact low-cost foreign labor undermines the incentive to innovate.

Recommendation 1.3: Refrain from deploying import-substitution strategy unless it is with an eye to creating businesses that can eventually compete on global markets.

Recommendation 1.4: Continue to develop early childhood and vocational education, as well as supporting Tamkeen's efforts at building private-sector capacity.

Recommendation 1.5: Adopt the development of non-oil exports, especially tradable goods, as a strategic goal, while securing larger markets for Bahrain via additional free trade agreements.

Recommendation 1.6: Develop the government's role as a strategic venture capitalist.

Recommendation 1.7: Continue to exhibit patience and discipline in the deployment of Bahrain's tourism strategy.

Recommendation 1.8: Continue investing in diversifying the tourist base.

Recommendation 1.9: Evolve Bahrain's tourism strategy to take advantage of the opportunities offered by Saudi Arabia's Vision 2030.

Recommendation 1.10: Improve the quality of economic integration and compliance data made available to researchers and the general public.

Recommendation 1.11: Evolve formal and informal punishment mechanisms to ensure compliance with GCC economic integration directives.

Recommendation 1.12: Exert greater effort at explaining the benefits of GCC integration to the GCC populations.

2. GETTING READY FOR THE ECONOMY OF THE FUTURE

Bahrain is aiming to diversify its economy by transitioning from an oil-based economy to a knowledge-based one. Improving education and encouraging innovation are the main means to accelerate this transition. This chapter explores the main challenges and opportunities in encouraging knowledge production through better education and innovation. The primary background papers are Abdulla (2018) and Bushager (2018).

"Growth in the Kingdom can only be fueled with the right investment in technology coupled with the infinite development of human minds."

- Mr. Abdulaziz Al Jouf
(CEO and Founder, PayTabs, Bahrain)

2.1. CHALLENGES AND OPPORTUNITIES FOR IMPROVED EDUCATION QUALITY AND RELEVANCE

Historically, education across the world was an activity reserved for the elite, and it often featured eccentric or eclectic curricula that bore little in relation to the demands of the labor market. The postwar advent of human capital theory (Becker, 1962) contributed to the transformation of societal views toward education, and today, it is considered both a human right and a crucial milestone in preparation for entry into the labor market, spawning a huge economics literature on the importance of education to economic growth. This section examines Bahrain's primary and secondary education systems, leaving an analysis of the tertiary system to future research.

2.1.1. Overview of the Educational System in Bahrain

Bahrain has the oldest public school system in the GCC. The first public school, Al-Hidaya Al-Khalifiyya was established in 1919. Before formal education was introduced in Bahrain, traditional Islamic education existed where students went to Quranic schools (Kuttab) where they learnt how to read and understand the Quran. In 1926, a second school for boys was established, in 1928 the first girls' school was established, and in 1936 the first industrial school was established. Some of Bahrain's earliest higher education institutions include a nursing school which opened to students in 1959, a teachers' institute opened in 1966 and the Gulf Polytechnic which started operations in 1968.

Today, Bahrain has more than 210 public and 70 private schools, with more than 14,000 teachers working in public schools (Abdulla,

2018). Education in Bahrain is compulsory for grades 1-9 (from the age of 6 to 14). Public education is offered free of cost for all residents, including non-Bahrainis. Furthermore, text books and transportation to and from school is also offered to students free of charge.

The educational system in Bahrain is divided into two levels: basic education from grades 1-9 (from the age of 6 to 14), and secondary education from grade 10-12 (age 15-17). Basic education has two levels: primary and intermediate. The primary level is further divided into the first cycle and the second cycle. In the first cycle of the primary level (grades 1-3), one teacher teaches all the subjects except for English, design and technology, music and physical education. As of the second cycle (grades 4-6) a different teacher is assigned to each subject.

Students at the basic level are assessed through both formative and summative assessments. Formative assessments include:

1. **Observation:** the teacher observes the students' behavior in class in order to assess their progress.

2. **Projects:** Assignments that are practical in nature aimed at solving a problem or addressing important issues, which are undertaken individually or in groups, and which are presented in order to develop the students' communication and presentation skills

3. **Reports:** written analytical assignments of around 300 words, aimed at helping students to describe, analyze, and organize ideas, and to improve their skills in written communication.

4. **Quizzes:** short tests of around 15 minutes undertaken at least five times during the semester, with questions set up by the teacher

5. **Portfolio:** comprehensive tracking of an individual student's overall work conducted both individually and as part of a team, thus assessing the progress in a student's performance over time

Summative assessments take place in two forms: semi-final exams undertaken in the middle of the semester for every subject; and final exams undertaken at the end of the semester for every subject.

The secondary education level aims to prepare the student for higher education and for the labor market. At this level students are provided with greater flexibility and more choice in order to tailor their respective coursework to their individual preferences and needs.

Students in secondary schools are evaluated based on formative and internal evaluations conducted by the school, and external evaluations. Formative evaluation comprises 30% of the final grade and is based on oral and written tests conducted by the teacher throughout the semester; while internal evaluation is conducted through semi-final exams set by the school in the middle of the semester, which account for 20% of the students' final grade. The remaining 50% of a student's grade is based on final, end-of-semester exams which are set up by the Ministry of Education. These national exams are set by committees which include experienced specialists and educators, such as curriculum experts and senior teachers. This committee is also responsible for developing a diagnostic list for each school that shows strengths and weaknesses, examines steps to address the weaknesses, and monitors the implementation of those steps until the school reaches the desired level.

The curriculum for all educational levels and all subjects in public schools is set up by the Directorate of Curricula under the Ministry of Education. After the curriculum is set up by the

Directorate of Curricula it is shared with senior teachers, university instructors, and some private institutions and ministries. Then the recommendations of all stakeholders are taken into consideration and a revised curriculum is produced. The majority of textbooks together with accompanying student guides and student exercise books used in public schools are produced directly by the Ministry of Education while a minority are outsourced.

In addition to public schools, private schools offer either their own national curricula or foreign curricula such as the IB diploma program and the UK A-levels program, which must be approved by the Ministry of Education. These schools choose their own study plans, teachers and textbooks. However, the Directorate of Private Education in the Ministry of Education supervises the teaching of Arabic, Islamic Studies and Bahrain History and Geography studies. The Ministry of Education provides private schools with free textbooks in those subjects. Additionally, students can choose to attend religious institutes instead of following the path of basic and secondary education offered by public schools. Religious institutes are managed by the Ministry of Education and offer a curriculum that focuses on Islamic studies in addition to other subjects such as Arabic, English, Mathematics, Science, Social Studies, Economics, Philosophy, Physical Education and Art.

2.1.2. Domestic Educational Performance

Bahrain has achieved significant improvements in education as reflected by different indicators. According to the Ministry of Education Bahrain has the following leading indicators:

- An adult literacy rate of 97.5%
- 100% enrollment in primary schools
- A drop-out rate of less than 0.4%

In the World Economic Forum (WEF) Global Competitiveness Report 2017-2018, Bahrain ranked 24th in the quality of the education system, and 31st in the quality of math and science education.

According to data from the Information and eGovernment Authority (IGA), the ratio of students to teachers in 2015 was 9 in public schools and 14 in private schools. This figure is relatively low when compared to the world average, which reflects the abundance of human resources in schools in Bahrain. A more important ratio is class size, where a small class size is associated with better learning outcomes (Abdulla, 2018). Data from the MOE also show that in 2015, the number of students per class was 29 in public schools, and 24 in private schools, both of which are closer to the OECD average class size, which is around 25 students per class. The discrepancy between the number of students per teacher and the number of students per class might be due to teachers having few teaching hours per day.

Additionally, significant levels of gender equality have been achieved in the educational system in Bahrain, as reflected in the enrolment rates of females to males. According to IGA data from the year 2015:

- In public schools the ratio of females to males was 103 in primary schools, 96 in intermediate schools, and 104 in upper secondary schools.

- In private schools the ratio of females to males was 86 in primary schools, 84 in intermediate schools, and 83 in upper secondary schools.

Furthermore, girls' performance at all levels of school education is significantly higher

than boys' as reflected in their performance in various assessments such as the national examinations and in TIMSS.

Educational laws in Bahrain focus on providing universal and equitable education to all students in Bahrain. Therefore the educational system not only contributes to gender equality but also accommodates for student with different needs such as the gifted, high achievers, and those with special needs, including those with sensory, physical and/or mild intellectual disabilities who are able to learn and engage in the social environment. Such students are integrated within the school: sometimes in special classes for them, and other times they are integrated with other students in order to help them gain interpersonal skills and interact with society.

"Human capital development is the cornerstone for every developed country. With various government and private initiatives, Bahrain is at the regional forefront of utilizing local experienced, qualified, and trained subject matter experts who, with the right mentorship, can reach new feats of achievement and success. The main aspect to further these initiatives is continual improvement and learning, with a consistent method of transforming young local talent into future leaders and entrepreneurs, who are able to cope with the rapidly changing business world."

- Ms. Nada Alawi
(Founder and Creative Director, Annada, Bahrain)

Integrated education also helps other students to interact with students with special needs which makes them more tolerant and empathetic. However, in some cases students with special needs need extra care and resources or specially designed curricula, therefore specialized institutions supported by the Ministry of Education are available for those with mental disabilities, aural impairments, visual impairments, and speech difficulties. For example the Saudi-Bahraini Institute for the Blind is an institute for the visually impaired which teaches the same curriculum taught in public schools. Additionally it provides social and psychological support for its students. When students in the Saudi-Bahraini institute complete their basic education, they are integrated into normal public primary, intermediate and secondary schools. Students with special needs in public schools and in the Saudi-Bahrain institute are also provided with assistive devices and tools in order to create a supportive and accessible classroom environment for all students.

Furthermore, Bahrain has a Gifted Student Center which accommodates those students who continuously outperform their peers

in all educational stages, or for those with special talents. The goal of the Center is to discover and develop various talents to the maximum extent possible, including the skills of those with special needs, and to provide comprehensive and continuous care for students. It provides enriching programs, quality projects and psychological counseling in cooperation with specialized individuals and institutions. According to the statistics of the Center, for the academic year 2015/2016, the number of gifted students enrolled in the center was 2,926 students, in addition to 100 students with special needs. Though not part of the public school system, it is worth acknowledging Bayan School's recent success in a global competition on renewable energy; **Box M** contains further details.

Bahrain realized from an early stage the need for a modern educational system, and to continuously upgrade the educational system according to new scientific and technological developments. Therefore the King Hamad Schools for the Future program was introduced in 2005, which aims to develop the comprehensive use of information and communication technology (ICT) in education in Bahrain, including connecting all schools to the internet, and introducing the concept of e-Learning. It aims to develop an educational infrastructure that supports digital empowerment in education, and encourages schools to be more innovative.

The educational portal was initiated following the program's launch. It now provides various online educational services for all school students, and enables communication between faculty members, students and parents. The education portal uses different types of software to facilitate learning. It also

BOX M:
BAYAN SCHOOL'S WINNING ENERGY PROJECT

Adopting renewable sustainable energy practices is both a bottom-up and top-down process. As Bahrain continues to pursue national plans and strategies, projects such as this one help mainstream sustainable practices, and raise awareness among students and youth who will become the next generation of decision makers and form the backbone of the workforce as well as the country's consumers. Transitioning to a sustainable lifestyle, or production and consumption model requires a long-term behavior change.

In January 2018, Bayan School in Bahrain won the "Zayed Future Energy Prize," in the category of high schools based in Asia (The Daily Tribune, 2018). Not only was the school able to create a model for energy efficiency and renewable energy in Bahrain through its "Project Ecolab360," (Bahbayaneco.org, 2018) but winning this award has made the school a source of inspiration for schools in the whole region. The Ecolab360 is an educational lab for students to test and promote environmentally sustainable practices for water, energy and waste management. Students conducted a series of feasibility studies and put forward project proposals that include a 50kW solar PV system, 1kW wind turbine, a 25kW/192kWh battery storage system, a greywater recycling system (25-30k liters/month), and food waste recycling (6 tons/year) (The Daily Tribune, 2018).

includes a variety of digital content, including online textbooks and interactive books. The Ministry of Education has established virtual labs in schools which use simulation systems which help students simulate science and mathematics projects.

To support the development of the use of ICT in education worldwide, Bahrain has initiated and funded the UNESCO King Hamad Bin Isa Al-Khalifa ICT in Education Prize, which encourages the development of innovations and technologies that support developing and increasing access to high quality education. Participants from all over the world compete for the prize, which is considered the most prestigious international award given to acknowledge excellence in the use of ICT in education around the world. Each year two projects are chosen, and the winning competitors receive a diploma and $25,000.

A number of projects in digital empowerment in education have been undertaken such as capacity building of teacher and school staff through evaluating, monitoring, supporting and training, including online training of school faculty. **Table 2.1.2.1** shows the number of training programs, training hours and trainees trained by the ministry of education as part of the King Hamad Schools of the Future program.

Bahrain has strong collaborations with the International Society for Technology in Education (ISTE), which offers professional learning and training in the use of technology in education. Bahrain has signed a contract with ISTE to train teachers in Bahrain. Bahrain is reviewing content and updating the curriculum according to ISTE standards. In addition, Bahrain has been chosen as the official ISTE standards training center for the GCC states. These different teacher training efforts are

Category	Number of Training programs	Number of Training hours	Number of Trainees
School Principals	35	525	454
Technology Specialists	510	2,278	4,391
Teachers	341	1,877	17,007
Students	88	932	26,351
Educational Specialist	71	876	858
Technicians	65	351	173
Others	25	450	55

Table 2.1.2.1
Training Program Statistics for Ministry of Education, 2018

Source: Ministry of Education via Abdulla (2018)

much needed in Bahrain to improve the quality of teachers in Bahrain.

Bahrain has strict regulations for the academic qualifications of teachers. All teachers in the first cycle of basic education (Grades 1 to 3), are required to hold a bachelor's degree in education. Teachers at the second cycle (Grade 4-6) should have a diploma in education together with a bachelor's degree in one of a variety of directly relevant disciplines. In intermediate and secondary schools, teachers are required to have a bachelor's degree in the same subject they are teaching and a postgraduate diploma in education. Additionally, all school principals should have an academic qualification in school administration.

Furthermore in 2008, Bahrain Teachers College (BTC) was established as part of the University of Bahrain, in order to equip teachers with the required skills and to improve the quality of teachers in Bahrain. All students at the BTC are employed by the ministry of education and experience teaching in schools during their studies. Even though significant efforts have been taking place to improve the quality of teachers in Bahrain, there remain opportunities for further improvement.

In order to evaluate the performance of schools in Bahrain, the Education and Training Quality Authority (BQA) was established in 2008. BQA reviews the quality of schools and teaching, and assesses each school on a four point scale: 'outstanding', 'good', 'satisfactory', or 'inadequate'. The BQA also conducts national examinations to evaluate the performance of students. Abdulla (2018) provides a summary of the latest BQA results and the following analysis is taken directly from her paper. **Figure 2.1.2.1** provides an overview

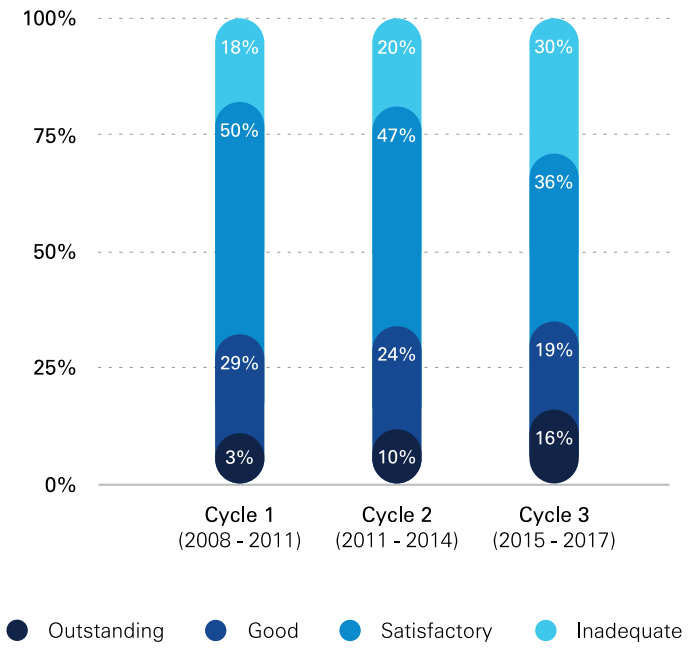

Figure 2.1.2.1
Overall Effectiveness of Government Schools (grade), 2008-2017

Source: BQA via Abdulla (2018)

of the effectiveness of government schools according to BQA assessment.

The effectiveness of 122 government schools reviewed has been over three cycles: cycle 1 (2008-2011), cycle 2 (2011-2014), and cycle 3 (2015-2017). Notably, the percentage of outstanding government schools increased. On the other hand, the percentage of schools which are inadequate also increased, while there is also a reduction in the percentage of schools that are good or satisfactory.

Figure 2.1.2.2 shows the overall effectiveness of private schools where 41 private schools were evaluated over two cycles: cycle 1 (2011-2014) and cycle 2 (2015-2017).

A more positive trend is found in private schools when compared to public schools, where the percentage of outstanding and good schools increased and the percentage of inadequate schools decreased. However, for both private and public schools, the share of outstanding and good schools is less than 40% while the majority of schools are either inadequate or satisfactory.

All government schools are mandated to participate in the national examinations conducted by BQA, while private schools can participate on a voluntary basis. Students are examined in the following subjects: Arabic, English, mathematics and science, and results are measured on a scale from 0.0 to 8.0. **Figures 2.1.2.3** and **2.1.2.4** show the results.

These data show declining results for grades 3 and 6. This decline may be due to loss of interest over time in answering the national examinations paper, since results do not count toward the final grade of the students.

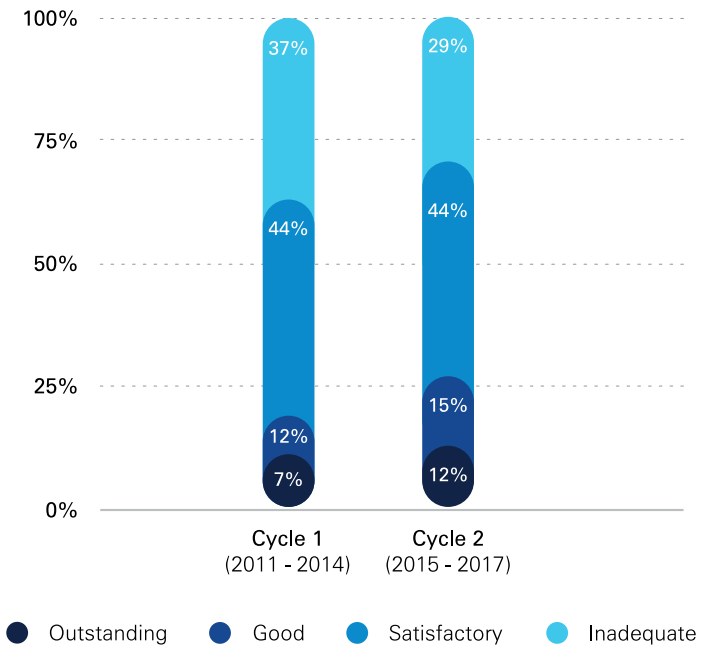

Figure 2.1.2.2
Overall Effectiveness of Private Schools (grade), 2011-2017

Source: BQA via Abdulla (2018)

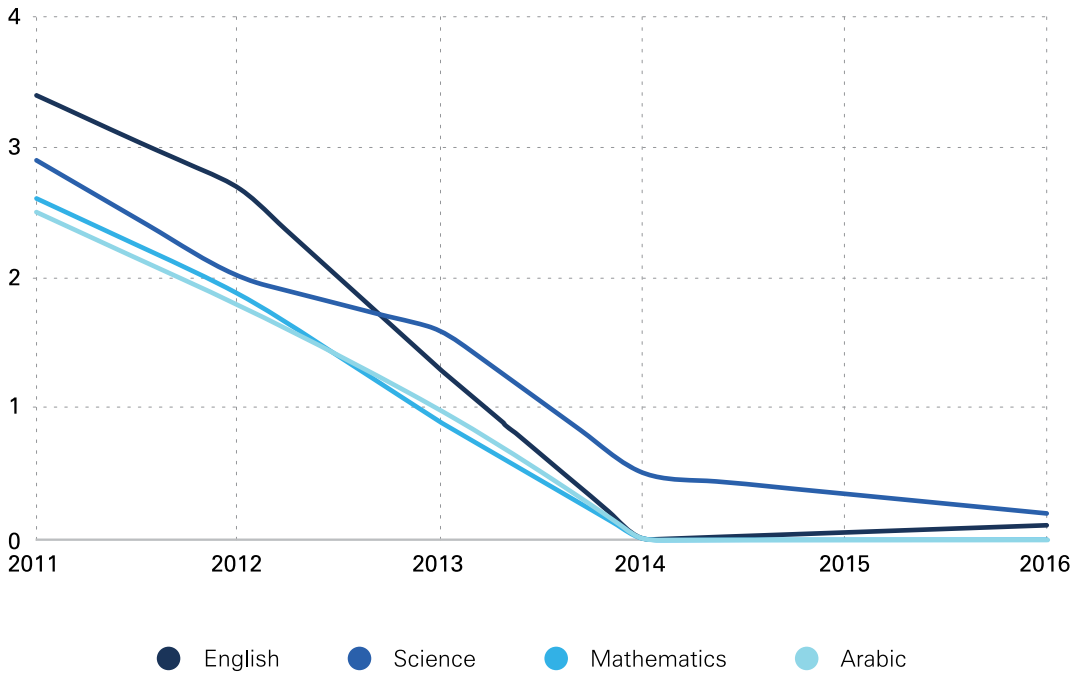

Figure 2.1.2.3
Grade 3 National Examination Results (score), 2011-2016

Source: BQA via Abdulla (2018)

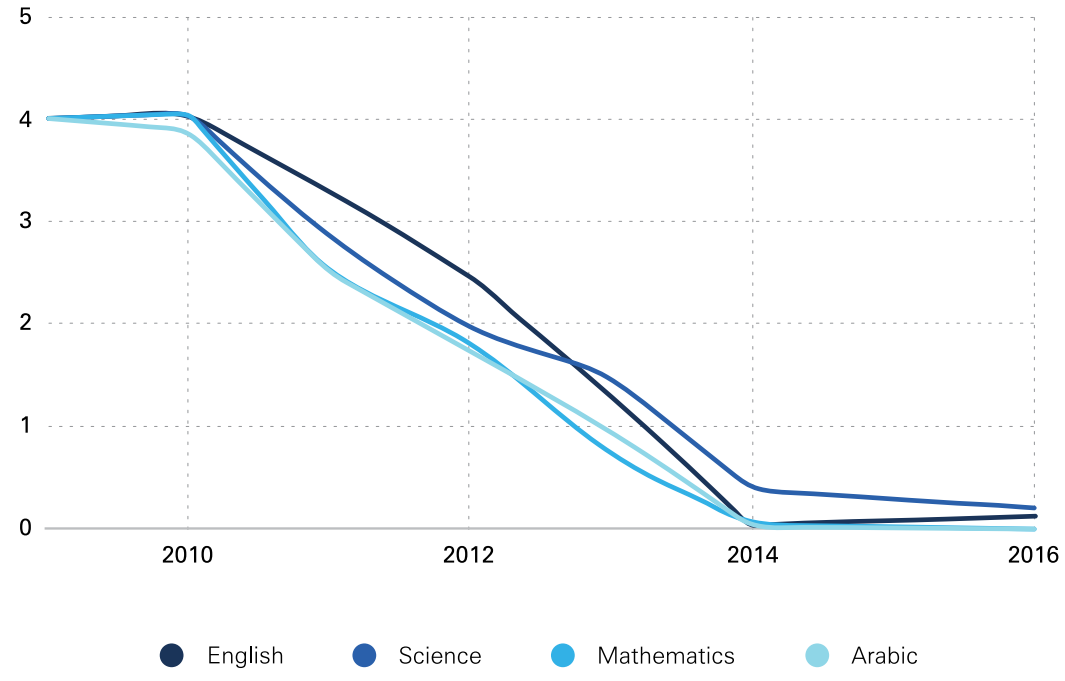

Figure 2.1.2.4
Grade 6 National Examination Results (score), 2009-2016

Source: BQA via Abdulla (2018)

To remedy this and to have more reflective results, starting from 2018, results achieved in the national examinations will be counted in the student final score. Students in Grade 12 are assessed in the following subjects: Arabic, English and problem solving. The national examinations are benchmarked against international qualifications – Arabic and problem solving against the UK international (AS) Level, and English against the Level B2 of the Common European Framework of Reference for Languages (CEFR). The grading system for grade 12 national examination is as follows:

- Grade A: 100% - 90%
- Grade B: 89% - 80%
- Grade C: 79% - 70%
- Grade D: 69 % - 60%
- Grade E: 59% - 50%
- Grade U: Fail: less than 50%

Results in 2017 are shown in **Figure 2.1.2.5**. The results suggest that there is plenty of room for improvement, as the majority of students failed the national examinations. The results of public schools and private schools cannot be compared because all students from public schools participated in the national examinations, whereas only an unrepresentative minority of private schools participated.

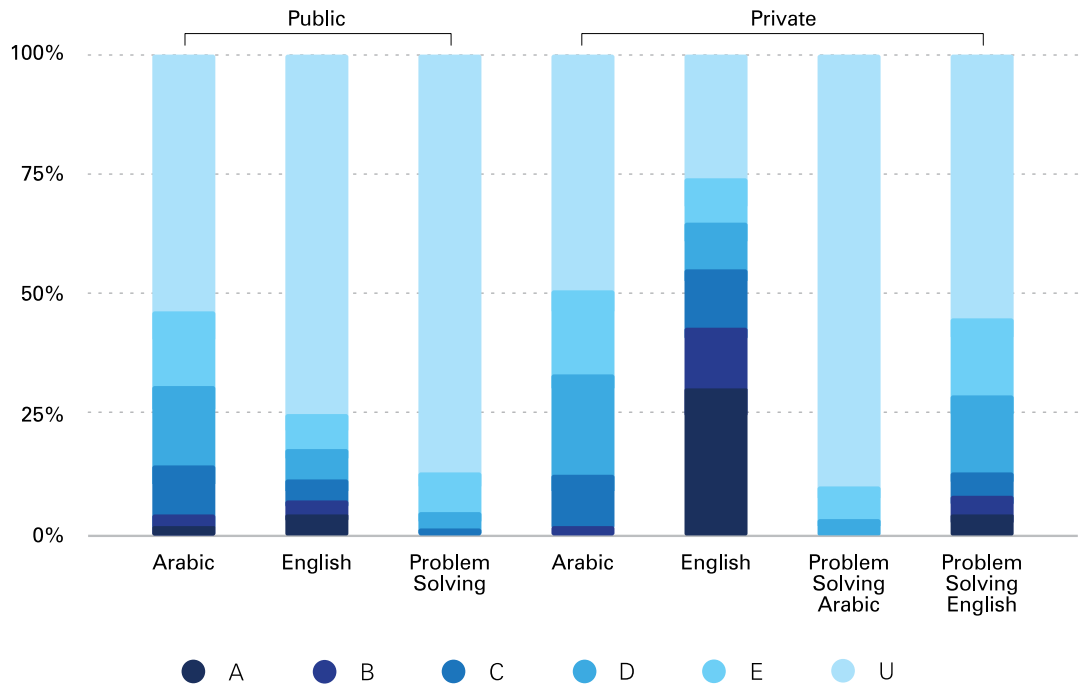

Figure 2.1.2.5
Grade 12 National Examination Results (letter grade), 2017

Source: BQA via Abdulla (2018)

2.1.3. Bahraini Students' Performance Compared to Its GCC peers

The GCC countries serve as a useful comparison point for Bahrain because they have shared characteristics of their educational systems that are somewhat unique globally. Chief among them is the relative youth of the educational systems; to a large extent, the inhospitable nature of the climate made non-nomadic life--a prerequisite for schools--the exception until the discovery of oil allowed for larger, stable populations.

Moreover, more recently, all GCC countries have focused on developing their educational system realizing that human capital is the main driver to sustainable economic growth. Therefore all six GCC countries have legislated nine years of compulsory education from age 6 to 14, this legislation is reflected in the high rate of Gross Enrollment Ratio (GER) achieved by GCC countries especially at the primary and secondary level (**Figure 2.1.3.1**). According to the UNESCO Institute for Statistics (UIS) Bahrain has a gross enrollment ratio in tertiary education of around 47% in 2016, which is high by global standards, and higher than all of its GCC peers with the exception of Saudi Arabia, which has a gross enrollment ratio of 67% for the same year (Abdulla, 2018).

When considering the gender differences in the GER in tertiary education females have a significantly higher GER of 63% while males have a GER of 34% (UIS, 2016). A similar trend is seen across all GCC countries where the GER in tertiary education for females is almost double the GER in males, with the exception of Saudi Arabia, which has a similar GER for both genders.

Data from UNESCO Institute of Statistics (UIS) show that in 2016 Bahraini expenditure on education as a percentage of GDP was around 2.7%, while the expenditure on education as

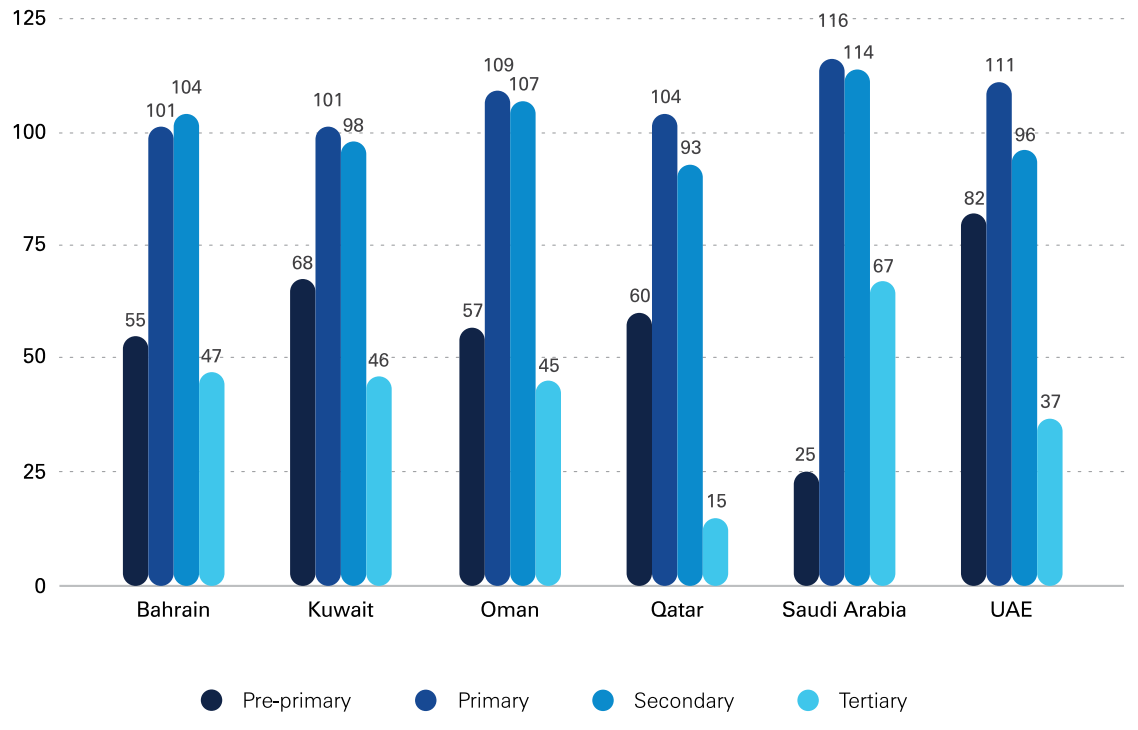

Figure 2.1.3.1
Gross Enrollment Ratio by Education level, 2016

Source: UIS via (Abdulla, 2018)

a percentage of government expenditure is around 7.6%. This is lower than its GCC peers where in the same year Oman had educational expenditures which constituted 6.2% of GDP and 12% of government expenditures, while in 2014 Qatar spent 3.6% of its GDP on education and 12.8% of government expenditures went to education. Similarly in 2014, the Bahraini government spent around $4,767 (PPP) per student on primary education and 7279 ($ in PPP) on secondary education , while in the same year Kuwait spent 11248 ($ in PPP) primary education and 13530 ($ in PPP) on secondary education.

Figure 2.1.3.2 shows the pupil-teacher ratio in primary and secondary education in GCC countries. The pupil-teacher ratio is also used as a measure of the availability of resources to schools: a lower pupil-teacher ratio reflects higher resource-availability and can be associated with better learning outcomes (Abdulla, 2018). The pupil-teacher ratio in primary school in Bahrain is slightly higher than its GCC peers, with the exception of the UAE which has a pupil teacher ratio almost double that of Bahrain. While for secondary education, the pupil-teacher ratio is also very close to its GCC peers, it is slightly lower than its GCC peers, with the exception of Kuwait.

Even though Bahrain spends less on education when compared to it GCC peers, results from different worldwide assessments such as the Trends in International Mathematics and Science Study (TIMSS) and Progress in International Reading Literacy Study (PIRLS) show that Bahrain still outperforms its GCC peers. The following analysis of GCC countries performance in TIMSS and PIRLS is summarized from Abdulla (2018).

Two subjects are assessed through TIMSS: mathematics and science. The assessment takes place every four years for students in the fourth and eighth grades. The TIMSS scale ranges from 0 to 1000 points, where 500 is the mean achievement score in 1995 and is

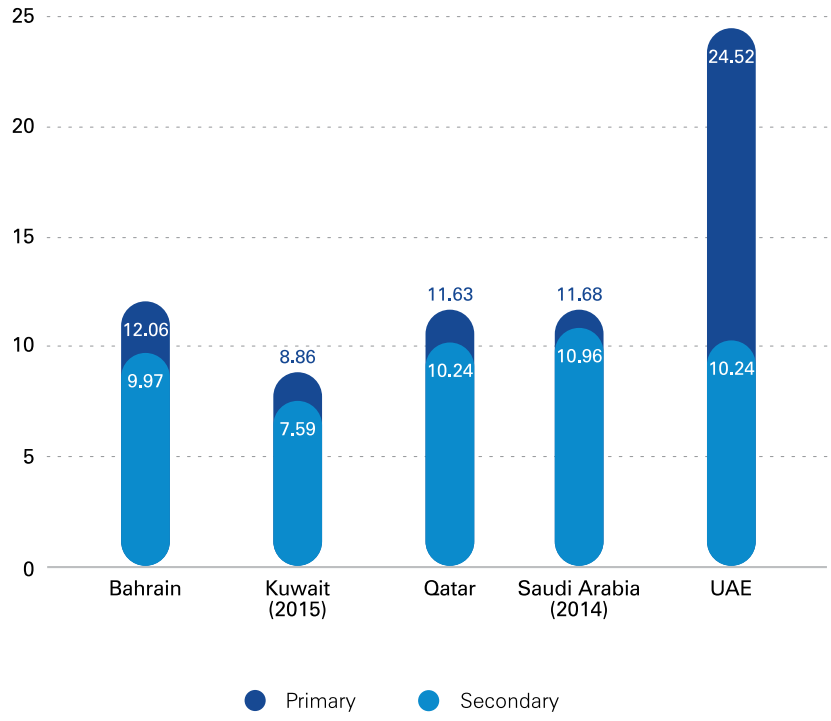

Figure 2.1.3.2
Pupil-Teacher Ratio, 2016

Source: UNESCO Institute for Statistics (UIS)

the baseline for which to compare subsequent years. All GCC countries participate in TIMSS therefore it provides useful insight for assessing and comparing their performance in mathematics and science education. The latest TIMSS results for the GCC countries are displayed in **Table 2.1.3.1**.

In the latest round of assessment in science, Bahrain was the first in the GCC for the fourth grade and second in the eighth grade. For mathematics, Bahrain scored the second highest for both grades, and the UAE scored the highest. Similar results can be found in the previous rounds, where Bahrain is always the first or second among GCC countries (See table 2.1.3.1). **Table 2.1.3.1** also shows that the performance of all GCC countries remains below the 500 centerpoint of the TIMSS scale in both mathematics and science. Nevertheless, Bahrain's overall performance in recent years has come close to the average performance. In fact Bahraini girls in the fourth and eighth grade in the science test were able to pass the 475 points for the first time in the Arab region, receiving 478 points in the fourth grade and 492 in the eighth grade test in 2015.

Looking at performance by gender, one can observe a gender gap in Bahrain where girls consistently outperform boys in TIMSS in both mathematics and science. In the latest assessment, Bahraini females scored the highest in the GCC in science for both grades, and were also the first in mathematics for grade 4. Over time, Bahrain's performance in both mathematics and science have improved for grades 4 and 8 as can be seen in **Figure 2.1.3.3**.

To evaluate the quality of reading, Progress in International Reading Literacy Study (PIRLS) provides useful insights as it assesses the reading skills of fourth grade students. **Figure 2.1.3.4** displays the result of the 2016 assessment for the GCC countries.

The UAE scored the highest among all GCC countries in PIRLS, followed by Bahrain, Qatar, Saudi Arabia and Kuwait, respectively. It can also be noticed from **Figure 2.1.3.4** that all GCC countries scored lower than the 500 centerpoint of the PIRLS scale.

Year	2015				2011				2007			
Subject	Math		Science		Math		Science		Math		Science	
Grade	4	8	4	8	4	8	4	8	4	8	4	8
Bahrain	451	454	459	466	436	409	449	452	-	398	-	467
Kuwait	353	392	337	411	342	-	347	-	316	354	348	418
Oman	425	403	431	455	385	366	377	420	-	372	-	423
Qatar	439	437	436	457	413	410	394	419	296	307	394	319
Saudi Arabia	383	368	390	396	410	394	429	436	-	329	-	403
UAE	452	465	451	477	434	456	428	465	-	-	-	-

Table 2.1.3.1
GCC Countries' Performance in TIMSS (Grade Points), 2007-2015

Source: Abdulla (2018)

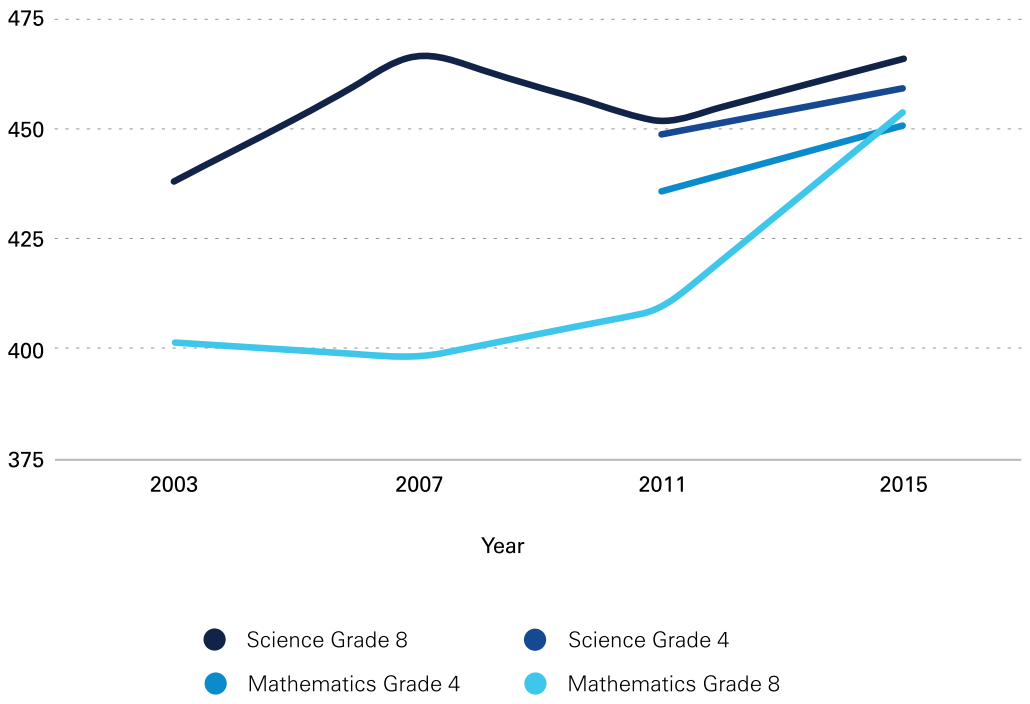

Figure 2.1.3.3
Bahrain Performance in TIMSS (score), 2003-2015

Source: Abdulla (2018)

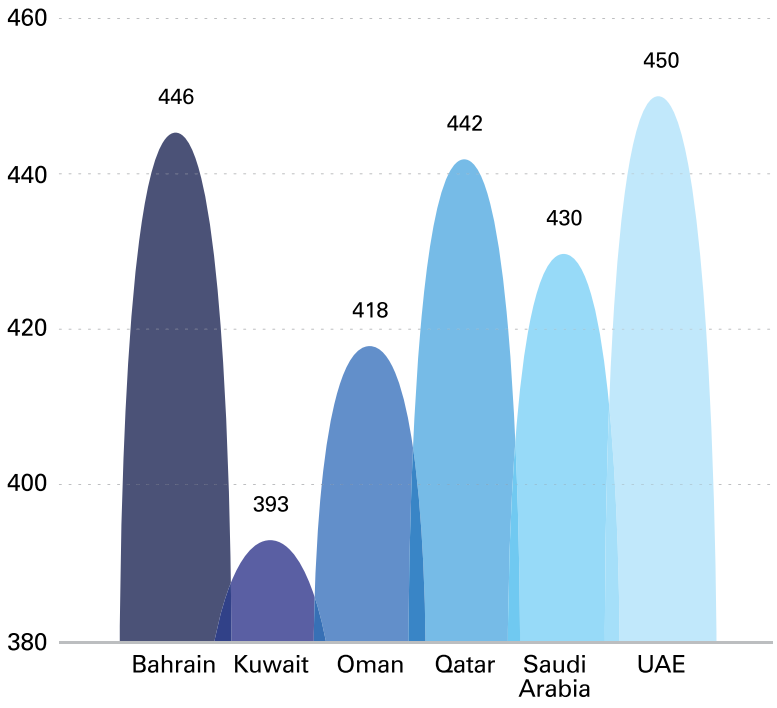

Figure 2.1.3.4
GCC Countries' Performance in PIRLS (score), 2016

Source: Abdulla (2018)

2.1.4. Moving Towards Improved Education Quality

Analysis from the previous section shows that although Bahrain performs relatively well compared to its GCC peers in terms of educational quality, there remains scope for further improvement. As discussed in section 2.1.2, significant reforms have been taking place to improve the educational system in Bahrain, yet there remains obstacles that need to be addressed.

Based on discussions with important education stakeholders in Bahrain, one of the main challenges found in the educational system in Bahrain is the need to increase the emphasis on critical thinking and problem solving skills (Abdulla, 2018). Over time, students simply forget what they have learnt and they do not develop the important skills required in the labor market at a rate consistent with the highest aspirations. Therefore, an initial recommendation is that teachers should be urged to evaluate students and set up assessments that focus more on encouraging analysis, critical thinking, creativity and individuality. Teaching methods should not focus on students passively accepting information; rather, students should be encouraged to be proactive in class.

Although significant improvements have been realized in teacher training, a strong emphasis should also be placed on further developing the quality of teachers in Bahrain. The provision of qualified teachers is a prerequisite for improving the results of students and improving the performance of the educational system in general. For example, taking advantage of the best school infrastructure, the most modern textbooks, and the latest digital technologies, is much easier the better the qualifications of the teacher. Accordingly, teachers should be systematically evaluated in order to assess, develop and improve teaching practices. Such evaluations through independent quality assessments can be used as the basis of offering performance-based compensation. Performance based compensation can help improve the quality of education since tying teachers pay to their performance clarifies teaching goals and helps attract and retain the most productive teachers (Lavy, 2007). One potential step toward realizing such a goal would be to extend the scope of the BQA's assessments to cover individual teachers, though that is not the only option available.

School leadership must also be highly qualified to take charge of educational affairs, and to create an appropriate learning environment that satisfies the needs of teachers and students. A highly qualified and well-trained school administration is able to transform the principles of good education, inclusion, equal opportunity, transparency, accountability and partnership into daily practice in school communities. Similarly having a good curriculum is a fundamental and essential condition for ensuring good educational outcomes. This is why authorities should continue to strive to tailor curricula to the requirements of the workforce.

There are also large returns associated with improving the quality of higher education and vocational education and training. Despite Bahrain's achievements in this realm, this section, and the report more generally, do not cover tertiary education as a comprehensive analysis of Bahrain's education system is beyond the scope of the report. This section has focused on education at the school level as the most recent research shows that the returns of improving the quality of early education are more important than the returns to education at later stages (Heckman, 2011). Although most of the basic skills required by the job market are developed at the school level, many important employability skills are developed by higher education and vocational

institutes. In recent years Bahrain has exerted significant efforts to improve the employability skills of it citizens. As mentioned above, Tamkeen is a semi-governmental agency that was founded in 2006 with the aim of developing Bahrainis and equipping them with the required skills in the job market. In Tamkeen's 2015-2017 strategy, they identify that the main issue in closing the gap between labor market demand and supply is ensuring that Bahrainis possess the skills required to fill new jobs. A thorough study was undertaken by Tamkeen, together with the Allen Consulting Group in 2008, to identify the skills gap in Bahrain. The report examined 11 main sectors in Bahrain and outlined the skills needed in each sector, evaluating some of the major factors that affect the availability of skilled workers in these sectors. This study is the latest comprehensive study conducted by Bahrain, meaning that there is a pressing need for an updated study. Abdulla (2018) summarizes the main market mismatches between the educational outcomes and market requirements in the GCC based on a report by the GCC General Secretariat titled: "New and distinctive

"It is critical for Bahrain to improve the standard of leadership in its non-profit sector, as an effective civil society can make very important contributions to human development. Non-profit organizations must learn to use the opportunities that the Economic Vision 2030 gives them to make positive contributions to society. This will help improve the functioning of the labor market, allowing Bahrainis to acquire valuable/ important workplace skills."

- Mr. Bashar Fakhro
(Chairman, Bahrain Youth Pioneer Society, Bahrain)

experiences in higher education and scientific research". It is found that there is a surplus of service-oriented graduates in comparison with scientific-oriented graduates such as engineering and medical sciences; around 60% of tertiary education students graduate with degrees in business management. Maximizing the ability of graduates to find jobs in their field of specialization requires a tight alignment between demand and supply in the labor market. Deviations from a state of perfect alignment can be caused by graduates acquiring skills that do not fully satisfy the needs of employers, creating a need for foreigners, especially in the private sector (see the discussion in chapter 1.1). This is reflected by the opinions of both students and employers, described in the report, where more than half of these respective groups believe that the educational system could more fully prepare students for the job market (Abdulla, 2018).

Therefore an additional recommendation is to identify the skills gap in Bahrain through conducting comprehensive and periodic studies. Once the skills gap is identified, traditional, vocational and technical curricula in Bahrain have to be updated in order to develop the required skills identified in the skills gap study. The skills taught in schools and universities should be realigned with the skills required in the job market. Therefore more collaboration is needed between the private sector and educational institutions such that the curricula in Bahrain become more reflective of the labor market's needs. Efforts in this direction have been done, for example, higher education institutions periodically conduct market research and surveys.
Indeed one of the validation standards of the National Qualification Framework (NQF) which is a system of classifying qualification, is "Justification of Needs", where higher education institutes are required to conduct or use existing market research and/or consult relevant stakeholders such as industry representatives and students before developing a particular qualification. An example of such effort is the significant communication and collaboration between Bahrain Polytechnic and the industry. Bahrain Polytechnic regularly update their curriculums based on periodic alumni surveys, employer surveys, and meetings of Curriculum Advisory Groups composed of industry partners.

To maximize the usefulness of a skills gap assessment, there needs to be a complementary assessment of what students and young entrants into the labor market are looking for, too. After all, there is little to be gained from tailoring curricula to employers' requirements if students are uninterested in acquiring those qualifications and entering those professions.

In a small economy, it makes sense for a skills gap assessment to be implemented in a centralized manner, most likely by an entity that deals directly with the labor market, such as the LMRA or Tamkeen. However, the desirability of centralizing the execution of the survey does not imply that efforts at rectifying any imbalances that are uncovered should also be centralized. For Bahrain's labor market to function optimally, labor market entrants, education providers, and employers must find it in their interest to align their activities, since they are the parties with the most to gain from the elimination of a skills gap. The government's comparative advantage in this process is in gathering information and releasing it publicly, so that it can reach the largest number of stakeholders possible; it is not in micromanaging the rebalancing process. Hopefully, a periodic and high quality skills gap survey can motivate the primary stakeholders to exert more autonomous and coordinated effort in addressing the skills gaps that the survey identifies.

Another way to better align the education outputs with the labor market demand is to improve and increase the percentage of students enrolled in vocational training. As can be seen in **Figure 2.1.4.1** the percentage of students enrolled in technical and vocational education and training in Bahrain has been declining significantly over the last decade, from 33% in 2008 to only 14% in 2016. To this end, the government launched a National Strategy for Applied Learning in 2017, though it is too soon to judge its effectiveness.

Authorities may wish to consider reversing this trend, by improving vocational education and training programs. These programs should be developed so that students have real life exposure to different workplace environments. Furthermore, students should be able to from expert practitioners in their field. Technical and vocational education and training programs should also be clearly linked to job market opportunities and these opportunities should clearly be identified and marketed to students.

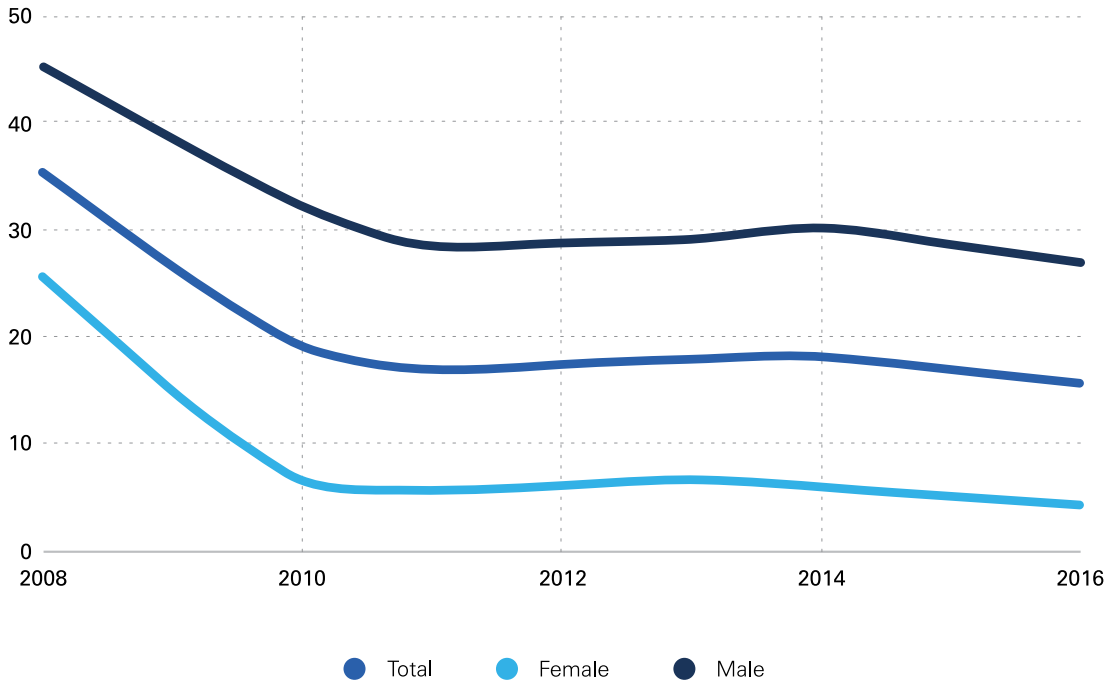

Figure 2.1.4.1
Enrolment in Technical and Vocational Education and Training (TVET) as % of the Total Enrolment in Secondary Education, 2008-2016

Source: Abdulla (2018)

2.2. INNOVATION AND INFORMATION TECHNOLOGY AS DRIVERS OF GROWTH

2.2.1. General Principles

Innovation and information technology are perceived by laypeople as making an important contribution to economic growth. In this section, the report fleshes out the scientific arguments underlying this view, before then applying them to Bahrain.

2.2.1.1. Innovation and Economic Growth

Production is defined as the process of transforming inputs, such as labor and natural resources, into goods and services, such as cars and haircuts. Loosely speaking, the theory of economic growth posits three fundamental mechanisms for increasing the level of aggregate economic activity.

1. Increasing the volume of available factor inputs (land, labor, tools, and so on), which is known as factor accumulation.

2. Discovering new techniques that allow for the same volume of factor inputs to be transformed into a larger volume of output, which is known as technological progress.

3. Improving the rules that govern how production is organized and resources are exchanged (the system of property rights, the commercial dispute resolution mechanism, the extent to which laws are enforced impartially, and so on), which is known as the development of superior "institutions", where "institutions" is a catch-all term used by economists for these factors.

Aggregate economic activity, and therefore living standards, have increased dramatically since the industrial revolution during the 18th century. A scholarly consensus (Gancia and Zilibotti, 2009; Foster and Rosenzweig, 2010) has emerged that the most important reason for this sustained improvement is technological progress: humans have discovered and invented new ways to combine the resources at their disposal, some of which--such as electricity, flight, and computers--have led to dramatic improvements in productivity.

In addition to affirming the role of technological development, scholars have also concluded that technological progress is not an accidental or arbitrary process; instead, it is the result of purposeful effort, most saliently through the allocation of resources to scientific research (Romer, 1990). Today, knowledge is produced by a large ecosystem that includes the basic research conducted in academic universities, the applied research performed by scientific institutes, and the commercially-targeted research performed by the research and development (R&D) laboratories found in for-profit companies.

Producing and deploying knowledge effectively have become so complex that the scientific ecosystem is supported by several other sectors, most notably the educational sector (Griliches and Seneca, 2000), which produces the expertise required to carry out the research; and the commercial incubation and venture capital sector (Sahaym et al., 2010), which helps transform research into an economically valuable commodity.

Nevertheless, the research itself remains the workhorse of the process of technological advancement: there exists a large literature documenting the robust empirical relationship between the volume of resources that a country dedicates to research, and the rate at which it progresses technologically (Ulku, 2007). Moreover, it is complemented by a large literature, mentioned above, affirming the presence of a strong causal relationship between research and economic growth (Mowery and Rosenberg, 1991).

"Bahrain represents a model of sustainable innovation by investing in human capital and providing an ecosystem for a sound education system and youth development. However, the challenges ahead in terms of socio-economic transformations can be overcome if a culture and mindset of innovation are mainstreamed in education and development policy."

- Dr. Odeh Al-Jayyousi
(Head of Department of Innovation and Technology, Arabian Gulf University, Bahrain)

2.2.1.2. Producing versus Adopting Technology

Economists often describe knowledge as a non-rival good, meaning that the consumption of knowledge by one individual does not diminish the ability of others to consume the same piece of knowledge. For example, when I learn how to add the number 2 to the number 3, that in no way diminishes the ability of others to acquire and deploy the same mathematical technique.

Non-rivalry is an unusual property, as most commodities are rivalrous, meaning that their consumption by one person decreases the volume available for others to consume. For example, when I eat an apple, nobody else can eat that apple.

In principle, the fact that knowledge is non-rival opens the possibility of countries advancing technologically without dedicating resources to the research process. As an illustration, suppose that a UK-based clinical researcher discovers that drinking water at very specific times of the day substantially reduces the risk of diabetes. This is technological progress, as it is new knowledge that allows society to allocate fewer resources to the process of preventing and treating diabetes. Once the researchers publish their findings in an open-access medical journal, in principle, everyone in the entire world can access and absorb this knowledge, implying that the technology instantaneously diffuses, to the benefit of all.

In fact, with the exception of a narrow range of patented products and processes, this principle should imply that all countries and organizations are constantly on the technological frontier: whatever new knowledge they do not produce themselves, they can import instantly by exploiting the non-rivalry of knowledge. They can read academic journals, attend conferences, and reverse-engineer products to ensure that the advancements of faraway scientists are accessible. This could explain why technology adoption from other countries accounts for over 90% of technological progress in most countries (Keller, 2004).

Yet a cursory comparison, for example, of the farming or medical techniques used in sub-Saharan Africa to those used in western economies suggests that there must be a flaw to this argument. It appears that farmers and doctors in countries such as the Democratic Republic of Congo are yet to absorb the knowledge produced by researchers in the UK. Certainly, they also lack the tools (factor inputs) that their British counterparts benefit from, such as advanced tractors and medical devices. But they are also not abreast of the latest technological developments. This is why Keller (2004) also concludes that the process of technology diffusion is not automatic. What prevents knowledge from instantly osmoting? In practice, acquiring and digesting new knowledge requires a combination of considerable effort and massive expertise (Foster and Rosenzweig, 2010). While anyone can browse the thousands of papers available for free on the Public Library of Science series of journals, reading and understanding them takes time. Moreover, for most of the population, whatever time and effort they dedicate to reading such papers will be insufficient, because they lack the requisite technical background: economists can read economics papers, and chemists can read chemistry papers; but economists cannot read chemistry papers and vice versa.

In fact, this is an oversimplification, since most chemists cannot make sense of most chemistry papers. In modern science, the degree of specialization has become so acute that with a narrow sub-discipline, only a few hundred people in the entire world can make sense of the newest developments (De Solla Price, 1986). That means that when a world-class French physicist makes a new discovery, if they went to Georgia to deliver a seminar, wherein they presented all the details of the research, probably no more than a dozen people in Georgia could ever hope to comprehend--let alone usefully deploy--the French physicist's findings.

Therefore, one of the reasons that Congolese farmers and medics are less knowledgeable than their UK counterparts is that they either do not have sufficient expertise to make use of the cutting-edge developments in their respective

fields, or that they have not made the effort to acquire the knowledge even if they exhibit the requisite scientific background.

Despite these impediments to the process of adopting the technology produced by others, for the small number of people who have the right speciality, it remains considerably cheaper to acquire existing technology than it is to develop that technology directly (Keller, 2004). Cutting-edge research is very expensive, and its cost is increasing.

Yet there are some additional complexities in the relationship between knowledge production and knowledge transfer that must be understood before data on R&D and economic growth can be correctly interpreted. First, maintaining a capacity to adopt cutting-edge research requires continual investment in the production of cutting-edge research (Cohen and Levinthal, 1989). In other words, if Germany wants to be able to efficiently copy the knowledge produced in Swedish universities, it needs to produce knowledge itself. That is because the only way to maintain one's status as one of 1,000 or so top scientists who can comprehend the latest discovery in a certain field is to continually contribute to the latest discovery (De Solla Price, 1986).

The need to actively produce new knowledge if one wants to adopt the work of others is partially the result of the neurophysiology of knowledge acquisition: to make sense of the latest discovery, one has to be sufficiently immersed in the field, which can only come from contributing to it. It is also partially the result of the sociology of scientific research: scholars disseminate their findings in conferences and via journals, and the only way to secure invitations to those conferences, or to be given free access to those journals, is to be a member of the club, which means contributing to the conferences and journals with one's own cutting-edge work.

Moreover, adopting cutting-edge technology requires cutting-edge scholars, and in general, they will only agree to work for an organization on a long-term basis if they have the opportunity to contribute to the development of cutting-edge technology, since maintaining a reputation as a leading scholar is a central component of the reward system for modern researchers (De Solla Price, 1986). That is why top pharmaceuticals, such as Glaxosmithkline, have huge in-house research departments that produce and publish their own original research at a rate comparable to medium-sized universities. If you want the best scientists, you have to give them the opportunity to continue being the best scientists.

Research clusters illustrate this principle microcosmically. Much of the cutting-edge knowledge production across the world is conducted by small agglomerations of research organizations, known as clusters, that simultaneously compete and cooperate (Audretsch and Feldman, 1996). For example, the American city of Boston houses multiple world-class universities, including the virtually adjacent giants, Harvard and MIT. Researchers within each organization produce original research, and then share it with their colleagues in inter-university seminars, thereby gaining access to their colleagues' research. This symbiosis between technology production and adoption is the reason why any country that hopes to advance technologically--either via production or adoption--must consider establishing a research cluster.

Second, a lot of the economic value associated with a new discovery depends upon having a first-mover advantage in the deployment of the discovery (Lieberman and Montgomery, 1988). This is most obviously seen in the case of patents, such as in the pharmaceuticals sector. But it also true even in the large number of technological advancements that are protected only by the fact that the discoverer

has a significant head start (Kerin et al., 1992). For example, when Apple becomes the first mobile phone producer to add a fingerprint reader on its units, Samsung can copy the idea, but it takes several months at least, which can help ensure that Apple harvests much of the economic return associated with the innovation.

A final remark concerns the possibility of a country importing specialists or products as a way of adopting foreign technology, such as a Danish physician working in Hungary, introducing the newest Danish medical technologies to his colleagues and patients in Hungary; or Jordan, which does not produce mobile telephones, importing the latest Sony devices. This works to some degree for sure: residents of Spain can import and make use of South Korean cars without ever comprehending the technology embodied therein. However, in general, this is a very poor substitute to regular adoption, let alone to developing the technology directly (Comin and Hobijn, 2004), because it severely stunts the rate at which the new technology diffuses throughout the rest of the economy.

To see why, note that in the case of importing a foreign specialist, if they will only be stationed temporarily, such as a technician on a two-year contract, then they have very limited opportunity to engage others, and they have very limited incentive to transfer knowledge, too, as this will undermine future demand for their services (in the case of the Gulf countries, this is discussed in greater detail in chapter 5.2).

And in the case of an imported product, the knowledge is embedded in the product, and cannot be extracted and deployed elsewhere. So while a Jordanian consumer can use the latest Sony mobile phone in their day-to-day lives, this is a highly narrow use of the knowledge compared to what is possible if the consumer had an intricate understanding of all of the science required to manufacture the unit. In contrast, the Japanese engineers who produced the mobile phone can explore other uses for the same technology.

To summarize the above discussion, the distinction between technology production and adoption is, to a large degree, a false one. For a country to be good at adopting foreign technology, it also has to be good at producing technology--the two processes are intrinsically linked. Moreover, for the benefits of new technologies to be fully realized, they need to be either produced or adopted by permanently stationed specialists, as that is the only way to ensure an optimal rate of diffusion and dissemination within the country. Finally, even when new, externally-developed technologies are cheaply adopted, the associated economic return is limited due to the presence of a second-mover disadvantage (or, equivalently, a first-mover advantage).

In conclusion, therefore, governments seeking to ensure that the economy uses the best available technology must ensure that the economy itself makes a significant contribution to the best available technology, most often via the establishment of research clusters. This is why the empirical relationship between R&D and economic growth is so robust.

2.2.1.3. ICT and Innovation

There is a large literature affirming the positive contribution that ICT can make to economic growth. This includes intricate empirical studies, such as Edquista and Henrekson's (2017) exposition of the ICT sector's role in the growth of the Swedish economy, Vu's (2013) research on ICT's contribution to Singapore at the turn of the millennium, and Jorgensen et al.'s (2008) chronicling of the effect of the 1990s ICT revolution on the U.S. economy.

Much of the aforementioned effect of ICT on the economy is a direct sectoral contribution representing the goods and services delivered by the ICT sector, such as manufacturing computer components, and developing software. To a large extent, this is not the main concern in this section, since the report focuses on ICT as a driver of innovation. Broadly speaking, there are two primary channels to consider.

The first is when production processes in non-ICT sectors advance technologically as a result of adopting ICT, i.e., where ICT represents the innovation. An example would be using a self-serving kiosk as a labor-saving device in a supermarket, or an electronic record system in a library to allow for faster retrieval of books.
In the context of Bahrain during the period of interest, one of the biggest potential contributions from ICT has been the proliferation of broadband technology. Czernich et al. (2011) use international data to study the effect of broadband on economic growth, and they find a large effect globally: a 10% increase in broadband penetration causes an increase in annual per capita income growth of between 0.9% and 1.5%. They attribute this to broadband's ability to magnify the rate at which decentralized information can be generated and distributed, which in turn facilitates the development and adoption of innovative processes.

In particular, broadband allows for new modes of business that rely on the spatial exchange of large amounts of information. A productivity-enhancing service such as Uber would not have been possible before the advent of widely-available, high-speed internet. Moreover, broadband increases the efficiency of the market process itself, by lowering entry barriers, and by creating higher levels of market transparency. Czernich et al. (2011) conclude that it shows many of the properties of a general purpose technology, such as electricity, which restructures economic activity in a broad-based, efficiency-enhancing manner.

The second channel relates to the process of innovation. As Autor et al. (2003) demonstrate, computers and ICT lead to a reorganization of work whereby workers are shifted away from routine tasks toward non-routine ones, such as a bank employee switching from being a teller to working as an investment consultant for customers. In the context of innovation, this constitutes a decrease in the cost of technological advancement, as labor is freed up for the non-linear thinking associated with innovation.

In addition, ICT is a direct input into technological progress. Scientists today are able to tackle far more complex--and potentially fruitful--questions due to the support that they receive from ICT hardware and software. Computers and the internet allow researchers to efficiently access huge databases of existing research, and to analyze their own research in a more sophisticated fashion. ICT also allows for remote collaboration between researchers, and rapid dissemination of results. In certain contexts, scientists have been able to use computers to automate the process of innovation, such as in the case of machine learning.

Notably, Jin and Cho (2015) stress that the contribution of ICT to innovation and economic growth is strongly mediated by the level of human capital: an uneducated and poorly trained workforce leaves the economy unable to realize the benefits of ICT. This is why ICT-education has become so important to the 21st century economy.

In summary, in the previous section, the report argued that innovation was central to economic growth. In this section, the report argued that during the last 30 years, ICT has played an important role in boosting innovation, both by complementing traditional production processes, and by being itself a vital input in the knowledge production chain. In the next section, these principles are applied to Bahrain.

2.2.2. Innovation and ICT in Bahrain

As explained above, R&D is only one link in the chain of producing and deploying economically-valuable knowledge. This section focuses exclusively on the research component, as education is discussed in chapter 2.1, while nascent businesses and commercialization are discussed in greater detail in chapter 1.1 and chapter 1.2.

2.2.2.1. How Innovative is the Bahrain Economy?

Unfortunately, the data below paint a clear picture of a country that needs to take steps to improve the level of innovation. The departure point is the key inputs into research. **Figure 2.2.2.1.1** shows R&D expenditure as a percentage of GDP in 2014.

Note that ideally, one would have produced a time series, allowing one to analyze the trend. However, the only available observation for Bahrain in the database was 2014, which is itself symptomatic of the broader lack of resources dedicated to research.

Bahrain spent only 0.1% of its GDP on R&D--a figure far exceeded by the available comparison groups. The world average was 2.2%, while the Middle East and North Africa figure was 0.9%; Bahrain is one sixth the value of the lowest region. Addressing this comparative lack of expenditure on R&D has been a key goal of various initiatives launched by the government, which will be elaborated upon below. **Figure 2.2.2.1.2** shows the number of researchers in R&D per million people.

Again, the figure for Bahrain is lower than for other groups: 369, compared to a global average of 1,277 (from 2010, the most recently available year). Notably, the R&D expenditure

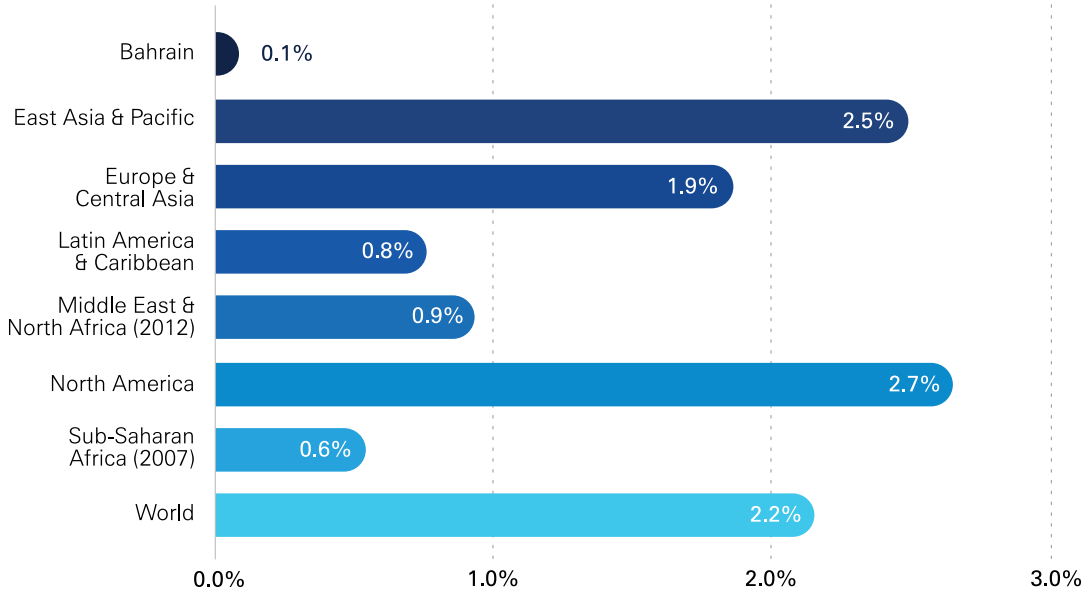

Figure 2.2.2.1.1
R&D Expenditure as % of GDP, 2014

Source: The World Bank/UNESCO

as a percentage of GDP gap between Bahrain and others is larger than it is for researchers per million, because Bahrain has a high GDP driven by relatively abundant natural resources, which artificially dilutes the R&D expenditure.

To focus on research output, **Figure 2.2.2.1.3** shows the number of research papers produced per million people from 2005-2016 compared to various groups. At around 160 papers per million people, Bahrain's average performance in research output throughout the period 2005-2016 is still consistently below the world average of 280, though again the gap is smaller than the gaps in **Figure 2.2.2.1.1** and **Figure 2.2.2.1.2**. Moreover, Bahrain outperforms sub-Saharan Africa by a large margin, as well generally outperforming Latin America and the Caribbean. This suggests that Bahrain's limited expenditure on R&D may have a higher yield than in other countries.

In terms of the trend, it is slightly negative, decreasing from 179 in 2005 to 148 in 2016. A fuller analysis is offered below, but at this stage, the report points out that the trend is partially due to the large increase in population, especially unskilled migrant workers, during the period, as opposed to a decline in the absolute number of papers. In fact, the latter figure rises from 159 in 2005 to 211 in 2016. However, paper production in regions such as North America is several orders of magnitude higher, as well as exhibiting a persistent upward trajectory.

Scientific papers are an output of scientific research, but they are actually more accurately characterized as intermediate outputs. A link further down the innovation production chain is patents; while such a measure has many weaknesses as a way of measuring innovative activity, it remains instructive as a diagnostic tool when assessing the effectiveness of research expenditures in a country such as Bahrain. **Figure 2.2.2.1.4** shows patents and industrial designs per million people in Bahrain and the World.

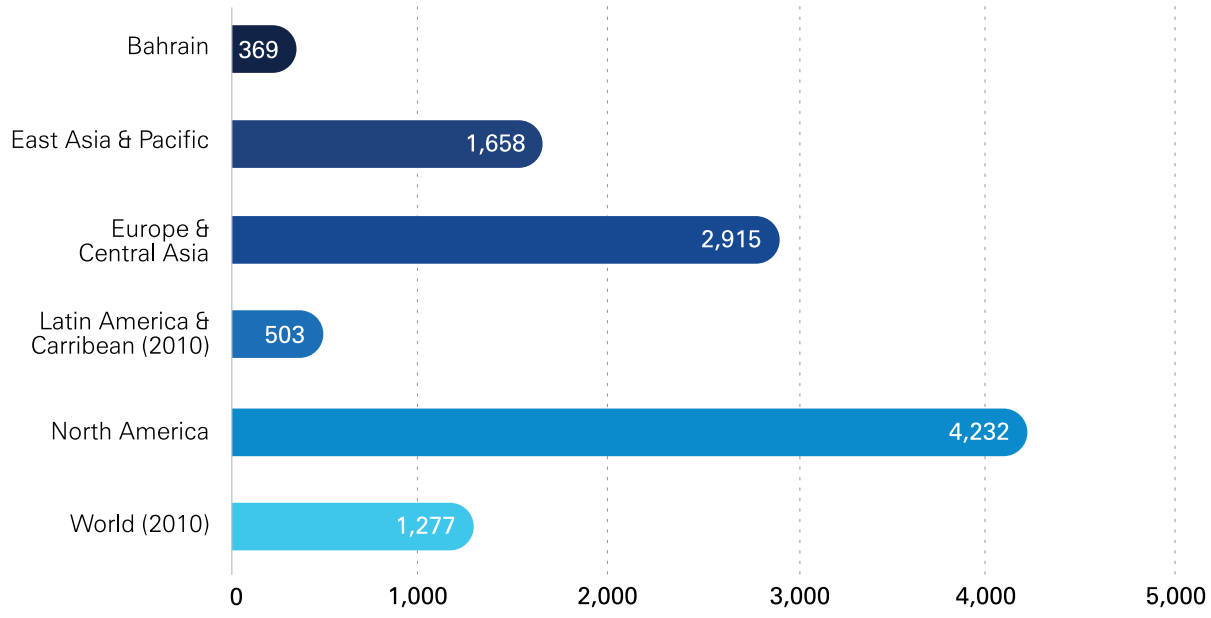

Figure 2.2.2.1.2
Researchers in R&D per Million, 2014

Source: The World Bank/UNESCO

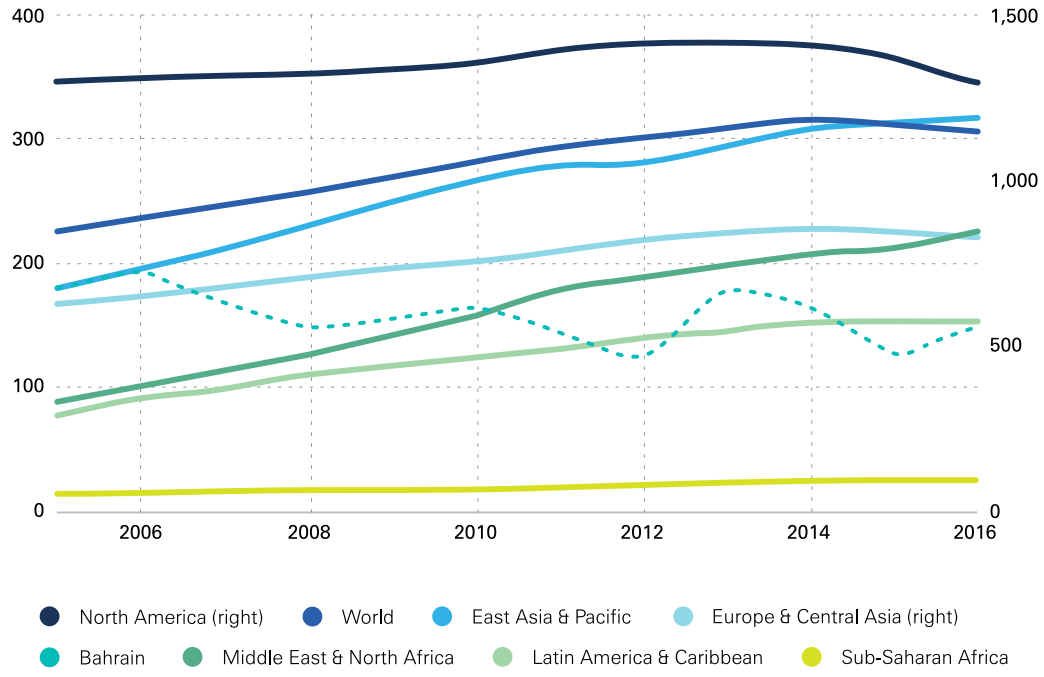

Figure 2.2.2.1.3
Scientific and Technical Research Papers per Million, 2005-2016

Source: The World Bank/UNESCO

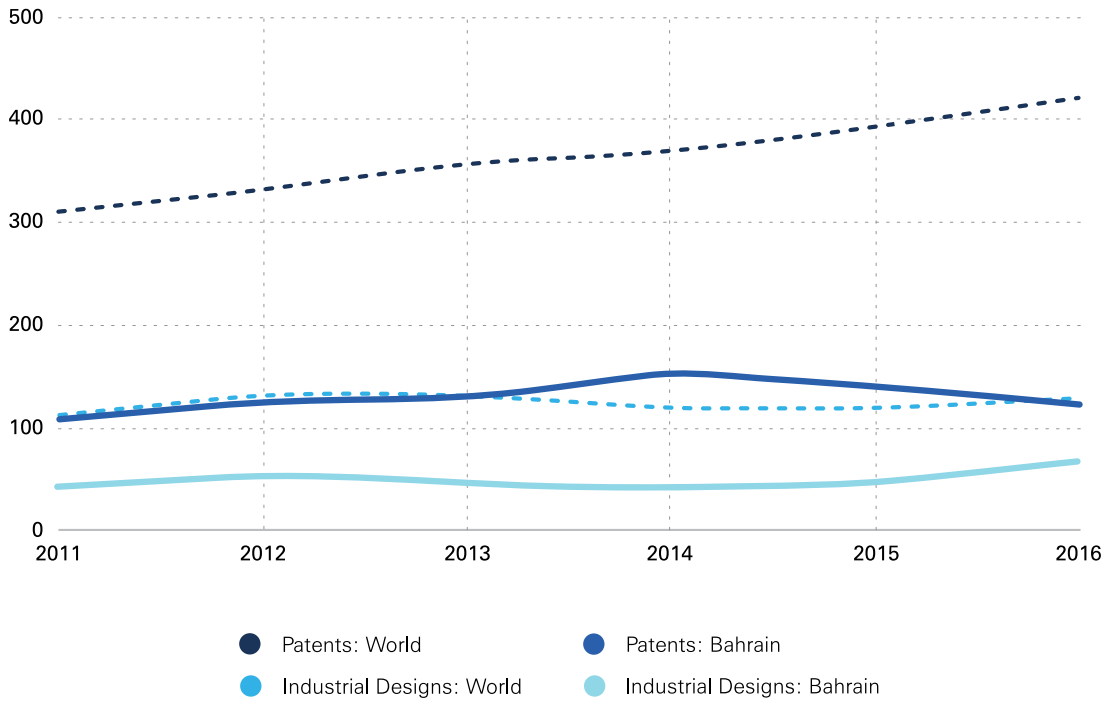

Figure 2.2.2.1.4
Patents and Industrial Designs per Million, 2011-2016

Source: WIPO

Again, in both cases, Bahrain exhibits research output that is below the world average. Moreover, the general trend does not feature robust growth, compared to persistent growth in patents at the world level.

Various global non-profits produce more nuanced, but subjective, measures of innovation. One such example is the World Economic Forum, which produces an annual competitiveness report that includes a rich array of indices covering many dimensions of commercial activity. While these indices are not rigorous, they serve as a useful general indicator. In the case of Bahrain, the following results for the year 2017-2018 are available:

- **Capacity for innovation:** 67th in the world.
- **Company spending on R&D:** 56th the world.
- **Availability of scientists and engineers:** 45th in the world.

This latter figure must be read with caution, as many of the most competent scientists and engineers in Bahrain are guest workers, limiting their effective contribution to innovation according to the discussion at the end of section 2.2.1.2.

The start of this chapter described the primary sources of growth (factor inputs, technology, and institutions). Economists have devised statistical methods for decomposing observed economic growth into its potential sources. In the case of Bahrain (and the Gulf countries more generally), technological advancement makes a minimal contribution to economic growth at best, with the main source being variation in oil prices, oil production, and investment, which includes FDI in the case of Bahrain (Espinoza, 2012).

In an effort to boost research and innovation in Bahrain, the Higher Education Council (HEC) launched a National Research Strategy 2014-2024. The Strategy identifies the key weaknesses in the prevailing research environment, as well as proposing appropriate remedies. The HEC has also been working with universities to cap the teaching loads placed upon professors, to ensure that they have sufficient time to conduct research. Moreover, through a variety of committees, the HEC has also been coordinating between the private and academic sector, with the goal of improving the ability of universities to serve the research needs of private companies. It is too early for the fruits of such efforts to be reflected in the official data, however.

Despite the launch of the National Research Strategy, the Bahrain economy still has a lot of room for improvement in terms of research, innovation, and technological progress. The content of the Economic Vision confirms that authorities have been aware of this for many years. However, unlike some of the other reforms associated with the Vision, those relating to boosting innovation are yet to yield results that are reflected in the aggregate data.

To some extent, this is due to the fundamentally long-term nature of the reforms, especially those relating to education and the production of homegrown scientists able to work at the cutting edge. However, the persistent stagnation in terms of levels of innovation suggests that considering additional reforms may be useful. These are discussed below, after a discussion of the contribution of ICT.

2.2.2.2. The Contribution of ICT to Innovation in Bahrain

Bahrain's Telecommunications Regulatory Authority (TRA) produce a bulletin that includes many useful indicators about the state of the ICT sector. **Figure 2.2.2.2.1** shows some of the leading telecommunications indicators.

Taking Bahrain in isolation, these data all

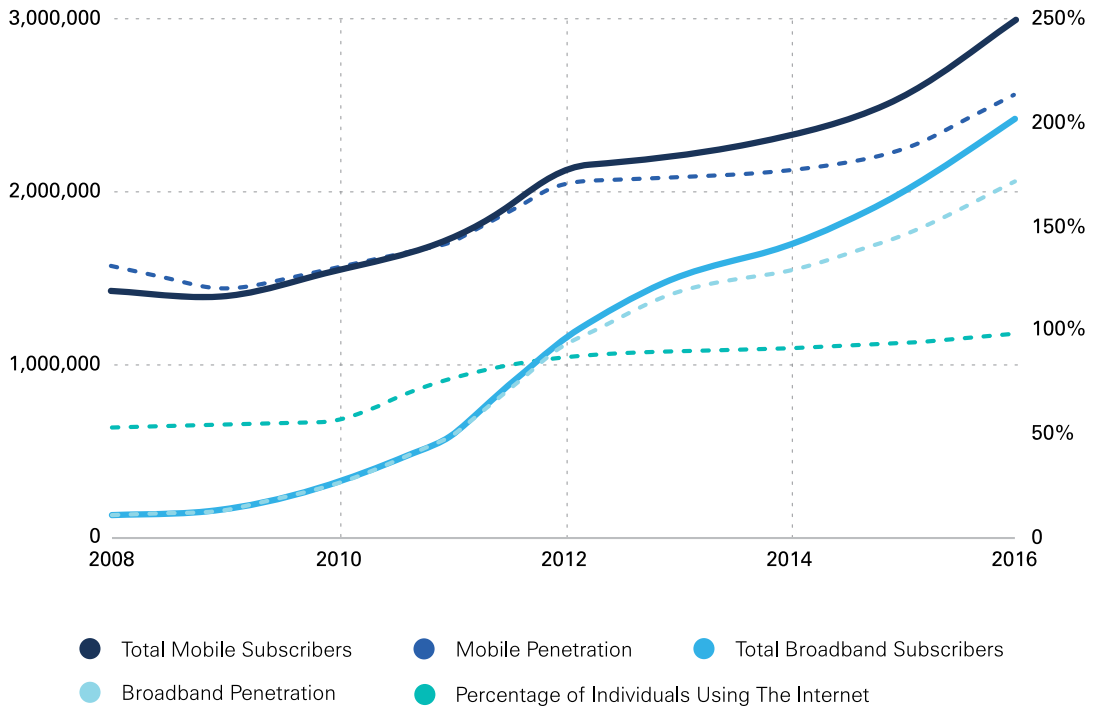

Figure 2.2.2.2.1
Leading Telecommunications Indicators, 2008-2016

Source: Bahrain TRA

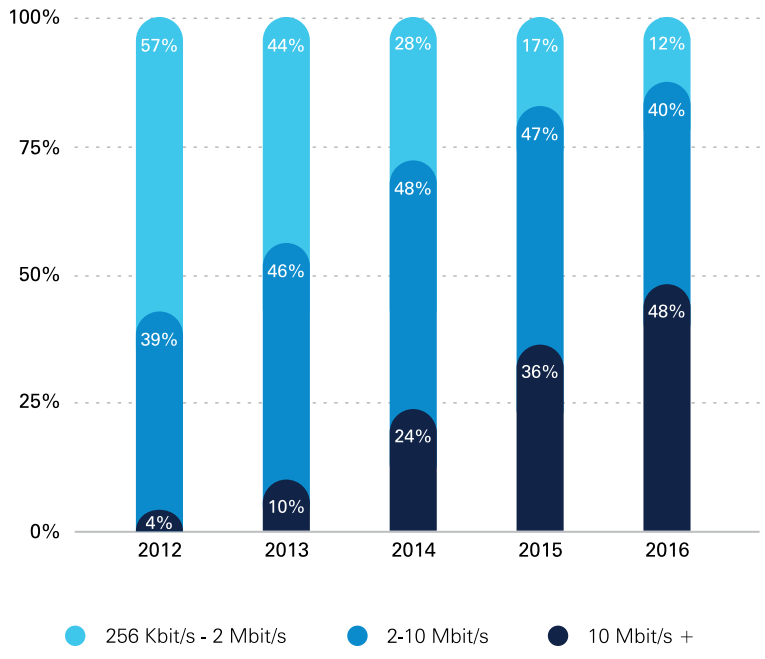

Figure 2.2.2.2.2
Speed of Broadband Connections (bits/s), 2012-2016

Source: Bahrain TRA

indicate a positive trajectory for key parts of Bahrain's ICT infrastructure. In the nine years from 2008-2016, mobile penetration increased from 130% to 213%, broadband penetration increased from 10% to 171%, and the percentage of individuals using the internet increased from 52% to 98%. **Figure 2.2.2.2.2** shows the speed breakdown for the broadband connections. These data again indicate a robust improvement in Bahrain's ICT infrastructure, with the percentage of broadband connections at a speed of 10 Mbits or higher rising from 4% in 2012 to 48% in 2016, an exceptionally steep ascent.

The International Telecommunications Union (ITU) gathers data that allow for global comparisons. **Figure 2.2.2.2.3** shows mobile penetration. Bahrain uniformly exceeds the averages for Arab states, the world, and even developed countries. **Figure 2.2.2.2.4** shows broadband penetration.

Again, Bahrain uniformly outperforms the Arab states and the world average, but lags behind the average for developed countries until 2012, after which it overtakes it and remains above it by a wide margin. **Figure 2.2.2.2.5** shows individuals using the internet.

The pattern is similar to that under broadband penetration; and in 2011, Bahrain overtakes and thereafter persistently outperforms the Arab states, the world, and developed countries. In fact, by achieving a 98% connectivity level in 2016, Bahrain has virtually maxed out its performance.

The ITU collates all of these data and composes an index (ICT development index, IDI) that summarizes a country's ICT infrastructure. In 2016, Bahrain ranked 30th in the world, falling slightly to 31st in 2017. In the entire Middle East and North Africa region, only Israel outranked Bahrain, while Bahrain occupied a

"Cloud innovation and transformative technologies will change the way we live and do business. Developments in the tech industry in Bahrain have been momentous and transformative and have resulted in tangible shifts in attitudes, appetites, and appreciation for innovation and technology among entrepreneurs. The government has been a fundamental driver of the Kingdom's nascent innovation ecosystem and has been very active, pragmatic, and fast-moving in creating a holding environment conducive to the growth of young businesses, notably in the tech sector. Our initiatives and programs are largely designed to align with the government's vision and we've been lucky to always find doors open and receptive to our ideas"

- Ms. Hadyah Fathalla
(Executive Director, C5 Accelerate, Bahrain)

higher position than affluent countries such as Italy and Portugal.

It is tempting to attribute Bahrain's high quality ICT infrastructure to technological improvements, and they have surely played a central role. However, Bahrain's access to these improvements is no greater than for other countries (since it does not develop them). Moreover, the fact that it is a small landmass with high population density helps, but this has been a constant in Bahrain's modern history, and therefore cannot account for the improvement in performance compared to the rest of the world during the last 15 years. Instead, the most likely explanation is the liberalization program in the telecommunications sector, which has led to dramatic improvements in service quality and infrastructure.

To what extent have these ICT infrastructure improvements facilitated R&D and other innovative activity? As argued above, Bahrain has realized low levels of innovation during the last 15 years. Given the improvements in, and high quality of, the ICT infrastructure, the appropriate conclusion appears to be that ICT has not been a limiting factor, and that instead, the relatively weak levels of innovation can be attributed to other factors, which are ruminated upon in the recommendations below.

Section 2.2.2.1 and the first part of this section focused on the picture emerging from aggregate data. Such data give an instructive, macroscopic view of innovation in the Bahrain economy. However, a more rounded analysis should also examine some of smaller-scale projects that might not be immediately reflected in the aggregate data. As it happens, in the case of Bahrain, almost all are tied to the ICT sector. The report here draws attention to some of the more salient contributions, referring readers to Bushager (2018) for a more detailed description and analysis of the various projects.

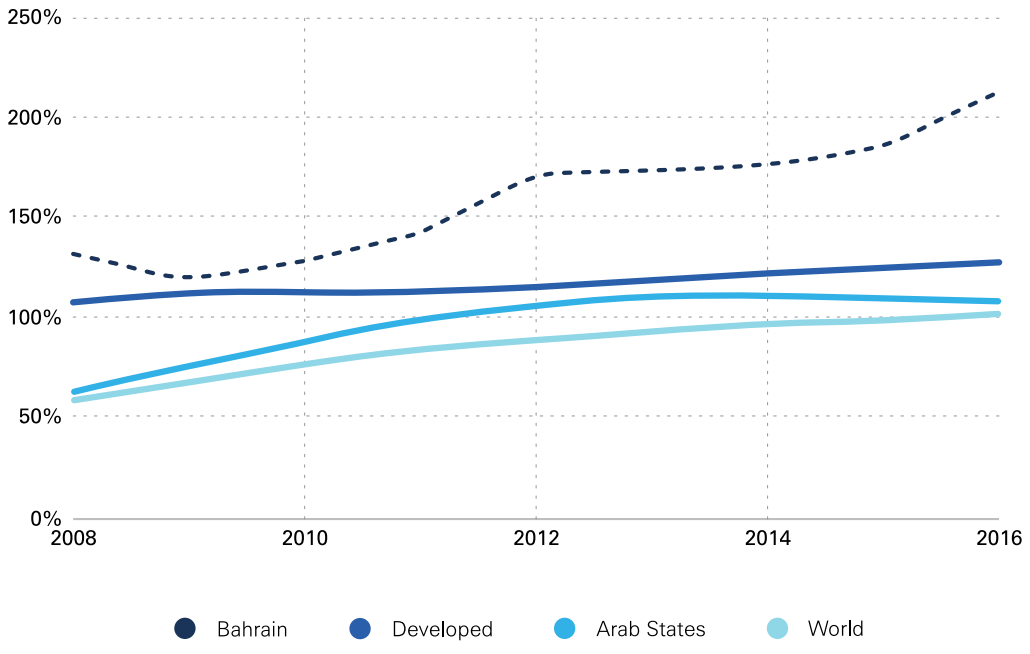

Figure 2.2.2.2.3
Mobile Penetration (%), 2008-2016

Source: ITU and TRA

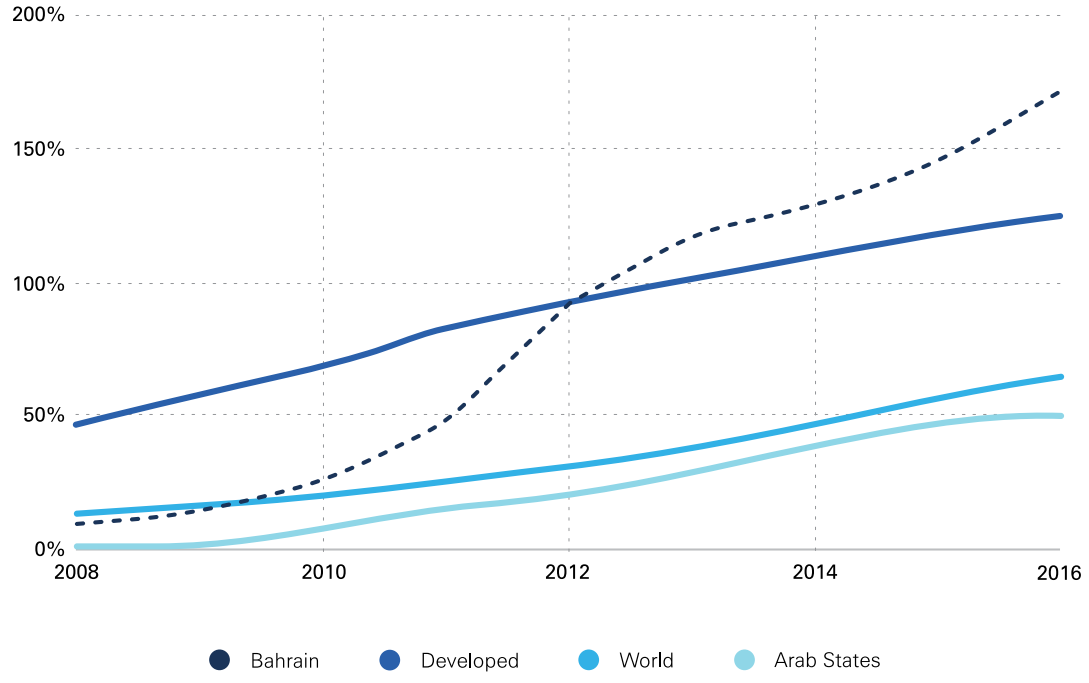

Figure 2.2.2.2.4
Broadband Penetration (%), 2008-2016

Source: ITU and TRA

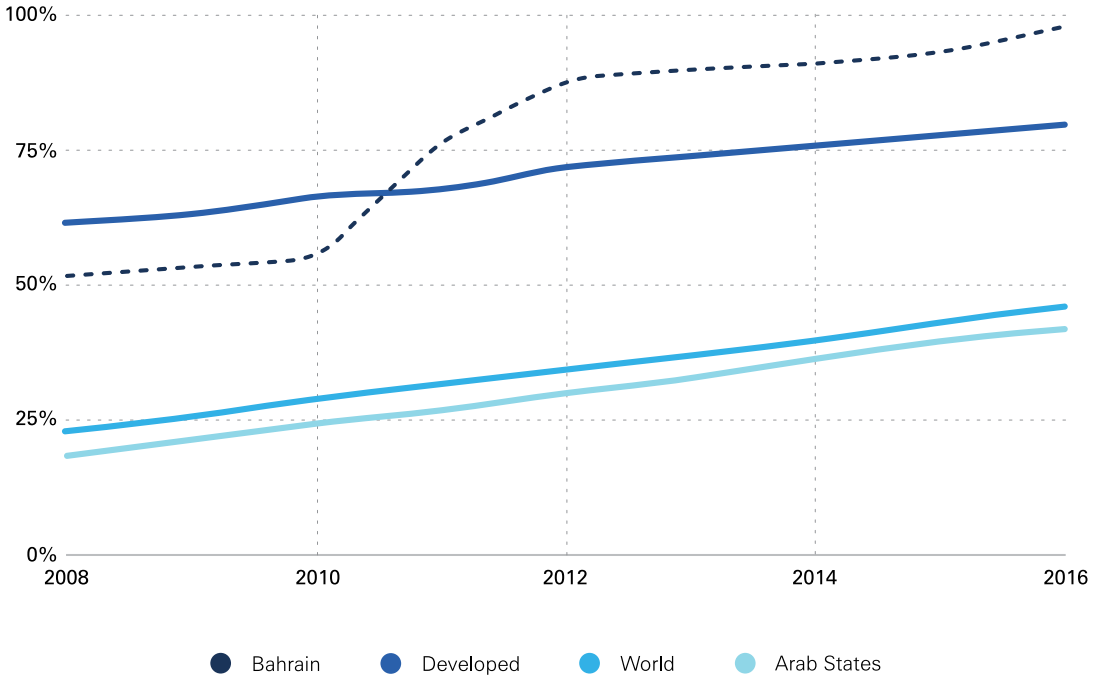

Figure 2.2.2.2.5
Individuals Using the Internet (%), 2008-2016

Source: ITU and TRA

In 2017, in an effort to build upon its successful Islamic finance sector, Bahrain launched a financial technology cluster, aiming to realize technological progress in financial services. Additional details on the project are in chapter 3.2 below; for now, one should note that it represents genuine R&D, and it features a prominent role for ICT, since financial services are a sector that has a deep dependence on ICT infrastructure. In this case, Bahrain has surely been able to realize higher rates of innovation as a direct consequence of its ICT infrastructure investments.
Also in 2017, the EDB spearheaded Bahrain's successful efforts at partnering with Amazon web services (AWS) to designate Bahrain as its Middle Eastern hub; see **Box N**. As a result, Bahrain is the first country in the region to adopt a Cloud First Policy, an initiative which requires that all government agencies migrate their data to the cloud. While several entities including the Ministry of Education, Ministry of Justice and Islamic Affairs and the IGA have already embraced the cloud, more than 20 government sites have already migrated to the cloud using 100 servers out of 650 in total.

One of the EDB's partners in its work with AWS has been Bahrain's eGovernment Authority, which was recently merged with the statistical office to create the Information and eGovernment Authority (IGA). Consistent

BOX N:
AMAZON WORLD SERVICES & MICROSOFT HUBS

Bahrain has been making strides in its transformation to a digital and knowledge-based economy. This is most evident in the public and private sector's migration to cloud services, mainly through Amazon Web Services (AWS) and Microsoft. Cloud-based operations can reduce operating costs, improve efficiencies, and offer greater digital security.

The IGA is currently leading the government's migration to the AWS cloud, which will increase the efficiency of government services and reduce cost in the long-run. By July 2018, 40 government systems and services had been migrated to the cloud (Iga.gov.bh, 2018).

Bahrain intends to become a hub for cloud technology and innovation, and was successfully able to convince AWS to set up a regional office, which opened in January in 2017 (Amazon Web Services, 2017). Both Microsoft and AWS have collaborated with a number of universities, start-up incubators and accelerators to provide educational and professional training programs. Such programs have the potential to provide Bahraini citizens and residents with critical digital skills, and technical know-how. AWS estimates that there will be a need for "10,000 data solution architects in the next five years" in the Middle East (Kilmartin, 2018). In Bahrain, over 2,300 participants have already signed-up to AWS Educate programs, which aim to provide students and young professionals with critical digital skills (Kilmartin, 2018).

While the presence of AWS and Microsoft hubs puts Bahrain on the map in the current global digital transformation, further investments will be needed to provide the Bahraini population with the skills needed in various sectors such as cloud technology, Artificial Intelligence, 3D printing and blockchain technology.

with Vu's (2013) findings with Singapore, the government has a very important role to play in accelerating the rate at which organizations--public and private--digitize their processes and take advantage of the leading ICT solutions. The IGA has the ability to mandate digitization in other governmental organizations, and it has been wielding that authority for several years, culminating in the current transition to AWS cloud services.

The result has been improvements in the productivity of government services. Previously, procedures such as renewing driving licenses, paying electricity bills, and obtaining permits for commercial activity were all dependent upon human interactions. Post-digitization, many have attained virtually complete digitization, enabling individual civil servants to serve a much larger number of citizens and residents. In tandem with these efforts, Bushager (2018) also documents important improvements in ICT education undertaken at the secondary and tertiary levels. Moreover, organizations such as Tamkeen have partnered with the University of Bahrain (see **Box O**), Microsoft, and the UNDP in the delivery of special projects that improve the presence and awareness of ICT in Bahrain.

These microeconomic projects might not necessarily be reflected in the aggregate data, or perhaps they do in fact represent the small amount of innovation and R&D cited in section 2.2.2.1. However there is little doubt that they represent steps in the right direction as Bahrain seeks to improve the intellectual dynamism of its private sector.

2.2.3. Recommendations for Bahrain

While Bahrain is taking steps in the right direction, much more work needs to be done before it can realize the goals set out in the Economic Vision 2030 relating to innovation and technological progress. The most important recommendation, therefore, is the need to organize a multi-stakeholder forum designed to address the question of how to boost innovation in Bahrain. The list of attendees should include:

- The academic research community
- The industrial research community
- Business leaders working in sectors that fund R&D in conventional economies
- Representatives of the ICT community
- Venture capitalists and representatives of the incubation sector
- Representatives of the government's intellectual property office

The forum should aim to deliver a definitive answer to the question: what is required for the private sector in Bahrain to allocate a higher percentage of its resources to R&D, and for that R&D to result in tangible technological progress? A professional, commissioned report would be an important contribution in this regard.

Note that the private sector was specified as needing to take the lead in R&D. This is not just an effort to adhere to the spirit of the Economic Vision. Rather, it is because, all over the world, and throughout history, private R&D has been the driver of economically valuable technological progress (Kealey, 1996). Publicly-funded research may result in a lot of scientific papers, but they invariably answer academic questions that bear little relevance to the process of economic growth.

This can be seen clearly in public universities across the world, which contain multiple research departments (especially in the humanities) that are almost guaranteed to produce commercially useless research, despite costing the university a significant portion of its budget. A key trap that the Bahrain

BOX O:
THE UNIVERSITY OF BAHRAIN

The University of Bahrain (UoB) was founded in 1986 and is the national university of Bahrain. The University states in its 2016-2021 Transformation Plan, that is vision is to become a world class university that is recognised as a 'learning, research and entrepreneurial institution.' It is committed to its mission of contributing to the economic development and growth of Bahrain, and is founded upon the values to be innovative, student centered, technology driven, proactive and transparent. The UoB recognises that it must adapt to the ever interconnected world to strive. Dedication to this can be exemplified particularly in the areas of energy, innovation and entrepreneurship.

In the context of energy, UoB has this year launched two new programmes that encourage sustainability. One is a new MSc programme in Environmental and Sustainable Development, in partnership with the Prince's Foundation for Building Communities, an educational charity established by the Prince of Wales. The programme incorporates the values of the foundation, and concentrates on the complex nature of current environmental issues within Bahrain and further afield, promoting sustainable environmental planning and management. The second is a PhD Program in Environment and Sustainable Development. This focuses on the 2030 United Nations Sustainable Development Goals, and aims to equip students with the ability to have a thorough understanding of and provide potential solutions to the environmental challenges faced globally today. The UoB has also announced an international partnership with Loughborough University in the field of renewable energy. This will establish a research center for Sustainable Energy at the UoB which will work with the Centre for Renewable Energy Systems Technology (CREST) at Loughborough University.

For innovation and entrepreneurship, the UoB has in 2018 launched new courses, such as the MSc in Big Data and Science Analytics, which aims to create graduates that are qualified to cope with the changing nature of data revolution. It has also created a Code Academy, that strives to produce 20,000 coders by 2020. A venture called 'Forsati for Her' has been initiated, in partnership with the United Nations Development Programme, Microsoft, Think Smart and Tamkeen to to create 3,000 female coders. The aim of the scheme is to train 300 students to the highest level, with 30 going on to set up their own technology led business through a start-up accelerator. The number of accelerators in Bahrain is rising, with organisations such as StartUp Bahrain helping to facilitate digital start ups that are essential to entrepreneurship and innovation. The UoB has also held 'Hackathons', events where computer programmers meet to develop software and propose solutions or new concepts to address problems. The university has also become the only Amazon Web Services Educate Academy in the MENA region. AWS is a global initiative that will provide the UoB with the resources required to accelerate cloud related learning, and enable students to prepare for careers in the cloud space, as they earn industry recognised certificates. As a testament to the recent efforts made by the UoB, the number of postgraduate students has risen considerably, from 150 in 2016 to 1,500 in 2018.

government must avoid is mistakenly targeting research output rather than technological progress. For example, it could easily increase Bahrain's R&D spending and associated research output just by expanding the research budget, including giving extra funding to the local universities and think tanks, and creating public research funds that researchers can tap for grants. Such a plan would most likely have an incredibly small economic return, as public sector research is not motivated by economic advancement. Under the right circumstances, direct government funding can be successful (Mazzucato and Semieniuk, 2017), but this requires interventions that have a lot more nuance than simply offering grants. But in general, private R&D must be the main driver.

That is why Bahrain's tailored plan must emerge from a multi-stakeholder forum. The government cannot alone determine what is necessary for the private sector to take the lead in R&D--it must engage the private sector directly to ascertain the requisite steps.

The second recommendation is that authorities shift the current model of technology adoption away from importing technologies embedded in products, and away from importing technical experts on guest visas; toward a model focusing on homegrown experts who contribute to--and benefit from--the global scientific community in equal measure. This change will help ensure that Bahrain is better able to absorb cutting-edge technologies, and that it has the best chance of seizing a first-mover advantage within a narrow field.

The third recommendation is for the government to build upon the financial technology experiment it launched in 2017. Authorities correctly surmised that an economy the size of Bahrain's cannot compete in cutting-edge R&D with ones the size of China or Russia, unless it picks a niche wherein it possesses a comparative advantage, such as Islamic finance. This was a great first step toward creating a vibrant, private-sector led research cluster.

However, as it looks to expand to other sectors, the government should bear in mind the recommendations made in chapter 1.1, namely the need to focus on tradable goods where possible. This is because the technological advancements--and concomitant improvements in productivity--associated with financial technology are likely to be limited in size and scope, because finance is a service. Fortunately, it is a service with good interlinkages to the rest of the economy, but even the biggest innovations will struggle to compare in influence to the ones seen in the manufacturing sector. The EDB has designated manufacturing as one of the five sectors it is seeking to nurture, and so it should spearhead the relevant coordination efforts.

A final recommendation is for the government to continue investing in the IGA, as it seeks to improve public sector productivity through the aggressive introduction of ICT into government services. Much has been achieved in this regard during the last 15 years, but ICT solutions are incredibly dynamic, and so the government must not relent, and it must resist the temptation to rest upon its laurels. Relatedly, the TRA must continue its effective oversight of the telecommunications sector so that when the private sector is ready to expand its R&D activities, it is afforded the requisite advanced ICT infrastructure.

2.3. SUMMARY AND RECOMMENDATIONS

Scholars universally agree upon the importance of education and innovation to the growth of an economy. In both of these domains, Bahrain exhibits a mixture of substantive achievements, and a need to refine existing approaches to realize superior outcomes. Moreover, education and technology reforms must go hand-in-hand, since an economy cannot be innovative without first being knowledgeable and able to effectively absorb the technological output of other countries. With these points in mind, the following recommendations for policymakers are presented.

Recommendation 2.1: Continue to improve teachers' quality and teaching methods by considering performance-based compensation taking advantage of independent quality assessments.

Recommendation 2.2: Identify the skills gap in Bahrain through conducting comprehensive and periodic studies.

Recommendation 2.3: Continue to improve traditional, vocational and technical curricula and update them based on the skills gap study.

Recommendation 2.4: Increase collaboration between the private sector and educational institutions in identifying skills gaps and in improving education.

Recommendation 2.5: Organize a multi-stakeholder forum on R&D in Bahrain that will result in a coherent plan for increased private R&D, while avoiding the drawbacks of publicly-funded R&D.

Recommendation 2.6: Focus on building active homegrown scientists to improve that rate of effective technology absorption, and to maximize the chance of securing the first-mover advantage associated with a cutting-edge technology.

Recommendation 2.7: Build upon the financial technology research cluster by looking for a manufacturing sector in which Bahrain can develop a niche.

Recommendation 2.8: Continue to wield government organs such as the IGA and TRA as pioneers in improving productivity throughout the Bahrain economy.

3. NATIONAL FINANCE, MACROECONOMIC STABILITY, AND OPPORTUNITIES FROM ALTERNATIVE FINANCING

Weathering the storm of a potentially long-term decline in oil prices and maintaining a commercial environment that is attractive to foreign investors both require sound macroeconomic management. Moreover, Bahrain's banking sector, where Islamic finance plays a very important role, is especially sensitive to the fiscal and monetary policies adopted by the government. This chapter explores Bahrain's macroeconomic and budgetary policies, as well as the contribution that Islamic finance can make to economic growth. The primary background papers are Sbia (2018) and Elshabrawy (2018).

3.1. OPTIONS FOR MACROECONOMIC AND FINANCIAL SUSTAINABILITY AND RESILIENCE

3.1.1. Fiscal Balance: Theory

There exists a large literature in economics discussing the effects of fiscal deficits. However, that literature is written almost exclusively for conventional economies, meaning those that exhibit minimal dependence upon natural resources. That literature is briefly surveyed, before an exploration of some of the modifications to the conclusions that emerge when dealing with economies like Bahrain's, where natural resource income plays a central role in the economy.

3.1.1.1. Economies with Minimal Dependence upon Natural Resources

Analyzing the effect of a fiscal imbalance is complex because the alternative is not always easy to pin down. For example, many of the claims about the adverse economic consequences of fiscal deficits are based on comparing the economy to an impossible hypothetical alternative where the only difference is the absence of the deficit. In fact, the alternative to a fiscal deficit must include higher government revenues, lower government spending, or a combination thereof, all of which have their own economic drawbacks.

To address this issue, Panizza and Presbitero (2013) assume that the government holds its expenditure constant, and then chooses between taxes that are high enough to balance the budget on the one hand, and low taxes combined with the issuing of long-term public debt on the other hand. Under these circumstances, it is useful to distinguish between the short-run and long-run effects of the fiscal deficit.

Under this scenario, the short-run effect of a fiscal deficit is usually positive (Elmendorf

and Mankiw, 1999), as it constitutes a redistribution of resources from the future to the present (one can reasonably assume the absence of perfect Ricardian equivalence; see Barro (1989)): the lower taxation will result in higher private consumption and/or investment, which in turn boosts the current levels of aggregate economic activity. How large this effect is depends upon the degree to which the economy's resources are being deployed efficiently: if the economy is in a recession, characterized by high unemployment and low consumer and investor sentiment, the effect of a fiscal deficit will be strong and positive, meaning that employment and output will rise; whereas an economy operating close to full capacity will simply overheat, meaning rising inflation.

Given that only some of the lower taxes will be invested by consumers and businesses, fiscal deficits are usually associated with lower levels of total investment, which constitutes a key determinant of the long-run effects of a fiscal deficit. In general, lower investment leads to lower productivity and wage growth, and it leads to higher interest rates, all of which adversely affect the economy. Moreover, if taxes need to rise more than proportionately in the long-run to pay off the debt, the distortionary effect of those taxes on the economy will accentuate the aforementioned adverse consequences. However, fiscal deficits give countries the option of spreading out the long-run effects over a long period of time.

Traditionally, therefore, the fiscal deficit decision is framed as a choice between today and tomorrow. A government may opt for today if the economy is in a deep recession because persistent economic downturns can cause damage to the economy that continues even after the recession expires, such as unemployed workers becoming permanently unemployable due to their skills becoming irrelevant, or strategically valuable industries failing to weather the storm. In contrast, the tradeoff surely favors tomorrow when the economy is thriving, or close to it.

The experience of the global financial crisis in 2008 revealed some additional avenues that blur the boundaries between short- and long-run effects. Cochrane (2011) emphasizes the adverse effect of increased uncertainty that results from a fiscal deficit so large that investors begin to wonder how it will ever be paid off. Once they start to fear future confiscation through inflation, financial repression, and arbitrary taxation, they may become so gun-shy that the economy fails to reap even short-run benefits from the fiscal deficit, even if resources are broadly being underutilized. Beyond this, governments, like individual consumers, risk falling into debt traps, whereby they are crushed by the weight of interest payments on the debt. The inevitable default under such scenarios can derail economies for many years as foreign investors become understandably averse to committing funds.

For these reasons, the relationship between the state of the government's finances and economic growth is considered complex and nonlinear. This underlines the need to consider the unique circumstances relating each country at each point in time, rather than relying on fiscally hawkish or dovish maxims as the basis for fiscal policy.

3.1.1.2. Resource-Dependent Economies

The dynamics of the effect of fiscal deficits on economic activity in resource-dependent economies differs substantially, because of fundamental differences in the nature of the business cycle.

In a conventional economy, the business cycle is "mean-reverting," which means that downturns are transient, and planners can with confidence expect them to be followed by organic economic upturns. This is because the economy deviates from its long-term trajectory due to temporary misallocations of its resources: prices in important markets, such as labor, stock markets, or oil, fail to balance demand and supply, and the effect snowballs into other markets, disrupting the economy. Eventually, the prices autocorrect, bringing the economy back towards equilibrium. Under these circumstances, fiscal deficits and surpluses are deployed counter-cyclically to smooth out the busts and booms, respectively, as consumers and investors dislike volatility.

In resource-dependent economies, the business cycle does not represent temporary deviations around a long-term, upward trend. To see why, note that the economy is driven by the long-run path of resource revenues, which in turn is highly dependent upon movements in global commodity prices. Moreover--and herein lies the critical difference--global commodity prices are loosely what economists and statisticians refer to as "random walks," meaning that they do not exhibit mean-reversion: to a first approximation, the best prediction of the price of oil or gas one year from today is the price of oil or gas today (Morana, 2001). When the price of oil rises by $15, this does not mean that one can expect the future price of oil to decrease any more than one would had the price of oil only risen by $2, or fallen by $7. In effect, every change in the price of oil is, to a first approximation, permanent.

That means that in a resource-dependent economy, GDP also follows a random walk (long-term changes in the production of the natural resource can dominate the effect of price movements, but typically, price movements dominate output movements). When the U.S. economy is in a recession, one can be confident that in a few years at most, it will recover its previous path; in contrast, when oil prices fall and the Saudi Arabian economy contracts, one cannot anticipate an automatic recovery: a future increase in the price of oil is no more likely than it would have been had the price not fallen today.

This has profound implications for the conduct of fiscal policy. In a resource-dependent economy, recessions generally do not represent a transient underutilization of resources; instead, they represent a permanent decline in economic performance, pending a future improvement stemming from a fortuitous offsetting increase in global commodity prices. In France, during a recession, fiscal authorities ask themselves the question: "Should we run a deficit now to accelerate the economy's autocorrection, and spread the cost out over the future?" In Brunei, fiscal authorities ask themselves the question: "Should we run a deficit now to provide temporary relief from the long-run fall in oil prices, and spread the cost out over the future?" The key difference is that when authorities stop running a deficit in France, the economy is back on track, and the only lasting effect of the recession is the debt that the government must pay off; whereas in Brunei, when the deficit stops, the economy falls back to its new, lower level, plus the debt has to be paid off.

With these principles in mind, the next section assesses of Bahrain's fiscal situation.

3.1.2. Bahrain's Fiscal Situation

3.1.2.1. Primary Indicators

The following exposition draws heavily from Sbia (2018), which is the primary source of data. A key feature of Bahrain's macroeconomy to keep in mind is that its monetary policy is focused on maintaining a fixed exchange rate with the US dollar, in addition to the traditional goals of maintaining low and predictable levels of consumer price inflation, and supporting the growth of the economy. A macroscopic look at the budget is the departure point: **Figure 3.1.2.1.1** shows government revenues and expenditures, alongside the price of oil.

Bahrain did not register a budget deficit until 2009, in the wake of the global financial crisis. After closing a little in 2011, the gap between expenditures and revenues has continued to widen. Beyond these observations, note the visually-evident tight relationship between revenues and oil prices; in contrast, expenditure, especially after 2011, seems unrelated to oil prices. **Figure 3.1.2.1.2** displays the precise value of the fiscal balance, both in absolute terms and as a percentage of GDP.

The virtual absence of a relationship between oil prices and government expenditure results in a weak but non-zero relationship between oil prices and the budget deficit, though clearly the two are structurally linked, as will be discussed below. Moreover, in 2015-2016, after the oil price crash of 2014, Bahrain's budget deficit exceeded 10% of GDP, which is atypically high. **Figure 3.1.2.1.3** digs deeper into the relationship between revenues and the oil price.

The most salient feature of these data is the comovement between oil prices and oil revenues, which reflects the stability of Bahrain's oil production. In 2011, the two decoupled slightly due to technical disruptions to production in the Abu Sa'fa oil

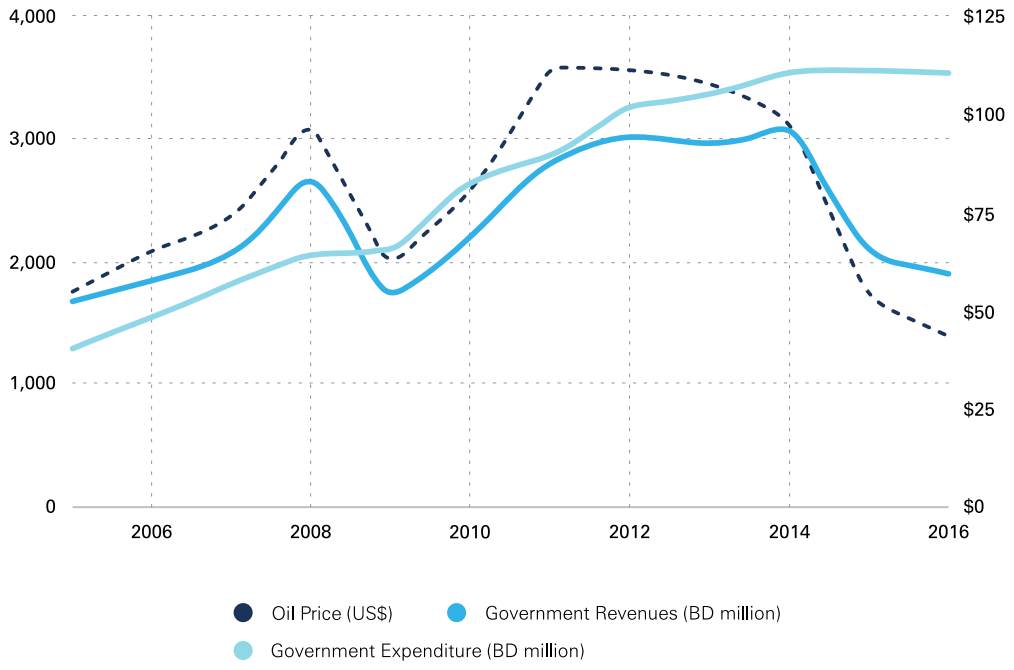

Figure 3.1.2.1.1
Government Revenues and Expenditures (BD million), and the Oil Price ($/barrel), 2005-2016

Source: Ministry of Finance and U.S. Energy Information Administration

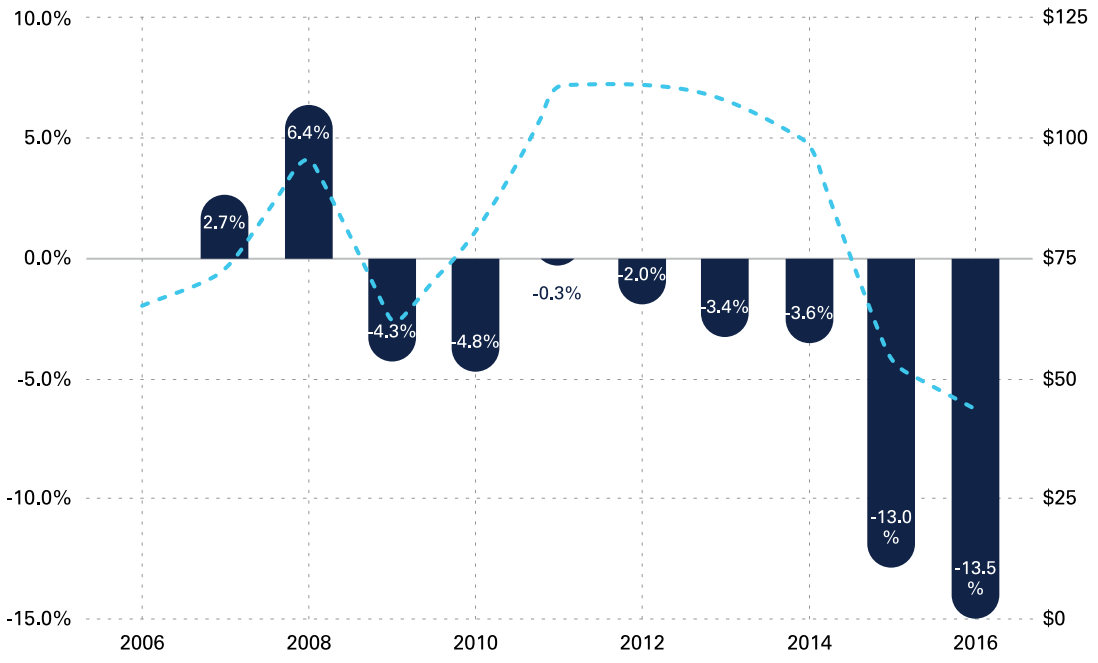

Figure 3.1.2.1.2
Fiscal Balance as a % of GDP and the Oil Price ($), 2005-2017

Source: Ministry of Finance and U.S. Energy Information Administration

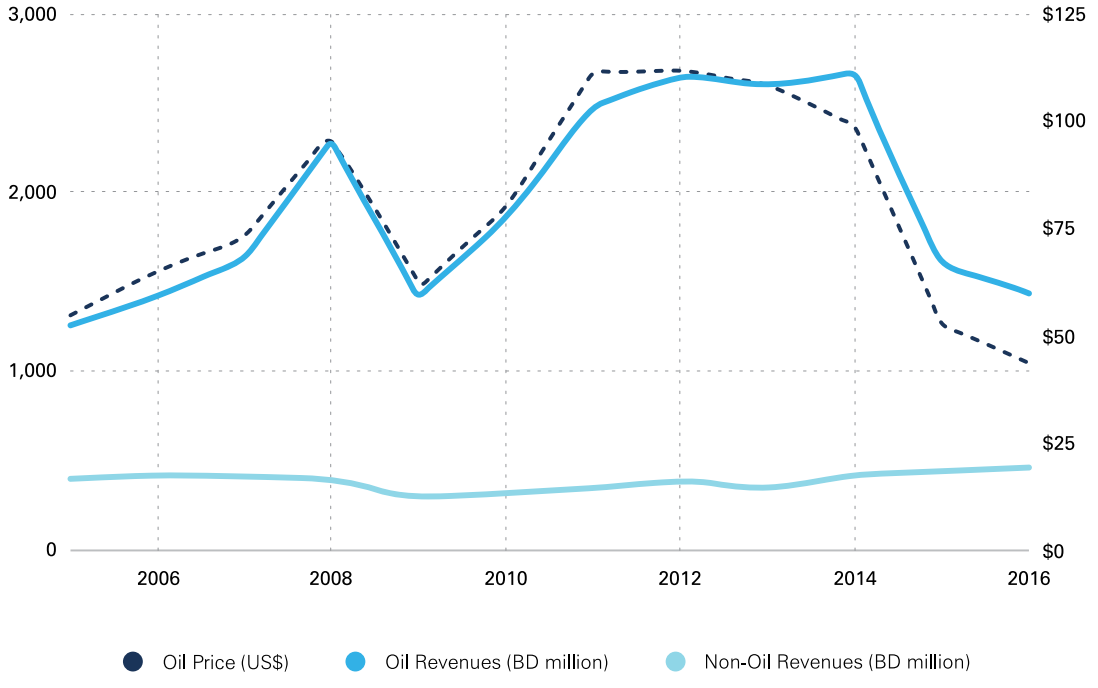

Figure 3.1.2.1.3
Government Oil versus Non-Oil Revenues (BD million) and the Oil Price ($), 2005-2016

Source: Ministry of Finance and U.S. Energy Information Administration

field. Beyond this feature, it is clear that oil revenues represent the lion's share of total revenues, as well as being the major source of variation in total revenues, too, since non-oil revenues are stagnant. Oil's contribution to the macroeconomy is more clearly exposed in **Figure 3.1.2.1.4**.

In 2016, oil revenues represented 86% of Bahrain's government revenues, the second-highest figure in the GCC behind Kuwait. As discussed in chapter 1.1, Bahrain's oil-dependence in the export and GDP domains is lower than in the neighboring countries, reflecting progress in diversifying the economy, yet the budget's continued dependence on oil remains a key challenge. Moreover, even though the export dependence on oil is low relative to the Gulf neighbors, it remains high at 69%, which makes Bahrain's ability to conduct its monetary policy sensitive to oil revenues, and therefore oil prices.

Shifting to expenditure, **Figure 3.1.2.1.5** compares the government's recurrent expenditure to its non-recurrent expenditure. These data shows that government expenditure is growing persistently, with the growth coming almost exclusively from recurrent expenditure. Moreover, recurrent expenditure exceeds non-recurrent expenditure substantially, representing around 88% of total expenditure in 2016. Notably, public sector manpower expenditure grew by almost 150% from 2005-2016.

Figure 3.1.2.1.6 breaks down subsidies, which is one of the biggest contributors to government expenditure.

Total expenditure on subsidies declines significantly in the period 2014-2016, falling from BD 763 million to BD 673 million (12% drop), primarily as a result of subsidy reforms. However, even after the contraction, subsidies still account for 20% of total expenditure--a very large figure. The other emergent trend is a shift from indirect subsidies, which is headlined by electricity and water subsidies, toward direct subsidies, which are mostly cash transfers to

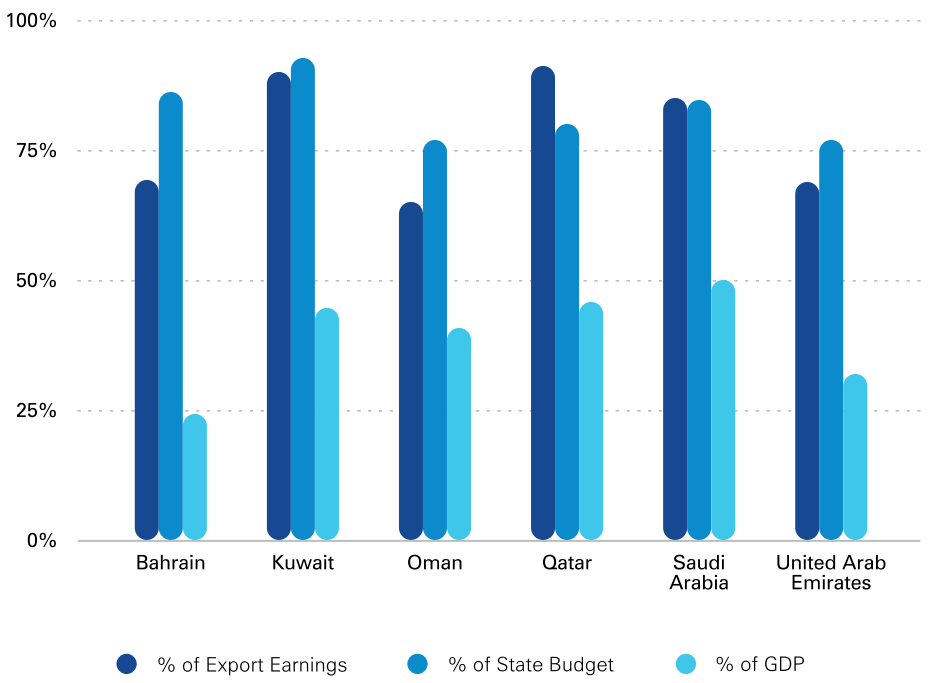

Figure 3.1.2.1.4
Oil and Gas Contribution to the Macroeconomy, 2016

Source: Sbia (2018)

low-income groups. This is likely the result of the government deducing that a lot of indirect support is regressive, meaning that it systematically assists the rich; this is especially true of electricity and water subsidies, which benefit those who have large and multiple homes much more than those living in small units. Direct subsidies, in contrast, offer the government the opportunity to means-test. As a result of continued deficits, the public debt has grown. **Figure 3.1.2.1.7** shows the growth.

During the period 2007-2017, real GDP has grown without interruption, but despite this, the public debt has increased from 8% of GDP to 80% of GDP. While there is no one-size-fits-all diagnostic for determining what a large public debt is, Bahrain's prevailing debt levels have led to cautionary statements from the IMF and credit rating agencies, with the latter citing it as a primary factor in credit downgrades (see below). This increases the cost of borrowing for Bahrain, which in turn limits the positive economic impacts of indebtedness.

Finally, Bahrain's current account--a key factor in Bahrain's monetary policy--is shown in **Figure 3.1.2.1.8**.

Bahrain has historically maintained a healthy surplus of the order of 5% of GDP, allowing it to accumulate the large foreign currency reserves necessary for Bahrain's monetary policy goals. However in the wake of the oil price crash during the middle of 2014, Bahrain has switched from a surplus to a deficit, which equaled 4.6% of GDP in 2016.

As mentioned above, these developments have had an adverse cumulative impact upon Bahrain's credit rating among the main global agencies. For example, in 2007, at the eve of the global financial crisis, Fitch rated Bahrain's sovereign debt at "A; stable," which is "upper medium grade" within the "investment grade" category. By 2018, all agencies classified Bahrain's sovereign debt as "non-investment grade;" for example, "BB-; stable" by Fitch.

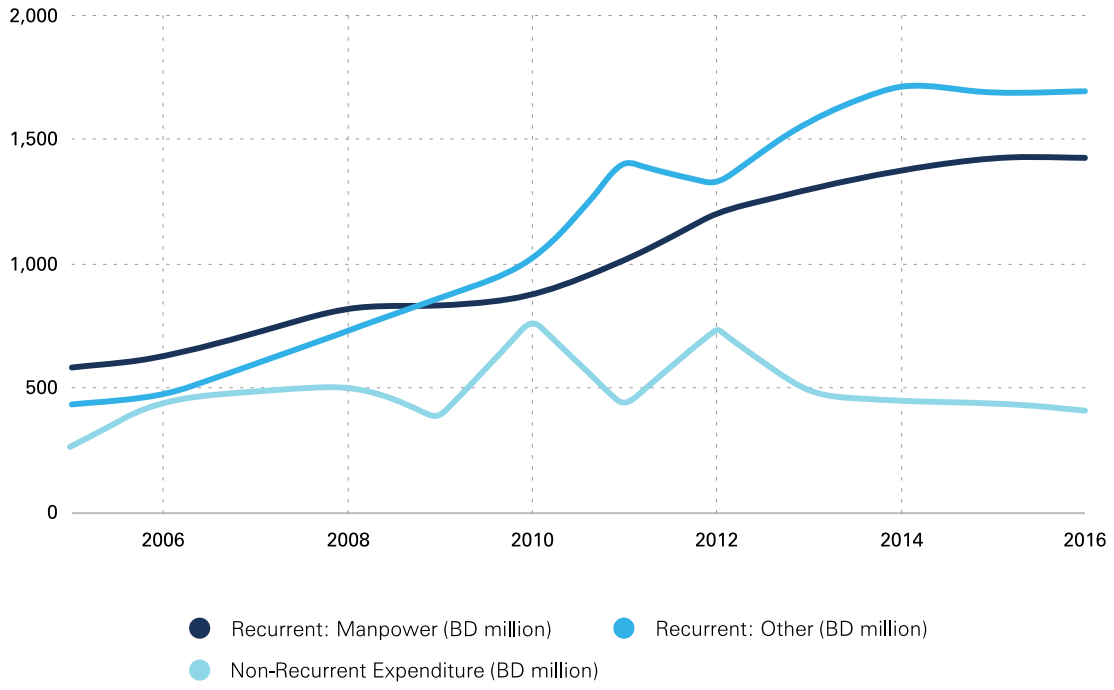

Figure 3.1.2.1.5
Government Recurrent versus Non-Recurrent Expenditure (BD million), 2005-2016

Source: Ministry of Finance

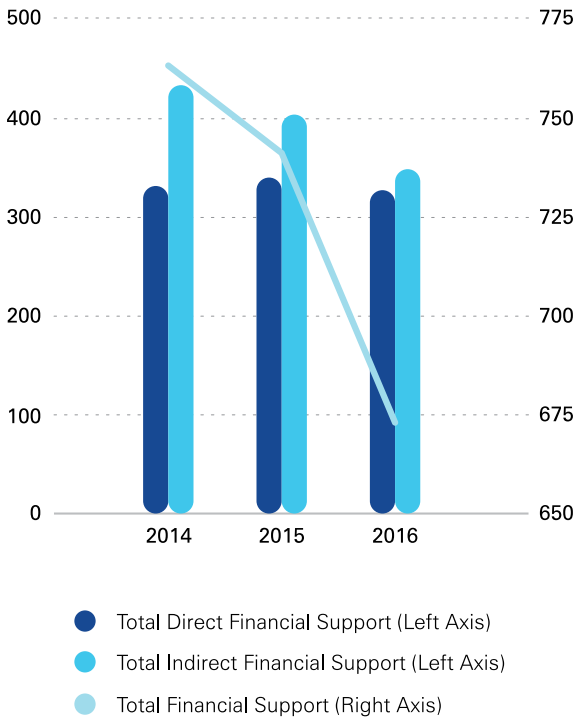

Figure 3.1.2.1.6
Direct and Indirect Government Subsidies (BD million), 2014-2016

Source: Sbia (2018)

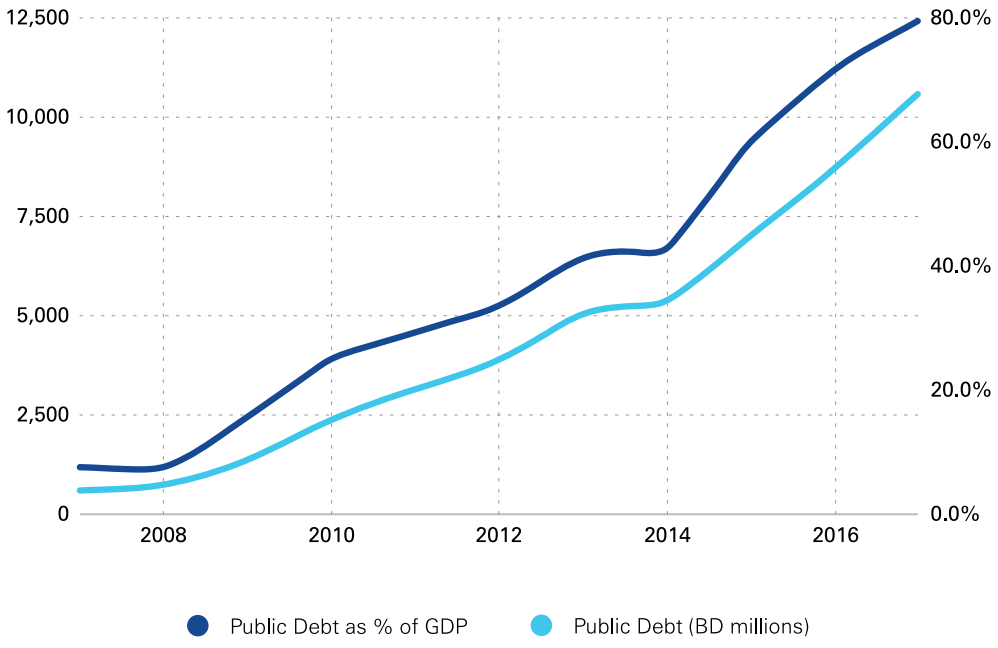

Figure 3.1.2.1.7
Public Debt (BD million), 2007-2017

Source: Central Bank of Bahrain

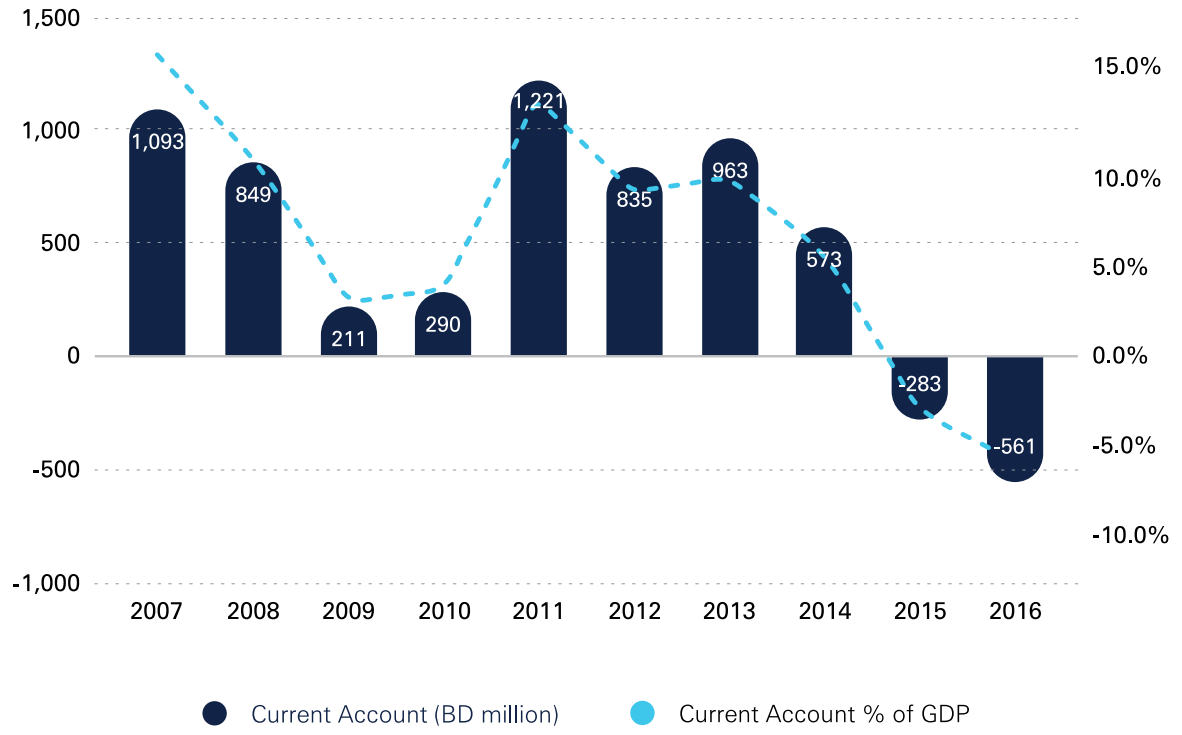

Figure 3.1.2.1.8
Current Account, 2007-2016

Source: Central Bank of Bahrain

3.1.2.2. Analysis

As discussed in chapter 1, despite the progress made in diversifying the economy, oil continues to play a central role, especially via its importance to government spending. Though Bahrain's fiscal difficulties started prior to the 2014 oil price crash, this latter event has made the task of restabilizing government finances incredibly challenging. As the public debt approaches 100% of GDP, it is clear that fundamental reforms are required if a sustainable trajectory is to be reasserted.

In particular, as oil prices seem to have declined in persistent manner, the scenario described in section 3.1.1.2 potentially applies: a budget deficit can be used to temporarily soften the impact of falling oil prices, but the economy may face difficulty in resuming its previous growth trend unless oil prices recover to their previous levels, which is unlikely. Admittedly, the discovery of a large oil field in 2018 could generate a large increase in revenues over the medium and long term (Al-Doseri, 2018), but it remains too early to assess the impact of the discovery on Bahrain's economy.

The dependence of government revenues on oil prices has been a consistent feature of Bahrain's economic history, and therefore the data shown above are unremarkable. The break from the past has surfaced in the expenditure domain: in resource-dependent economies, both revenues and expenditure co-move with global commodity prices, which is how Bahrain managed to maintain a balanced budget in the past despite the ups and downs of oil prices.

However, in the post-2008 era, the government has instituted a new fiscal strategy, whereby expenditure continues to grow despite stable or retreating oil prices.

Moreover, by opting to increase recurring rather than non-recurring expenditure, the government has committed itself to making the higher spending sustained rather than transitory. As shown in chapter 1.1, despite a stated goal of decreasing public sector hiring, it has in fact increased during the last 10 years, and is a major contributor to the prevailing budget deficit.

The government fully anticipated that there would be a day where falling oil prices would create fiscal and macroeconomic problems. This is evidenced by the fact that the Economic Vision was launched from a position of strength, virtually at the peak of Bahrain's post-2000 boom. In other words, Economic Vision 2030 is not a knee-jerk reaction to an economic crisis--it is a well-considered, long-term plan for putting the economy on a sustainable path.

Unfortunately, the economy underwent a series of unexpected shocks in the wake of the Vision's launch. These necessitated short-term measures that authorities were understandably not previously planning for, such as increasing government spending to cushion the effects of falling oil prices and the global economic crisis. Moreover, the government partially diverted expenditure from investment toward consumption to boost the economy.

The regular reports produced by the IMF and global credit rating agencies indicate that Bahrain could benefit substantially by clarifying the details of the government's strategy for tackling the deficit (Cochrane, 2011). The value of such information in Bahrain is amplified due to the centrality of FDI to the economic model, as investors favor the environments with the greatest levels of certainty. In October 2018, the government outlined a plan for achieving a balanced budget by 2022, which is discussed in greater detail below.

In addition to the foresight exhibited by the government in launching the Vision prior to the period of economic tumult, it has also undertaken substantial fiscal reforms as a reaction to the unfolding challenges, some of which were alluded to in the description section above. Correctly designating subsidies as a key target for fiscal reforms is among the major achievements. In fact, one of the reasons for the sustained growth in expenditure despite the stable or falling oil prices is that population growth was robust, and population size is one of the key determinants of the government's subsidy bill. Before describing the changes, it is worth explaining why the effectiveness of the previous system of subsidies had declined.

For several decades, Bahrain, like all the GCC countries and many other developing economies across the world, operated a generous system of subsidies to basic commodities and services, whereby consumers would be assured of a low, fixed price for a commodity/service. In the case of Bahrain, meat, flour, gas, fuel, electricity, and water were the most prominent examples, with residents paying fractions of these commodities' real costs; moreover, the subsidies were given to both residential and commercial consumers, creating a huge fiscal burden for the government, as shown in **Figure 3.1.2.1.6**.

In principle, the goal of subsidies to basic commodities is to support higher living standards for residents, especially those with low incomes who must purchase minimal quantities of such commodities. Price subsidies can be an attractive way of achieving this goal in developing countries that lack income tax systems, because in the absence of an income tax, it can be difficult for a central government to reliably and efficiently determine a household's level of economic need. Therefore, in terms of

implementation and delivery cost, a subsidy will have the desired effect of increasing gross consumption by poorer households.

However, subsidies to basic commodities suffer from a series of drawbacks that are so acute that global agencies such as the IMF and World Bank firmly recommend their elimination without exception.

First, by artificially lowering prices, subsidies generate wasteful overconsumption of basic commodities. In Bahrain, this was especially true of foodstuffs, such as flour and meat: households and restaurants would regularly dispose of surplus food simply because it was so cheap.

Second, the first drawback is exacerbated in the case of commodities that generate pollution and have other adverse societal effects resulting from their consumption (referred to as "negative externalities"). Thus, overconsumption of water depletes reserves, while overconsumption of fuel leads to excessive CO2 emissions and deteriorating air quality. This is why such commodities are typically taxed in advanced economies; yet in Bahrain, they were subsidized, contributing to some of the environmental problems discussed in chapter 4.2.

Third, despite the manifest assistance that they provide to low-income households, subsidies are regressive, meaning that they help high-income households more than they do low-income households. Fuel subsidies, for example, benefit the owners of large SUVs much more than owners of hatchbacks, and the former are systematically richer than the latter. Similarly, electricity subsidies benefit the occupants of a mansion many orders of times more than they do the tenant of a small apartment. Therefore, subsidies are a highly inefficient–and arguably counterproductive--poverty-alleviation device. A far superior alternative is direct, means-tested transfers, whereby a household's income is assessed, and if it is sufficiently low, it qualifies for a direct financial transfer. The issue below is further discussed below.

As far as economists are concerned, the case against subsidies to basic commodities is absolute, especially when compared to the alternative of means-tested direct transfers. In fact, the IMF and World Bank regularly cooperate with governments in their efforts at removing such subsidies, and they have a highly refined list of best practices based on the extensive international experience in subsidy reforms.

Before discussing Bahrain's reforms, it is worth noting that regular citizens are usually vehemently against the removal of subsidies, despite the arguments made by economists. This is primarily due to a narrow frame of consideration: they compare subsidies to no subsidies, without considering the alternative ways in which the money saved would be spent, including in helping them. Moreover, in countries with ineffective governments, citizens may lack faith in policymakers' stated goals of implementing means-tested transfers if the subsidies will be withdrawn prior to the introduction of the new system. This is why the IMF and World Bank emphasize the need for transparency in the reforms process, as securing popular support for subsidy reforms is critical for their long-term success.

In light of these widely-accepted arguments relating to subsidies, when the Bahrain government began considering how to address this fiscal deficit, it emphasized subsidy reforms. Sbia (2018) charts the chosen reforms, which included the following:

- **04/2015:** Increasing the price of gas from $2.25/MMBtu by $0.25/year until 2021
- **10/2015:** The removal of meat subsidies, followed by the introduction of compensatory, fixed (by household size) direct transfers

- **01/2016:** A gradual increase in fuel prices
- **03/2016:** The gradual elimination of electricity and water subsidies, with the exception of the first account for citizens, which retained significant subsidies

Once complete, these reforms will save the government substantial sums, but it remains too early to give a precise forecast, as these are basic commodities that are interlinked with all sectors, meaning that demand forecasts are highly complex. So far, a notable absence is a system of means-tested transfers. This is discussed further below. However overall, these reforms constitute sound steps toward realizing fiscal sustainability.

The government has also introduced reforms on the revenue side of the fiscal equation. Sbia (2018) lists the following:

- **01/2016:** Hotel service fees increased from 5% to 10%
- **02/2016:** The introduction of a new price on sand extraction
- **02/2016:** Alcohol tariffs increased from 125% to 225%
- **02/2016:** Tobacco tariffs increased from 100% to 200%
- **11/2016:** Introduction of fees on main land and partial land subdivision services
- **05/2017:** New customs service fees
- **09/2017:** Increased commercial registration fees

Some of these measures have not been fully implemented as authorities study potential modifications. Beyond this, foreign worker fees that were temporarily lifted in 2011 were reintroduced, as were new health insurance fees. Health authorities are close to launching a new, national health insurance scheme that aims to decrease the pressure on the health authorities' finances.

The Bahrain government is also in the process of launching a 5% VAT, as part of a pre-existing agreement at the GCC level. Saudi Arabia and the UAE have already launched their versions, whereas Bahrain delayed the January 2018 launch so as to permit further logistical and regulatory preparation. In addition to creating substantial revenues, VAT will also potentially raise the standard of business accounting in the private sector, and the resultant improvements in transparency could contribute to a more dynamic and attractive commercial environment, in spite of the initial cost of learning how to deal with VAT.

Finally, the emergence of a current account deficit, in addition to the fiscal deficit, has created a need for fiscal reforms to support Bahrain's fiscal and monetary policy goals--a view acknowledged by the government and central bank, and affirmed by the IMF. To that end, in June 2018, Kuwait, Saudi Arabia, and the UAE all committed to assisting Bahrain in the requisite fiscal reforms. In October 2018, Bahrain's government released its fiscal balance program, which included a series of initiatives to tackle the budget deficit, culminating in a balanced budget in 2022.

On the expenditure side, these included reducing operational expenditure by creating six task forces that evaluate purchase requests by government organizations, and then submit their recommendations to the Ministerial Committee for Financial Affairs and Rationalization of Expenditure--a committee that has been endowed with executive powers. Also on the expenditure side, in an effort to tackle the recurring expenditure relating to the public sector workforce, the program features a new voluntary retirement scheme that is likely to contribute to the long-run streamlining of the government bureaucracy. In parallel, the program seeks to make government processes simpler, and for them to continue to take advantage of the latest technological advancements.

On the revenue side, in addition to the aforementioned VAT, the program opens the door for growth in non-oil income by stating that there will be a review of government fees. Moreover, existing revenues will be subjected to stricter anti-corruption oversight. Subsidies will also be restructured, especially those falling under the umbrella of the EWA, to balance the Authority's budget by 2022.

The government will also launch a debt management office to support the process of stabilizing Bahrain's public debt. These initiatives (and others that have been omitted in the pursuit of parsimony) are certainly a step in the right direction, though many of the important details are yet to be released, such as the criteria that will be used when evaluating purchase requests, or the manner in which government processes will be simplified. Accordingly, it is too early to pass definitive judgment on their long-term consequences.

3.1.3. Recommendations for Bahrain

Bahrain is facing significant fiscal challenges, but as the government has known from before they even started, the definitive solution lies beyond the domain of fiscal policy. Nevertheless, fiscal policies can still play an important role in making Bahrain's public finances more sustainable. The report here picks out some of the most important recommendations in Sbia (2018).

If the government decides that more taxation is the right course of action, then it must continue along the example set by its subsidy and "sin" taxes (tobacco, sugary drinks, etc.), i.e., it must impose taxes on activities that have adverse spillover effects on the rest of the economy, thereby allowing the government to kill two birds with one stone. The plan to balance EWA's budget suggests that the government may well be planning for this.

In particular, if more taxes are necessary, then as Sbia (2018) proposes, energy taxes are a logical starting point, as they will help Bahrain to overcome some of the environmental problems discussed in chapter 4.2, and to realize some of the renewable energy targets discussed in chapter 4.1.

In terms of subsidy reforms, which are in process, Bahrain should consider importing a few more of the best practices described by the IMF and World Bank. These include more clearly telegraphing the expected schedule for subsidy reduction, which has occurred for some of the basic commodities, such as gas and electricity, but not for others, such as fuel. This is an important step in terms of improving investor confidence: as Cochrane (2011) argued, the short-term positive stimulus effect of fiscal deficits is maximized when investors have the greatest clarity over the future schedule of taxation and spending.

Moreover, despite commencing its subsidy reforms prior to Saudi Arabia, Bahrain has so far refrained from deploying an analogue to the Saudi "citizen's account," which permits means-tested direct financial transfers. This could be due to understandable apprehension about the inevitable teething problem as such a bold system is introduced. Bahrain should carefully monitor Saudi Arabia's progress and look to implement a refined version, as part of a strategy that involves the complete elimination of subsidies to basic commodities.
The result will be a far more cost-effective method of raising the living standards of society's lowest earners.

The fiscal balance program suggests that the government is planning for many of these reforms, though the details are yet to

be released. The private sector and foreign investors are likely to improve their sentiment considerably as more details about the plan are released, which is likely to occur as the specific initiatives are put into action.

Beyond fiscal reforms, the Bahrain government should continue implementing the Economic Vision 2030, along with the proposed refinements described in chapter 1. The root of Bahrain's fiscal problems is the budget's dependence on oil, which makes planning more difficult in the domain of government finances, and undermines the economy's ability to self-correct after economic downturns.

In the base of both fiscal and extra-fiscal reforms, the Bahrain government must continue to work with its Gulf partners. In addition to providing much-needed fiscal breathing room, they can also provide technical assistance. For example, in addition to already imposing VAT, the UAE has also totally eliminated fuel subsidies, creating floating retail gasoline prices. Bahrain can surely benefit from an inside-look at how such bold policies were implemented.

3.2. OPPORTUNITIES AND CHALLENGES FROM ISLAMIC FINANCE IN BAHRAIN'S ECONOMIC GROWTH

Islamic finance may seem superficially unrelated to issues of macroeconomic and fiscal sustainability. In fact, there are two major links. The first is not specific to the Bahrain economy, which is that adherence to Islamic financial principles (see below) can contribute to more stable economic growth, and in particular, can diminish the risk of financial booms and busts that can disrupt the economy. Therefore, Islamic finance alters the tradeoffs relating to macroeconomic and fiscal policy.

The second, which is more specific to Bahrain, is that finance constitutes a large part of the Bahrain economy (almost 20% of GDP), and is therefore of strategic importance to policymakers. Consequently, macroeconomic and fiscal policy needs to pay special attention to the Islamic finance sector, which is a critical contributor to the financial sector.

3.2.1. Islamic Finance: A Primer

Islamic finance is considered one of the fastest growing segments in the financial world. Today, there are more than 250 Islamic banks in the world and in only five years, from 2009 to 2014, the compound annual growth rate (CAGR) increased rapidly by 17.3%. In addition, the assets of these banks are expected to reach $3.8 trillion in 2022 from $2.8 trillion in 2016. This astonishing progress of Islamic banking in the marketplace started in 1974, when the foundation of the Islamic Development Bank was approved by ministers of finance at a Jeddah conference of the Islamic states (Elshabrawy, 2018).

Islamic finance can be defined as "financing or banking activity that complies with the Sharia (Islamic law) and its practical application through the development of Islamic economics" (Azarian, 2011). Today, the Islamic banking system has successfully replaced a lot of

products and services offered by conventional banks and has become one of the main drivers of the economy in several countries, rather than merely being a vehicle of piety.

3.2.1.1. Defining Characteristics

In principle, the Islamic finance is similar to the conventional finance in searching for profit and commercial opportunity. However, there are several conceptual and operational differences between these two systems. According to (Elshabrawy, 2018), Islamic finance is based primarily on four fundamental pillars.

1. The prohibition of interest or excessive interest, known as riba
2. Encouraging risk-sharing as a business model
3. The prohibition of speculative behavior and the sanctity of contracts
4. The prohibition of financing illicit sectors, such as drugs, arms, alcohol, and so on; see Beck et al. (2013)

To further understand these differences, the three primary components of Islamic finance are expanded upon: Islamic banking, takaful, and Islamic capital markets. Each is considered in turn.

Islamic banking was established in 1963. The main products and services in Islamic banking are as follows:

Murabaha: A cost-plus financing service. The seller buys a property or a product on behalf of a liquidity-constrained client and then resells it to the client in installments in addition to a defined service charge that operates as a profit margin. It is considered as a non-interest-bearing loan.

Mudaraba: A partnership where the buyer provides capital for a bank to invest and profits are shared based on an agreed percentage.

Qard hasan: A finance facility provided for the client without any profit; the client returns the capital amount at a certain agreed upon time or on a monthly basis according to a mutually acceptable schedule.

Ijara: A lease agreement between the bank and a client to provide a loan for a specific identified property for a period without transferring the ownership when the finance is settled (Mahmoud et al., 2015).

In general, Islamic banking is characterized by ensuring that financial assets are backed by the exchange of tangible goods and services, and this is normally achieved by risk-sharing. Sometimes, the contract brings together heterogeneous parties, as in the case of mudaraba, where one brings the capital and the other brings commercial and asset-management expertise; while sometimes it brings together homogenous parties, as in the case of musharaka, where both bring capital and commercial acumen. In these modes of businesses, Islamic banks can play a significant role in stimulating the engagement of skillful people and entrepreneurs in the market (Elshabrawy, 2018).

Some of these differences were exposed by the 2008 global financial crisis, when conventional banks exhibited weakness and instability, compared to the higher levels of stability and adaptability found in Islamic banks. The key driver was the latter's emphasis on risk-sharing, and the fact that their activities are more closely related to the real economy than in conventional finance (HGB, 2017).

Table 3.2.1.1.1 summarizes the main differences between Islamic and conventional banking.

	Islamic Banking	Conventional Banking
Main Principles	Functions and operations are based on Sharia principles	Functions and operations are based on the Bank's own principles
Main Focus	On investment, emphasis on the soundness of the projects	On lending, emphasis on the ability to repay loans
Sources of Funds	Investors (Profit Sharing Investment Account Holders) risk and return sharing with Islamic banks. The return on PSIA is not guaranteed but depends on the bank's performance.	Depositors transfer the risk to Conventional Banking, which guarantees a pre-specified return.
Uses of Funds	Share the risk in Mudaraba and Musharakah contracts and conduct sales contracts in most other contracts.	Financing is debt-based; borrowers are required to pay interest independent of the return on their project. Conventional Banks transfer the risk through securitization or credit default swaps.
Money	Money is not a commodity	Money is a commodity, can be sold & rented
Time	Profit on trade or service is the basis for earning profit	Time is the basis for interest on capital
Risks	Profit and loss sharing based	Interest is charged regardless of profit or loss
Values	Moral, permissible and ethical business aspects are the main values, guided by sharia law	Profits are the priority, social, moral or religious aspects are mainly ignored
Develop	Creates real economic value by trading, linked with the real assets to contribute directly in the economic development.	Increasingly involved in speculative ventures such as hedge funds and derivatives trading
Governance	Board of Directors and Sharia Advisory Board	Board of Directors
Control	Internal Sharia Reviewer and Internal and External auditors	Internal auditor and external auditor
Compliance	Regulatory and Financial Compliance & Sharia Compliance system	Regulatory and Financial Compliance

Table 3.2.1.1.1
Islamic vs. Conventional Banking

Source: Elshabrawy (2018)

The concept of takaful was first introduced in Sudan 1979 and officially endorsed in 1985 as an Islamic alternative to conventional insurance, which violates certain Islamic principles. Rather than having an insured and an insurer, takaful contracts have contributors to a fund managed by the takaful company and paid for by the participant for the shared benefit of both parties. Currently, around half of the world's takaful institutions reside in the GCC countries and the sector is growing to an estimated $20 billion of contributions from about 130 institutions established worldwide (Elshabrawy, 2018).

Finally, Islamic capital markets, where all investments, financing activities, and products are sharia compliant. Islamic bonds, known as sukuk, are the Islamic analogue to conventional fixed-income securities, and they have exhibited exceptionally low default rates, as well as comparable returns, while maintaining the moral benefit of the shared social responsibility of risk. Sukuk are being extensively used for financing infrastructure developments around the world, while some corporations use them to benefit from Islamic investment funds and indexes. Overall, it is estimated that the assets of the Islamic capital market will double by 2020 to $1 trillion (Elshabrawy, 2018).

3.2.1.2. Islamic Finance and the Macroeconomy

Today, there are more than 600 Islamic financial institutions in 75 countries and they are operating also in non-Muslim countries such as the UK and US. The UK has officially declared its intention to be the Islamic finance global hub (Elshabrawy, 2018). The proliferation of Islamic finance brings with it challenges and opportunities.

One of the main distinguishing features in Islamic finance is its embedding investments in real transactions of goods and services, which means that investment activity is more likely to stimulate the real economy, rather than contributing to financial bubbles. Furthermore, Islamic finance is based on the profitability of the projects requiring finance, rather than being merely a credit-oriented mode of business. In other words, these banks are investment centered and have an influential role in improving the economy growth and capital accumulation (HGB, 2017).

Two studies were conducted to examine the aforementioned roles of Islamic Finance in the economy of two countries: Malaysia and Pakistan. The studies revealed that Islamic Finance services and products have a positive impact on economic growth and the accumulation of capital as mentioned earlier (HGB, 2017; Belouafi, Bourakba and Saci, 2015). Even in Islamic banking credit products, such as ijara and murabaha, it is mandatory for clients to inform the bank about the use of this money, to prove that it will serve tangible purchases, investments, or expenses that are sharia-compliant (HGB, 2017).

Several scholars have compared the resilience of Islamic banks to that of their conventional counterparts during the 2008 global financial crisis, which was itself partially attributed to the excessive expansion of credit and the decoupling of financial activities from the real economy. There has been some evidence in support of the idea that in this regard, Islamic banks are a force for stability, exhibiting attributes that monetary authorities should consider imposing upon conventional banks (Hasan and Dridi, 2011).

With this background in mind, the next section examines Islamic finance in Bahrain.

3.2.2. Islamic Finance in Bahrain

3.2.2.1. A Descriptive Overview

Bahrain has the highest concentration of Islamic banks in the Middle East (Islamic International Rating Agency, 2017). Bahrain is

currently home to 102 banks contributing to 16% of GDP in 2017, and 23 of these banks are Islamic Banks (CBB, 2018). Of the 23 Islamic Banks operating in Bahrain, 17 are wholesale banks and six are retail banks (CBB, 2018). Islamic Banks represent around 14% of the total retail banking assets in Bahrain (CBB, 2018). Furthermore there are 13 Islamic Investment Business firms out of a total of 52 Investment Business firms (IGA, 2016). There are also seven Islamic insurance companies (Takaful) and two re-takaful companies (CBB, 2018a). The total gross contributions of takaful in 2016 was BD 60.43 million, making up around 22% of the total gross premiums/contributions in Bahrain (Elshabrawy, 2018).

The Islamic Banking sector has grown rapidly during the past few decades: total assets of Islamic Banks in Bahrain grew from US$ 1.9 billion in 2000 to US$ 25.6 in 2012, raising the market share of Islamic Banks of total banking assets from 1.8% in 2002 to 13.3% in 2012 (CBB, 2018a). Impressive growth rates have been achieved in Bahrain between 2006 and 2008, where total asset growth rates reached 35%, but growth slowed down significantly after the global financial crisis of 2008, where growth rates reached 3% between 2010 and 2012 (Elshabrawy, 2018). A similar trend is found in all GCC countries where the growth rate in the GCC Islamic banking sector was 29% in 2006-2008 and slowed down to 10% between 2010 and 2012. However, it is worth noting that despite the slowdown of the growth of Islamic banks they have maintained higher growth rates than conventional banks following the 2008 global financial crisis (Elshabrawy, 2018). The growth rates of Islamic banks remained low until 2014, though growth rates started accelerating thereafter. In 2016, the Islamic retail banking assets grew by 11% while deposits grew by 8% (Elshabrawy, 2018).

By the first quarter of 2018 the aggregated assets of Islamic Banks reached $27,177.3

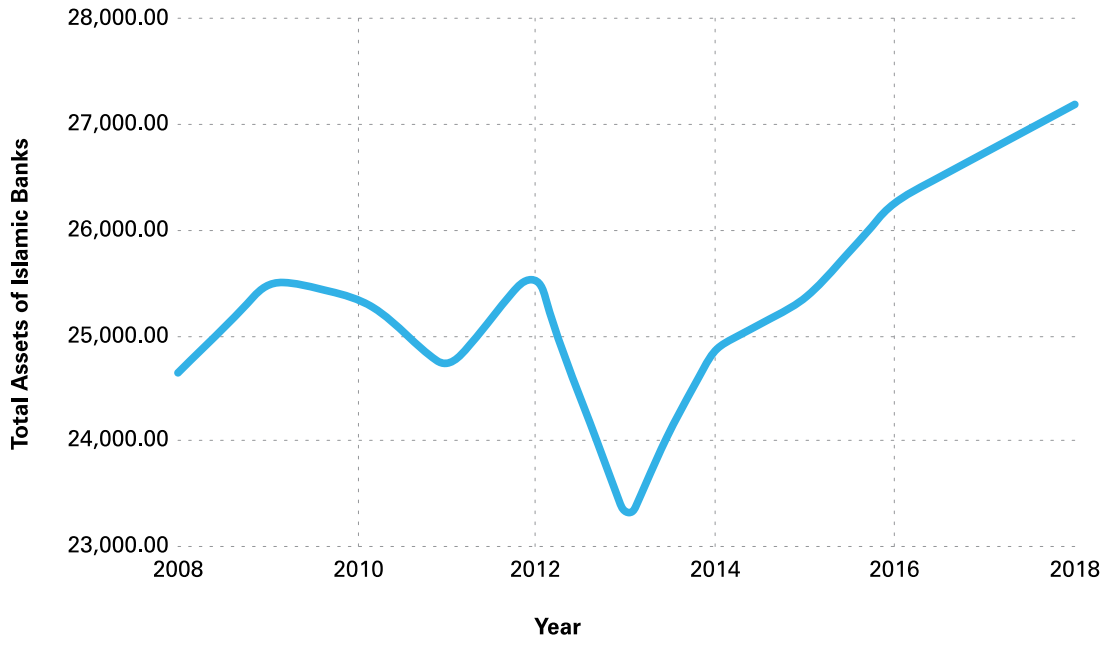

Figure 3.2.2.1.1
Total Assets of Islamic Banks ($ million), 2008-2018

Source: Central Bank of Bahrain

million, equal to 77% of GDP in Bahrain (see **Figure 3.2.2.1.1**; CBB, 2018b). While the aggregate assets of the whole banking system in Bahrain was almost $190 billion, which is equivalent to 535.5% of GDP (CBB, 2018b). **Figure 3.2.2.1.2** shows show the total assets and liabilities of Islamic banks classified by geographical location, and as can be seen the majority of the assets and liabilities of Islamic banks in Bahrain are domestic. Also, the majority of assets and liabilities of Islamic banks are dominated in Bahraini Dinars or US Dollars (**Figure 3.2.2.1.3**). The dominance of the USD is due to the fixed exchange rate regime, which adds to the certainty and predictability of banking operations.

The ICD Reuters Islamic Finance Development Indicator (IFDI), measures the performance of 124 countries and provides useful insight on the development of the Islamic finance sector in Bahrain compared to other countries worldwide. The IFDI includes five indicators:

1. Quantitative development
2. Knowledge
3. Governance
4. Corporate social responsibility
5. Awareness

Each of these indicators is further divided into sub indicators. The IFDI shows that Bahrain is a global leader in Islamic Finance where it ranked second after Malaysia in 2016 and 2nd globally in 2018 following Malaysia 1st and UAE 3rd (Elshabrawy, 2018). The following is a summary of the results in the 2017 report summarized by Elshabrawy (2018):

• **Bahrain is ranked 5th** in the quantitative development indicator which includes 5 sub indicators: Islamic banking, takaful, other Islamic financial institutions, sukuk, and Islamic funds. Bahrain ranked 1st in the Islamic banking sub indicator, 6th in sukuk, 9th in Islamic finance assets, 10th in takaful, but was not in the top 10 for Islamic funds.

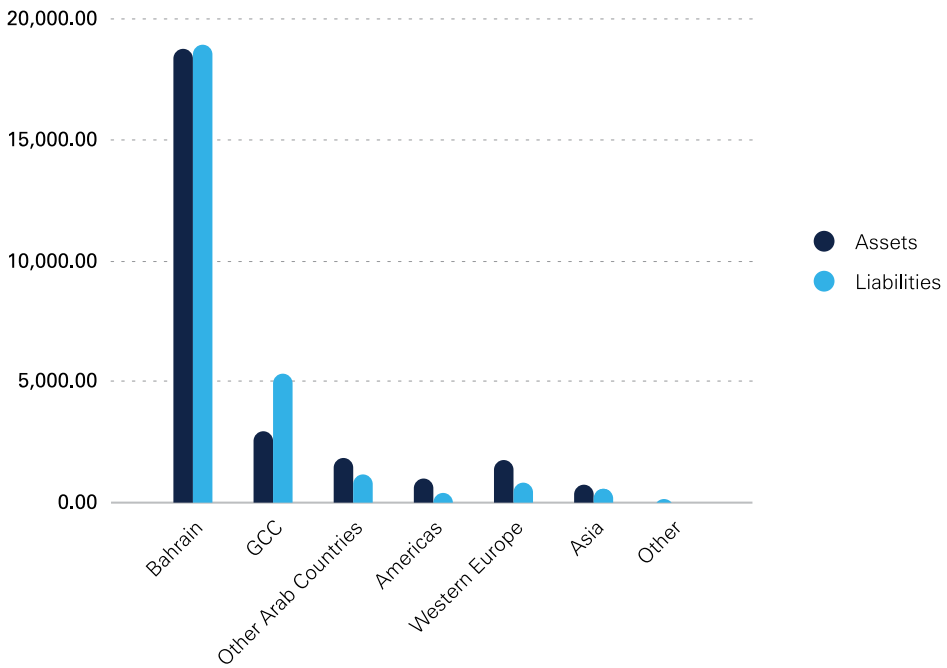

Figure 3.2.2.1.2
Islamic Banks: Location of Assets/Liabilities ($ million), 2018 Q1

Source: Central Bank of Bahrain

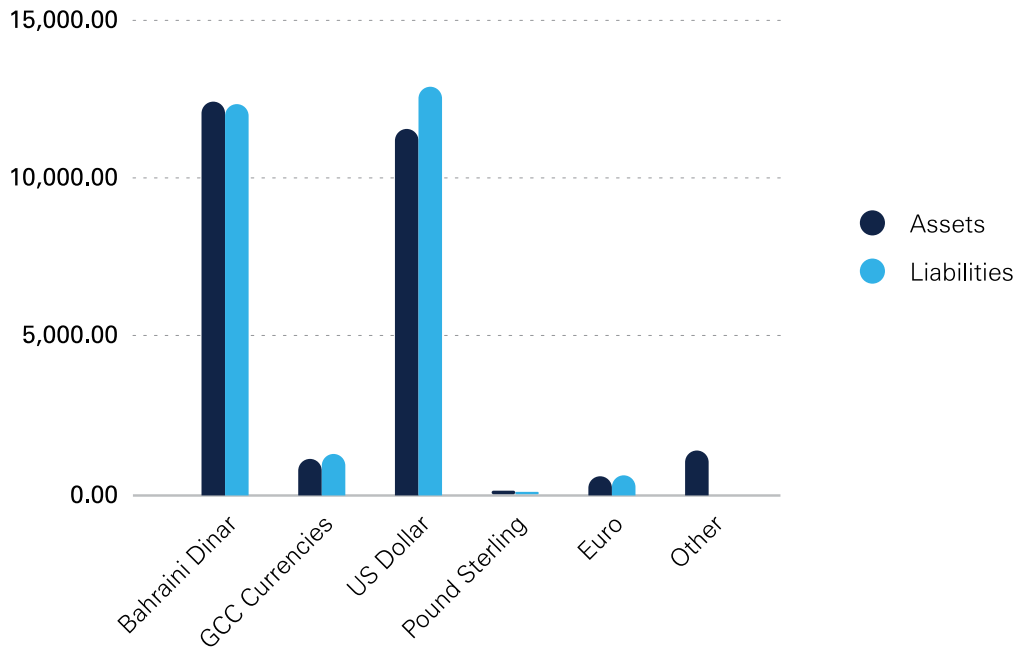

Figure 3.2.2.1.3
Islamic Banks: Currency of Assets/Liabilities ($ million), 2018 Q1

Source: Central Bank of Bahrain

• **Bahrain ranked 4th** in the knowledge indicator which measures both education and research in Islamic Finance. Bahrain ranked 4th in education and 3rd in research.

• **Bahrain ranked 1st** in the governance indicator which includes three sub indicators: regulations, sharia governance, and corporate governance. Bahrain ranked 1st in regulations and sharia governance and 8th in corporate governance.

• **Bahrain is ranked 3rd** in the corporate social responsibility (CSR) indicator which includes two sub indicators: CSR activities and CSR funds disbursed through zakat, qard ul-hasan, and charity.

• **Bahrain ranked 2nd** in Awareness which is measured by the number of seminars and conferences. Bahrain was the first globally in Islamic finance conferences and second after the UAE in seminars.

Overall the IFDI indicator shows the globally leading role of Bahrain in developing the Islamic Finance sector in the economy. The Global Islamic Economy Indicator (GIEI) also paints a similar picture. The GIEI is a wider indicator that measures the Islamic economy which includes halal food, Islamic finance, halal travel, modest fashion, halal media and recreation, and halal pharmaceuticals and cosmetics. In 2017 Bahrain ranked third worldwide in the GIEI and second in the Islamic Finance sub-indicator (Elshabrawy, 2018).

The financial services industry has seen drastic technology-led changes over the past few years. Therefore, in order for Bahrain to maintain its position as a financial hub and as a leader in Islamic finance, it has to be a leader in

financial innovation. As mentioned in chapter 4.2, Bahrain Fintech Bay (BFB), a financial technology hub and a corporate incubator was launched in early 2018. BFB is the largest Fintech hub in the MENA region.

BFB brings together governmental bodies, financial institutions, corporations, consultancies, universities, associations, media agencies, venture capital and fintech start-ups to drive the development of a financial technology ecosystem. In 2017, the CBB established a dedicated Fintech unit to oversee the sector. The Central Bank of Bahrain (CBB) also announced new regulations to create a regulatory sandbox that will allow startups and fintech firms to test and experiment their banking ideas and solutions in a virtual space before deploying them in Bahrain. In 2017 the CBB also issued new crowdfunding regulations to support the expansion on the Fintech sector.

3.2.2.2. What explains the general trends in Bahrain's Islamic finance sector?

The rapid growth of the Islamic finance sector in Bahrain and Bahrain's status as an Islamic finance hub can be partially attributed to supportive government policies, including the open-market economy and a macroeconomic policy framework conducive to growth. Furthermore, the CBB has played an important role in regulating and monitoring the Islamic finance industry and providing an environment that fosters transparency and innovation. The CBB was one of the first central banks to publish Islamic finance regulations in 2001 (Elshabrawy, 2018). Since then, the CBB has been continuously implementing new innovative regulations and policies to further develop the sector.

The CBB has itself been an innovator in the regulatory realm. It was the first central bank to issue and develop sukuk in 2001 (EDB, 2017). The CBB was the first to develop takaful and retakaful regulations in 2005 (EDB, 2017). It was also the first to launch short-term Islamic liquidity management instruments in 2008 (EDB, 2017). As a result of such leadership, the CBB's role has been recognized worldwide and the CBB was voted Best Financial Center at the International Takaful Summit for three consecutive years from 2008-2010 (CBB, 2010). Moreover, the CBB Rulebook has been widely regarded as benchmark for sharia compliant governance (Elshabrawy, 2018). More than 30 countries have looked to Bahrain for help and guidance in setting up their own Islamic financial structures and regulations (EDB, 2017).

The Islamic banking sector in Bahrain has also benefited from accommodating a network of important organizations that support and help develop the Islamic finance industry. For example, the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) was established in Bahrain in 1991. With around 45 members, AAOIFI is a leading international non-profit organization that is based in Bahrain responsible for development and issuance of standards for the global Islamic finance industry. AAOIFI standards and guidelines in sharia, accounting, auditing, ethics and governance have supported the growth of the Islamic finance industry both in Bahrain and globally.

Bahrain was the first country to make AAOIFI standards mandatory for all Islamic institutions. Many countries followed Bahrain's footsteps and today AAOIFI standards are mandatory in the Dubai International Financial Center, Jordan, Qatar, Qatar Financial Center, Sudan, South Africa, Syria, and the Islamic Development Bank. AAOIFI standards also form the basis for national standards in Bangladesh, Brunei,

France, Indonesia, Kuwait, Lebanon, Malaysia, Pakistan, Russian and Central States, Saudi Arabia, the United Arab Emirates, and the United Kingdom.

Established in 2001, the Council for Islamic Banks and Financial Institutions (CIBAFI) is also a non-profit organization based in Bahrain. CIBAFI has around 120 members and provides information and services to Islamic Banks and Financial institutions. Both AAOIFI and CIBAFI offer specialized training programs related to various topics in the Islamic financial industry. Similarly, the International Islamic Financial Market (IIFM) is non-profit organization with member institutions from a variety of countries worldwide based in Bahrain, and was established in 2002 with the aim of creating a robust, transparent and efficient Islamic financial market. IIFM focuses on standardizing Islamic financial contracts and product templates relating to the Islamic financial services industry.

In 2002 the Liquidity Management Center (LMC) was also established in Bahrain. LMC delivers innovative, adaptable and tradable Islamic sharia-compliant short-term and medium-term financial instruments to Islamic financial institutions. LMC contributes to the growth of the Islamic finance sector by helping Islamic finance institutions in placing their surplus funds in profitable traded instruments (Elshabrawy, 2018). LMC and CBB also jointly introduced the Islamic Sukuk Liquidity Instrument (ISLI) in 2008 as a liquidity management tool for Islamic financial institutions. ISLI creates a more liquid sukuk market by enabling financial institutions to access the government's Islamic leasing (ijara) bonds. Furthermore, a number of private organizations are present in Bahrain such as Thomson Reuters, Global Islamic Finance Hub, and Deloitte's Islamic Finance Knowledge Center, among others, which provide a variety of services to Islamic finance institutions.

The Islamic finance industry in Bahrain has also been supported by a highly skilled Bahraini workforce. The financial services sector employs more than 14,000 people, of whom over 60% are Bahraini (EDB, 2017). Many of the Bahraini workforce are educated and trained in institutions that offer specialized degrees and courses in Islamic finance. Bahrain was one of the first countries to offer Islamic finance education and training programs in the 1980s (Elshabrawy, 2018). According to the Global Islamic Finance Education report by Yurzik (2013), Bahrain was among the top 10 countries worldwide and second in the MENA region by the number of Islamic finance education and knowledge service providers. The CBB has also supported the development of Islamic finance education in Bahrain through the Waqf Fund which was established in 2006.

The Waqf Fund sponsors different Islamic finance education and training programs, for example the Waqf Fund Graduate Sponsorship Program provides scholarships for student to pursue a post-graduate diploma program at the Bahrain Institute of Banking and Finance (BIBF). Bahrain's Islamic finance industry has also benefited from Bahrain's leadership role in hosting conferences and seminars. In 2017, e.g., Bahrain hosted the 24th World Islamic Banking Conference with over 1,300 participants and 135 speakers from more than 50 countries. Such conferences contribute to developing the Islamic finance industry through sharing best practices, the most recent innovations, and methods of managing change and dealing with challenges.

The growth of the Islamic Banking sector in Bahrain has also been supported by the high liquidity levels in the region and the increasing preference for Islamic transactions, especially after the global financial crisis of 2008, as Islamic finance products have been increasingly viewed as a safer alternative to conventional banking (CBB, 2008). In addition

to the study mentioned in 3.2.1.2 above, an IMF study (Farooq and Zaheer, 2015) shows that worldwide Islamic Banks proved their resilience during the crisis and contributed to economic stability as their credit and asset growth was at least twice as high as that of conventional banks. As argued above, the very nature of Islamic banking precludes some of the riskier practices that caused conventional bank to make large losses during the crisis.

In Bahrain in 2008 the consolidated assets of Islamic banks grew by 50% driven mainly by foreign assets (CBB, 2008). Islamic Banks continued to grow in 2009 but at a lower rate of 3.5% (CBB, 2009). Growth further decelerated in 2010 to -0.6% (CBB, 2010) due to the effects of the global financial crisis. In 2011 the aggregated assets of Islamic banks (retail and wholesale banks) declined by 2.6%, and this drop was due to a reduction in foreign assets (CBB, 2011). Foreign securities decreased by 23.1% from $3,042.5 million in 2010 to $2,341.2 million in 2011 (CBB, 2011). Foreign investment with private non banks also decreased, dropping by 24.6%, from $2,414.5 million in 2010 to $1,821.6 million in 2011 (CBB, 2011). However, Islamic banks quickly recovered and recorded a positive growth rate of 3.5% in 2012 which was also fueled by a growth in foreign assets (CBB, 2012). Between 2014 and 2017 a number of reforms were undertaken by the CBB which caused the growth rate of Islamic banks to accelerate after 2014.

3.2.3. Recommendations

All GCC countries have achieved significant growth in the Islamic finance sector. Today Islamic finance plays a substantial role in the economies of the GCC countries. However a number of GCC countries are aspiring to become the world leader in Islamic finance, a goal that they cannot all simultaneously realize. Competition is a healthy phenomenon that generally leads to growth, however the emergence of rival centers in the GCC has fragmented the Islamic finance industry (Wilson, 2013). Each GCC country has set up its own laws and regulations governing the Islamic finance sectors and there have been no attempts to harmonize these regulatory systems (Wilson, 2013).

Therefore GCC countries should work together to converge their Islamic finance regulations. The GCC countries should collaborate together and identify their areas of competitive advantage and focus on developing such areas. Islamic finance institutions in the GCC should focus on competing with other institutions worldwide rather than competing with each other. Collectively the GCC is well positioned to become the world's largest and most important Islamic finance hub.

Islamic banks in Bahrain should also place greater emphasis on expanding their operations internationally, as currently the majority of the assets and liabilities of Islamic banks in Bahrain are domestic. International expansion offers much more scope for growth, as well as for the minimization of risk.

To this end, the CBB should continue its role as an innovative regulator. Bahrain is moving toward the right direction in terms of financial innovation, especially after the establishment of the Bahrain Fintech Bay. Moreover, to support financial innovation and the development of the Fintech industry, Bahrain should focus more of its efforts on developing its educational quality, particularly in digitalization and technology. Digitalization should be linked with Islamic finance and banking and specialized courses should be offered that link recent technological developments with the banking industry.

Also as part of a within-industry diversification strategy, Bahrain should focus on providing

comprehensive Islamic economy education programs, as the prevailing ones mainly focus on Islamic finance, with less emphasis on other aspects such as the halal industry, zakat, and waqf, which are also important aspects that can support the Islamic finance industry. By developing Islamic finance education in Bahrain, Bahrain can also start focusing on marketing itself as a leader in Islamic finance education with the aim of attracting international students. Bahrain can also start offering online courses and e-learning opportunities in Islamic finance to students from all over the world.

3.3. SUMMARY AND RECOMMENDATIONS

Bahrain's macroeconomy has historically been stable, which has helped foster a vibrant Islamic finance sector. However, a series of crises, starting with the global financial crisis of 2008, have given rise to a period of sustained fiscal pressure. The ultimate solution lies in diminishing the economy's dependence on oil, and building upon the existing successes of the Islamic finance sector can play an important role in this strategy. In the short-term, however, there exists room for fiscal interventions that can help stabilize state finances, will also contributing to Bahrain's environmental targets.

Recommendation 3.1: When imposing new indirect taxes, focus on goods and services that have negative environmental and health spillovers.

Recommendation 3.2: Work toward the complete elimination of subsidies to basic commodities, and the introduction of direct, means-tested financial transfers in their place.

Recommendation 3.3: Continue to implement and refine Economic Vision 2030 to build a diversified economy.

Recommendation 3.4: Continue working with GCC partners in implementing fiscal reforms, including soliciting their financial and technical assistance.

Recommendation 3.5: GCC countries should exploit synergies in building a vibrant GCC level Islamic finance sector.

Recommendation 3.6: Efforts should be made to harmonize Islamic finance laws and regulations in the GCC.

Recommendation 3.7: Islamic Banks in Bahrain should focus more on expanding their operations internationally.

Recommendation 3.8: Develop the Islamic finance educational system so that Bahrain can start marketing itself as a leader in Islamic finance education.

4. SUSTAINABLE ENERGY: RENEWABLE ENERGY AS A COMPLEMENT TO HYDROCARBONS

In light of the prevailing environmental challenges, and building upon the Economic Vision, Bahrain is seeking to exploit the opportunities afforded by renewable energies. This chapter explores the relevant issues, and draws heavily from the background papers Al-Doseri (2018) and Albuflasa (2018).

4.1. THE OPPORTUNITIES FROM RENEWABLE ENERGIES

"Due to its limited size and natural resources, as well as its arid land, Bahrain has realized that a healthy environment is the foundation for human wellbeing and economic prosperity. The main drivers of environmental change in Bahrain are population growth, economic development, urbanization, technology and climate change. These challenges require the transfer and adaptation of proper green technologies, funding for sustainable development, national capacity building, and raising community awareness about the interlinkages between economic development, environmental protection and human wellbeing. Low-carbon innovations, alongside resource efficiency actions may increasingly gain competitive advantage in the global economy and help Bahrain in achieving the SDGs and MEAs. Moreover, it sustains a prosperous economy attractive to businesses and investments, ensuring the well-being of its citizens and the sustainability of resources for future generations."

- Dr. Asma Abahussain
(Professor of Earth Sciences and Environment, Arabian Gulf University, Bahrain)

Bahrain was the first Arabian Gulf state to discover oil in commercial quantities. It was also the first country to earn oil revenues; which financed wide modernization projects. This discovery was a lifeline for Bahrain's economy as it coincided with the collapse of the world's pearl market, which was Bahrain's main export at that time. Since then, the country's economic development agenda has been based on this limited natural resource, which also represents the focus of all energy sectors, too. This accentuates the challenge of shifting from a well-established energy source to alternative, more sustainable fuel types other than hydrocarbons. Nevertheless, Bahrain's Economic Vision addresses this challenge and many strategies have been formulated and implemented in the pursuit of a diversified energy base.

This section discusses the energy balance between production, expected needs, and consumption rates. In addition, it also analyzes how this influences the direction and substance of the government's policy on privatization, subsidies, the diversification of energy resources, and plans for exploring alternative sources of energy.

4.1.1. An Overview of the Energy Sector in Bahrain

4.1.1.1. Oil and Natural Gas

Bahrain is endowed with substantial energy resources consisting mostly of crude oil and natural gas. April 2018 witnessed an

The oil and gas sector has played a vital role in sustainable development, it is the engine of the sustainable national economy by fueling economic growth and improving living standards. We embarked on sustainability initiatives such as the climate change strategy for the petroleum sector, including enhancing energy efficiency and environmental standards, water conservation, and mangrove restoration. The world is on the verge of an era of unprecedented prosperity due to rapid advances in technology and a global middle class, which will grow to five billion people by 2030, creating greater demand for energy and products derived from oil and gas. This is an opportunity for Bahrain to meet such demand and at the same time fuel the national economic growth by adopting Smart Oil Economy (SOE) as a critical enabler of economic growth in the 4th Industrial revolution era.

- HE Shaikh Mohammed bin Khalifa bin Ahmed Al Khalifa
(Minister of Oil, Chairman of the board of directors in NOGA)

announcement of a new shale oil and associated gas resource in the Khaleej Al Bahrain Basin, located off the west coast of the kingdom, in addition to the discovery of large quantities of deep gas. This oil discovery is the largest in the kingdom since 1932. It is estimated to reach a total volume of 80 billion barrels of oil in place and up to 20 trillion cubic feet of deep gas in place from Bahrain field (Barbuscia, 2018). However, oil extraction at scale will not occur anytime soon for this type of discovery and it is not yet clear exactly how much the field can produce. For instance, Oman's Rub Al-Khali Basin area was estimated to contain 24 billion barrels of oil, but only 1.2 billion barrels are technically recoverable (Mahdi and Sergie, 2018).

According to National Oil and Gas Authority (NOGA) experts, the technological challenges will require a lengthy lead time of several years until extraction levels can represent a significant contribution to the governmental budget. This is because the feasibility of extracting this type of oil and gas is normally carried out through several stages. Furthermore, NOGA announced that they will be approaching international partners to contribute in funding and providing technical expertise which will consume more time than conventional investment (Gnana and Saadi, 2018).

Currently, Bahrain's oil sector mainly relies on two resources; namely, the Bahrain and Abu Sa'fa fields, with revenues from the latter being split equally between Saudi Arabia and Bahrain (operations are performed by Saudi Arabia). **Figure 4.1.1.1.1** shows crude oil production for Bahrain's oil field for the period 2005-2015.

In recent years, oil production from Bahrain's field has increased significantly from 32 thousand barrels in 2010 to 51 thousand barrels in 2015, which translates into an increment of approximately 60%.

As a result of this increase in oil production, the production of associated gas also increased, rising from 105 billion cubic feet/year in 2011 to 232 billion cubic feet/year, in 2015. This growth

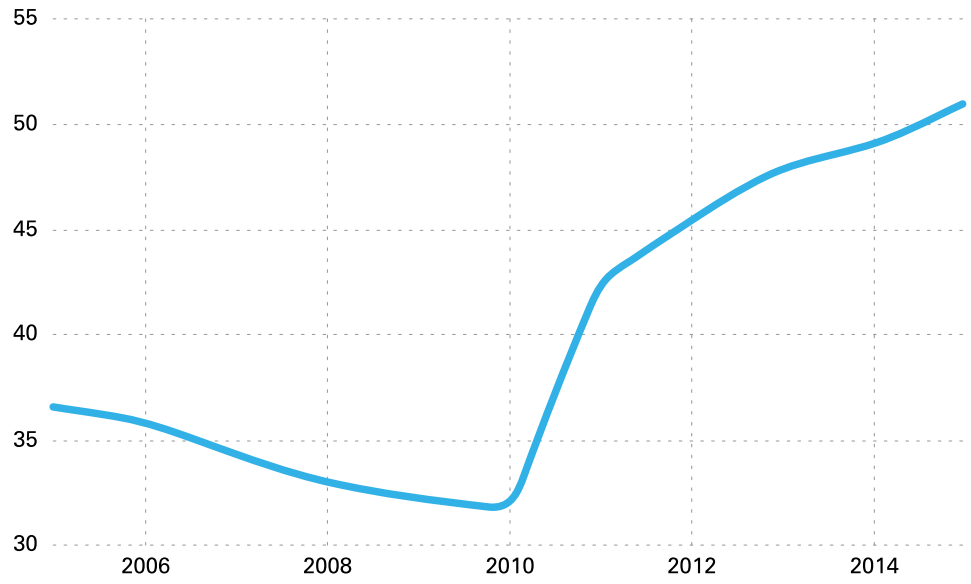

Figure 4.1.1.1.1
Crude Oil Production for the Bahrain Field (thousands barrels/day), 2005-2015

Source: NOGA via Al-Doseri (2018)

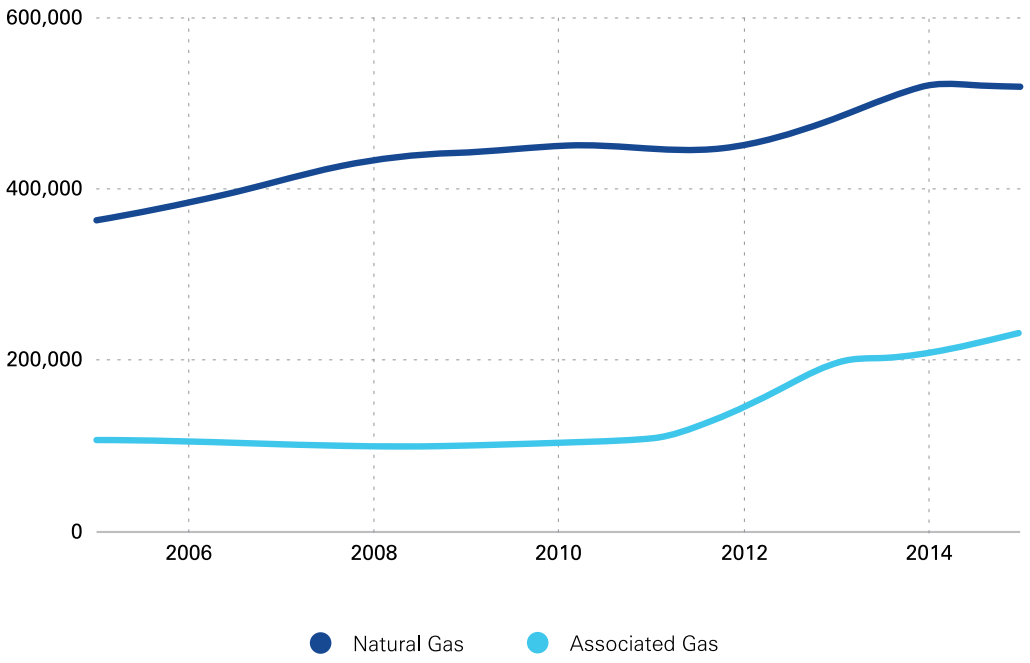

Figure 4.1.1.1.2
Natural and Associated Gas Production (billion cubic feet/year), 2005-2015

Source: NOGA via Al-Doseri (2018)

trend has also influenced the production of natural gas by enhancing extraction efficiency, elevating production to 520 billion cubic feet/year compared to the 2005 production level of 363 billion cubic feet/year. The production trend for natural and associated gas is depicted in **Figure 4.1.1.1.2**.

Gas production is of critical importance for human development in Bahrain, as power generation and water desalination depend on gas. It is also consumed by the industries such as Alba, GPIC and Bahrain steel company. This makes gas security, which consists of a mix of steady domestic production and reliable imports, a strategic goal for Bahrain's government, especially given the increase in population and urbanization (Bahrain is planning in importing gas in the coming years). Moreover, in line with the FDI strategy discussed in chapter 1, Bahrain's government is keen to attract industrial companies, and so the gas market has implications for the type of industries targeted. A key implication is that the strategy of transitioning away from a hydrocarbon-based production model, barring spectacular short-term efficiency gains, cannot be achieved without upgrading the current methods of electricity generation and water desalination: foreign investments will eventually lead to increased demands for power supply and thus gas consumption that cannot be met according to the existing model.

Bahrain has other alternative resources for electricity generation which are more promising and sustainable than the current finite and depleting resources, and which will be expand upon below. Nevertheless, the existing infrastructure and limitations in national expertise are amongst the main challenges facing the new approaches for generating electricity. Hence, it will be useful to discuss the overview layout of the national electrical grid.

4.1.1.2. Power Generation

Bahrain's national power grid is operated by the Electricity and Water Authority (EWA) which is a governmental entity. However, EWA owns only two power stations out of five, while the rest are owned by private sector entities known as "independent power & water producers". The governmental power stations, Riffa and Sitra, contribute about 11% of total power generation, and the remaining is supplied from the independent power providers and the power generations links with Alba and the GCC (**Table 4.1.1.2.1**).

Hidd, Al-Ezzal and Al-Dur stations are combined cycle gas units (CCGT) with a total installed capacity of 3,095 MW, a total of 977 MW installed open cycle gas units (OCGT), and 100 MW steam turbine units (ST). Also, as mentioned in chapter 1.3, the grid is connected to the GCC grid, which presently serves as a backup for supporting the network during emergencies and blackouts, but would be a keystone for developing regional power trading.

If the grid between the GCC were to be extended to European countries, this would open an opportunity for trading and sharing benefits between those countries, as well as reducing gas consumption in the world. This can be achieved because peaks in energy demand patterns are highly complementary between the GCC and European countries: the peak demand in the GCC is in summer (May-July/August) because of air-conditioning, while in Europe it is during the winter months (November/December-early March) that require heating. Such trading will limit the expansion of gas-based technology, provide a common secure margin for these countries, and improve the energy efficiency by consuming the gas in the country of production, such as GCC, in order to avoid any loss of gas during the storing and transporting for the countries that imported gas.

Although the investment in the GCC grid is a right step for a more sustainable grid, it should not be compared to renewable resources for an ultimately sustainable and secure grid. Bahrain's solar and wind resources have been investigated by various researchers at the University of Bahrain and other organizations inside and outside the country. Data applied for analyzing these resources show very promising results, and several projects have been implemented.

Station	Type	Installed Capacity (MW)
Riffa	OCGT	700
Sitra	OCGT + ST	125
Hidd	CCGT	929
Al-Ezzal	CCGT	942
Al-Dur	CCGT	1,224
GCC Grid	Exchange	600
ALBA	Exchange	300

Table 4.1.1.2.1
Power Stations and Installed Capacity, 2017

Source: EWA statistics, 2017

4.1.1.3. Solar Energy

Standard solar emissions in Bahrain are relatively high, at around 2,600 kWh/m2/year, and the technical potential for producing electricity by using solar thermal technology is about 33 TWh per year (Albuflasa, 2018). An actual measurement for solar radiation was conducted at the University of Bahrain and the measurements are consistent with broader findings (Muneer et al., 2007). According to Alnaser et al. (2014), the average sunshine duration is 9.2 hours and annual average solar power is 1,891 KWh/m2.The maximum power that can be generated by currently installed solar-based technology is approximately 6.8 KWh/m2/day in the summer months (June to September), and approximately 5 KWh/m2/day in winter months (December to February). Such daily solar power based on Bahrain's land surface is equal to the energy gained from 43.2 million m3 of natural gas, taking into consideration that each one m3 of natural gas could produce approximately 10 kWh of power.

The photovoltaic (PV) module is the best approach for harvesting energy from solar radiation based on several studies (Parida et al., 2011; Krauter and Rüther, 2004). Accordingly, Bahrain has taken serious steps towards integrating PV technology into Bahrain's energy mix systems. The following projects are the main initiatives in this field.
The first is the 5 MW Bapco PV pilot project. This project is the first PV connected to the national grid in Bahrain and it was commissioned in 2012. It was installed by an American company called Petra Solar at $25 million in four locations namely: Awali, the company's refinery, Wharf, and 0.5 MW at University of Bahrain, to be the largest PV installation at a University Campus worldwide. The solar panels were installed on the ground and on top of parking lot shade structures covering 34,000 m2 with 21,000 solar panels (Albuflasa, 2018).

The second is solar-powered mosques. In 2006, the Ministry of Justice and Islamic Affairs, established a project to power a number of mosques, ma'tams and Quran learning centers in the country using solar PV. As of early 2018, it had covered three mosques. Recently, EWA signed an agreement with the Ministry to provide places of worship and waqf properties with solar systems (Albuflasa, 2018).

The third is a proposal for 100 MW solar power plant. Late in 2017, the government resolved to develop a 100 MW solar power plant in collaboration with the private sector. This project is part of the renewable energy action plan, which includes the development of both distributed generation and large-scale solar power. The project is expected to be accomplished in 2019 and EWA has already received the proposals for the project which will be located at the landfill area (Albuflasa, 2018).

4.1.1.4. Wind Energy

The wind climate of Bahrain is described by a specific pattern based on the season. The strongest wind speeds reached up to 7 m/s in summer months, compared to 3.8 m/s during winter. This means that the characteristics of wind speed in Bahrain are inverse to the wind behavior in most European countries (Alabbasi, 2015). Several studies addressed the potential of harvesting energy through wind in various locations in Bahrain for different heights.

The first national wind atlas was created in 2009 and in 2017, the sustainable energy center (SEC) finished a far-reaching wind analysis. Based on this update, a revised national wind atlas was recently produced which particularly features offshore wind assets. The maps show scientific proof of sufficient wind presence in specific areas which would allow to operate turbines that generate clean energy and produce electricity from wind energy. The

main initiatives for wind power applications in Bahrain are as follows.

First, the Bahrain World Trade Center (BWTC). This tower was built in 2008 as an iconic landmark situated at the heart of the leading financial and business hub. It consists of two 44-storey sail shaped office towers. Three wind turbines were integrated into the building and they are expected to produce a total of 1,100 to 1,300 MWh per year, which represents 11-15% of the office towers' electrical energy consumption (Bahrain World Trade Center, 2015; Albuflasa, 2018).

The building was designed to accelerate the wind before it reaches the turbines in order to maximize the output power. Also, several applications have been considered to reduce carbon emissions, such as low energy systems, high-efficiency insulation, and solar-powered road and amenity lighting. This building is the first one in the world with an integrated wind propeller.

Second, the EWA pilot plant. EWA is currently building a 5 MW pilot plant with a 2 MW wind power component and a 3 MW solar power component. The project, which costs $17.1 million, is still under construction and it is expected to be in service at the end of 2018 (EWA, 2018).

4.1.2. Energy Demand

4.1.2.1. Gas and Fuel Consumption

Figure 4.1.2.1.1 shows Bahrain's natural gas consumption. Between 2005 and 2011, the rate of gas consumption in Bahrain grew gradually, but thereafter, there was a pronounced acceleration due to the increase in the electricity production. In 2011, Bahrain witnessed a boom in producing associated gas, and the industrial sector expanded its demand to absorb the additional supply (Al-Doseri, 2018). **Figure 4.1.2.1.2** shows the local consumption of petroleum products. The consumption of fuel for small cars, which are

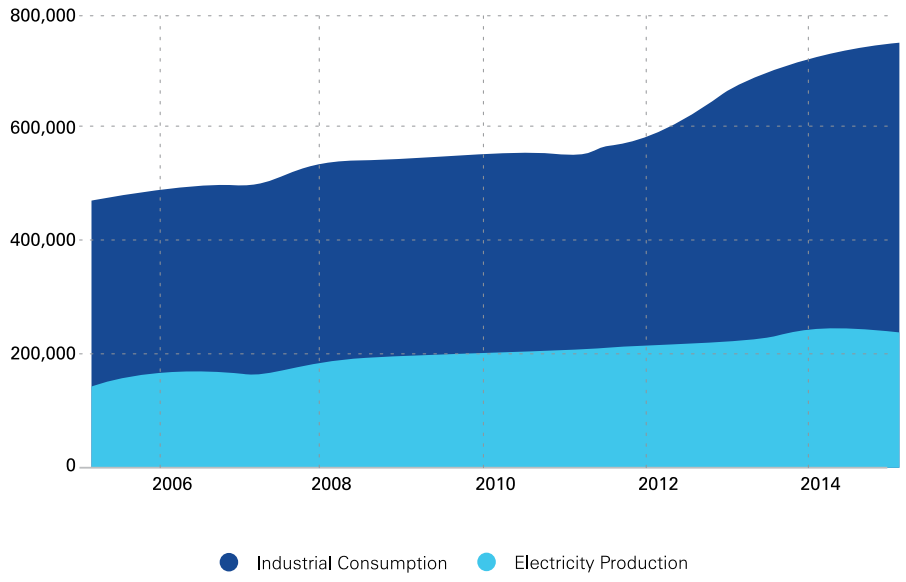

Figure 4.1.2.1.1
Natural Gas Consumption (billion cubic feet), 2005-2015

Source: NOGA via Al-Doseri (2018)

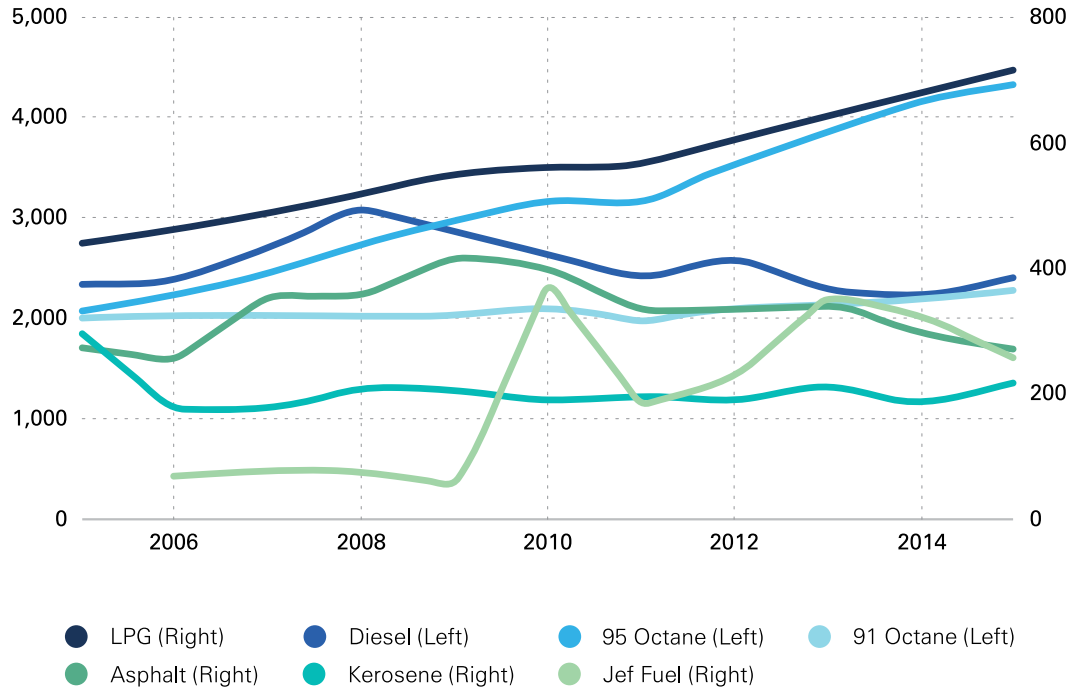

Figure 4.1.2.1.2
Local Consumption of Petroleum Products (thousand barrels/day), 2005-2015

Source: NOGA via Al-Doseri (2018)

considered the main mean of transportation for individuals in the country, doubled from 2005 to 2015. Population growth was the most likely source of this growing demand. These data suggest that the government's efforts at promoting environmental awareness, and of providing an attractive form of mass transit, were not as effective as was hoped.

4.1.2.2. Subsidies

Electricity consumption in Bahrain is relatively high in comparison to other Arab countries. Overall, GCC countries are responsible for 58% of total electricity consumption of the Arab region and this region has one of the highest levels of consumption per capita in the world, reaching 19,000 kWh/capita (Rizk, Alheraf and Brand, 2017). A key reason is that energy prices in the region are highly subsidized, reinforcing the fiscal-based motivation for subsidy-reform outlined in chapter 3.1.

As detailed in chapter 3.1, Bahrain has taken steps forward in reducing energy subsidies in electricity and fuel. In recent years, the government increased the price of cars' fuel, and the price of electricity for residential expat consumers. Octane 95 and 91 prices were increased to BD 0.200/liter and BD 0.140/liter, which represent 33% and 22%, increases from previous prices in January 2016 respectively. Restructuring electricity tariffs targeted two categories: non-Bahraini subscribers, and Bahraini subscribers who have more than one account.

Even after implementing the above subsidy reforms, energy prices remained below the international level. The government redirected these saving to more productive uses. For instance, the electricity sector saved BD

136 million from 2015 to 2018, as depicted in **Figure 4.1.2.2.1**. Furthermore, according to EWA, the increment in the annual load, before restructuring the subsidies, was 9.2% between 2014 and 2015, but in 2016 the annual load declined by -0.7%. This pattern was not expected in Bahrain as each year the gap between demand and supply narrows as demand grows (EWA statistics, 2017). Hence, in 2017 the increment in the load continued and reached 4.5%, which indicates that the decrease in 2016 is a direct impact of changing the price of electricity. This affirms the effectiveness of subsidy reforms as a method of encouraging electricity conservation--a technique that is likely to be much more effective than awareness campaigns that involve no material incentive.

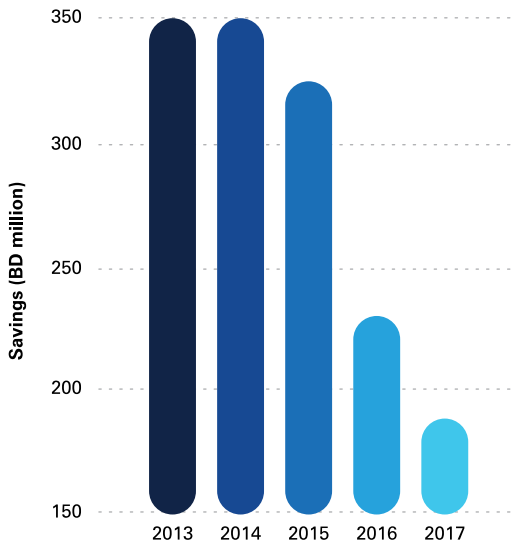

Figure 4.1.2.2.1
Impact of Subsidy Reforms on Subsidies Paid to EWA (BD million), 2013-2017

Source: Mirza (2018)

4.1.2.3. Energy Intensity

Energy intensity, defined as total primary energy consumption per unit of GDP, is considered to be high, similar to almost all the GCC countries. This indicates that the country needs to consider how it might increase its efficiency levels (Rizk, Alheraf and Brand, 2017). Admittedly, it is an imperfect measure of technical efficiency, as it makes no correction for extraneous factors such as geography, climate, population growth and economic structure; but one can still conclude with confidence that Bahraini policymakers must continue to search for ways to improve energy efficiency. Successfully enhancing efficiency will also yield dividends in terms of decreased CO2 emissions from electricity and heat production.

Bahrain has to continue working toward "economic decoupling", which is breaking the link between "environmental bad" and "economic goods". The country has to maintain the same growth of economy with a lower consumption of energy in order to reduce the country's carbon footprint and environmental impact. This requires further investments in renewable energy and energy efficiency.

This realization drove the SEC to formulate an action plan in response. Some major projects in renewable energy and complementary policies were proposed in order to attract investment and ensure achieving national targets in the energy sector. The next sections discusses these plans.

4.1.3. An Action Plan for the Future

Bahrain's government has taken several steps to further diversify the country's energy sources. In this context, it is essential to

address the role of the SEC for planning and implementing the National Energy Efficiency Action Plan (NEEAP) and National Renewable Energy Action Plan (NREAP).

4.1.3.1. The Sustainable Energy Center

In 2014, in partnership with the UNDP, Bahrain established a program tasked with developing sustainable energy policies and promoting renewable energy and energy efficiency measures in the country. The SEC plays a crucial role in synchronizing the NEEAP and NREAP. In addition, it provides technical support in the design and execution of specific initiatives. The unit also conducts cost-benefit comparisons of alternative equipment options and commercial models, and oversees the accomplishment of the various projects (Albuflasa, 2018).

4.1.3.2. The National Energy Efficiency Action Plan (NEEAP)

Bahrain has implemented an energy saving target of 6% by 2025; this decrease is equivalent to 5,800 GWh on principal energy equivalent bases. The action plan determined the objective based on the technique recommended by the Arab Guidelines on Energy Efficiency. The plan comprises of 22 initiatives, covering all sectors, with the aim of improving efficiency equally in both energy demand and supply. The affected sectors include building (residential and commercial), industry, government, transport, and electricity supply.

The execution and supervision of the NEEAP is the responsibility of a committee chaired by the Minister of Electricity and Water, and includes representatives of EWA, the Ministry of Finance, the Office of the First Deputy Prime Minister, the Ministry of Industry and Commerce, and Tourism, the Ministry of Housing, the Ministry of Works, Urban Planning and Municipalities, the Ministry of Oil, and the Supreme Council for the Environment. The committee congregates periodically.

4.1.3.3. National Renewable Energy Action Plan (NREAP)

The NREAP was developed by the SEC to set a roadmap for identifying the most suitable technologies in utilizing Bahrain's renewable resources. For instance, the plan supports using solar PV more than the thermal concentrated solar power CSP or district cooling technology (see **Box P**), due to the prohibitive water requirements of the latter. As for wind energy, this source seems to be a promising substitute source of power for Bahrain, particularly offshore projects. Another method is the waste-to-energy approach, via both municipal solid waste (MSW) and wastewater. This approach still requires further examination through applied research and modelling. So far, the NREAP measured specific approaches such as the anaerobic digestion process and landfill methane recovery. While Bahrain at present has no set of laws to implement waste isolation, waste ignition machinery can possibly take such a role in the future.

NREAP has laid down a goal of 5% of renewable power by 2025, with a production of some 480 GWh of unsoiled clean energy per year. By the year 2035, 1460 GWh of clean power are expected to be generated per year. To attain

BOX P: DISTRICT COOLING

Tackling Bahrain's hot and arid weather in a sustainable and cost-effective way remains a significant challenge, and the country has been exploring, and investing in, different technologies. One of these technologies is "district cooling," which relies on circulating chilled water through a pipeline network from a central plant to a network of buildings in a specific area or district. The district cooling plant chills the water using electricity, which depends on fossil fuel. The water is then returned to the central plant to be re-chilled and distributed. The chilled water feeds the air-conditioning system in each building and reduces the cost of the more energy-intensive traditional air-conditioning systems.

District cooling systems can reduce both CO2 emissions, and energy costs, but its economic feasibility has to be measured against the cost of its significant water requirement.

In a joint-venture between Veolia and Arcapita, the Bahrain Bay waterfront development area today is served by a district cooling network (Veolia Middle East, 2018). The network's length is 5 km, it has 18 centrifugal chillers, and 9 cooling towers, thus covering the whole Bahrain Bay area, which comprises a commercial retail area, the Four Seasons hotel, and Arcapita's headquarter building.

Neighboring countries such as Saudi Arabia, UAE and Kuwait have also launched district cooling systems. The Abu Dhabi-based company "Tabreed" is one of the biggest regional companies in this sector, and it has launched its own subsidiary in Bahrain, the Bahrain District Cooling Company, which currently manages the district cooling system in the Bahrain Financial Harbour (Rahman, 2017). The expansion of district cooling in Bahrain will depend on its long-term cost, efficiency and sustainability.

the targets, several projects were proposed, including the following:

1. Decentralized Urban Generation (100-150MW)
2. Large-scale Generation on Available Land (50-100MW)
3. Offshore Generation (50W)

Three corresponding policies were proposed to assist in realizing these targets (**Table 4.1.3.3.1**). In February 2018, EWA proclaimed that the complete switch from conventional to net metering had been accomplished in Bahrain (Albuflasa, 2018).

The NEEAP and NREAP are sound steps toward sustainable growth, but more ambitious goals are required if Bahrain wants to become a regional leader, since other GCC members are implementing more rigorous strategies in this field. The NREAP, which includes the development of both distributed generation and large-scale solar, sets the national target of renewable energy in the Kingdom of Bahrain at 5% by 2025 which will be further boosted to become 10% by 2035. By way of comparison: Germany is a highly industrialized country with a small UV endowment, yet still has around 15% of its gross power consumption being covered by renewables, and is targeting to

increase this share to 60% by 2050. With regard to the share of renewables among the total electricity consumed, renewable energy is supposed to cover at least 35% by 2020 and more than 80% by 2050. Using the year 2008 as baseline, Germany's energy consumption is supposed to be reduced by 20% until 2020, and by 50% come 2050 (calculated against 2008 data). Gross electricity consumption is supposed to be reduced by 25% by 2050.

Furthermore, the SEC's agenda exceeds the authority that it wields, and much more attention must be taken towards restructuring this unit in order to boost its role; as Bahrain is yet to finalize its approach for renewable energy technologies. Moreover, several studies have to be carried out to examine the feasibility of different renewable energies in Bahrain and all research institutions have to collaborate in drafting a detailed roadmap for the policymakers to accelerate renewable energy deployment in the country.

One of the most important economic benefits of renewable energy and improvements in energy efficiency will be the stabilizing effect on electricity costs and the ensuing reduction of subsidy requirements in the energy sector. In addition, there is a fair chance of seeing spin-off businesses developing, given the effect of otherwise non-existent/non-viable business opportunities cropping up for industrial development.

	Policy 1: Net metering	Policy 2: Tender-based feed-in tariff	Policy 3: Renewable energy mandate for new buildings
Objective	Enable consumers to generate their own power from renewable energy sources for self-consumption.	Attract private investors to develop renewable energy projects through a competitive procurement process.	Require new buildings and real estate developers to integrate renewable energy technologies in the building design.
Target group	Residential, commercial and industrial electricity customers.	Renewable energy developers and large electricity customers.	New building and real estate developers.
Incentive	Reduced electricity bill through on-site power generation and the ability to credit the excess electricity fed back to the grid.	Long-term standardized power purchase agreement.	Reducing energy demand of the building (reduced electricity bill).

Table 4.1.3.3.1
Bahrain's Policies for Promoting Renewable Energy, 2018

Source: Albuflasa (2018)

4.2. ENVIRONMENTAL SUSTAINABILITY AND ITS GROWTH DIVIDENDS

As Bahrain's Economic Vision and the SDGs stress, protecting the environment and conserving its natural resources are an essential part of realizing the full potential of human development. The strategic objective of environmental policy in Bahrain is to introduce and integrate environmental concerns relevant to protecting human health and managing natural resources into all national policies, plans, programs and projects. The medium-term objective is to preserve natural resources, biological diversity, and national heritage within a context of sustainable development. The short-term objective is to reduce current pollution levels and minimize health hazards to improve the quality of life in Bahrain.

Bahrain established the Committee for the Protection of the Environment in 1980, reflecting the government's interest in environmental affairs. In 2012, the Supreme Council for Environment was established with a mandate to create a sustainable environment that ensures the quality of life and also protects, manages and develops environmentally important natural reserves.

This section will review Bahrain's environmental protection and conservation activities for living resources. It will address the situation of land, water and the conservation efforts devoted to achieving sustainable development. Furthermore, it will cover the current environmental situation regarding air and water pollution, and shed light on the status of biodiversity. Bahrain's environmental policies and the cooperation it pursues in this arena at the international level will be explored.

4.2.1. Land

Bahrain has witnessed substantial growth in population and infrastructure which has increased accordingly the demand on land; see **Box Q** for a discussion of sustainable urban development. Those needs have driven the government to resort to the reclamation of shallow water coastal zones and the transformation of agricultural areas into areas for residential and industrial developments. As a result, dredging and reclamation operations continue to expand Bahrain's coastal zones to accommodate new projects.

Bahrain's land area increased from 669 km2 in 1980 to 780 km2 in 2017 (IGA). The rate of increment reached the highest (21 km2/ year) between the period from 1997 to 2007, due

BOX Q:
SUSTAINABLE URBAN DEVELOPMENT

Bahrain is a small-island developing country with a current population of 1.5 million. Data projections indicate that the country's population will reach 2.2 million by 2030 (Information and eGovernment Authority, 2018) which would mark a significant increase in a country that is already listed as one of the top ten countries in the world in terms of population density. Other than significant pressures on infrastructure, health, education and social services, the country faces a number of challenges stemming from its dry and arid desert climate and its limited land surface. Perhaps urban transportation and traffic represents one of the most illustrative examples in the country's attempt to pursue a sustainable approach regarding urban development.

Traffic congestion is one of the biggest urban challenges in Bahrain. The number of cars in Bahrain reached 700,000 by 2017, or almost one car for every two people, and while the Bahrain Public Transport Company has expanded the bus lines to cover more areas of the country, these efforts have not been able to keep track with the population increase and the need for greater and faster public transportation (Ismail, 2017). The Ministry of Transportation has completed a number of feasibility studies for a metro rail network project, and construction is projected to start in 2020.

Another urban challenge is waste management (Abu-Safi, 2018). Bahrain produces over 6,000 tons of waste every day (Akbar Alkhaleej, 2018). This presents an opportunity for Bahrain to adopt sustainable waste management policies and programs on a national scale, such as by implementing an advanced national recycling policy for governmental, residential, commercial, and industrial zones.

Bahrain has already taken the first step of outlining a master-strategy for sustainable urban development in 2008 when it adopted the "Bahrain 2030 National Planning Development Strategy." The strategy outlines ten pillars that take into account the multidimensional aspects of sustainable urban development, including society, the environment and the economy (Ministry of Municipalities Affairs and Urban Planning, 2008). The first pillar stresses the importance of formulating a comprehensive master urban scheme for the island as a key reference strategy for all urban development projects, one that is flexible and can be updated overtime. Second, a thriving economy that is connected to regional and global markets. Third, preserve and sustain environmental resources. Fourth, to put in place a comprehensive and diverse strategy for transportation. Fifth, fulfill housing needs. Sixth, establish more public waterfront areas and beaches. Seventh, to preserve Bahrain's historical and cultural heritage. Eighth, to meet military needs of the future. Ninth, increase planting of trees across the country. Tenth, to pursue a strategic and futuristic framework in sustainable urban planning (Ministry of Municipalities Affairs and Urban Planning, 2008).

This key strategy has put in place an institutional and policy framework that can guide the Kingdom to further adopt sustainable urban development practices.

to the increasing demand for land. Moreover, population growth and rapid urbanization with limited attention to zoning resulted in an encroachment of residential areas towards the industrial areas, and thus leading to several impacts in the immediate vicinity of the residential areas.

These reclamation activities and the proximity of the residential areas to industrial areas, along with other factors, have had several consequences on the land environment and Public health, which are discussed below.

4.2.1.1. Threats to Public Health

In recent years, residential areas have spread rapidly and cities have drawn closer to industrial zones, which can cause health problems. Residents living near to industrial zones have complained of being exposed to pollutants and emissions from big existing industries particularly those related to energy production. Besides the emission caps in the form of measurable concentrations, there are no specified emission limits for the industries, refineries, power plants, and oil exploration stations, which leads to increasing uncontrolled emissions in the immediate vicinity of the residential areas, thus increasing pollution exposure rates. This is especially important for the Manama and Muharraq regions, which are surrounded by power and desalination plants.

In 2007, the Directorate of Environmental Assessment and Planning conducted a study on the impact of air pollution on public health, including cases of asthma, allergies, and respiratory problems. The same directorate carried out another study to examine the extent of air pollution in Bahrain and the study revealed that there was an increase of particle pollution parameters levels from 1997 to 2004. Furthermore, the reclamation of land is considered a main cause of the dispersal of fine sand particulates, and with frequently occurring sandstorms, a negative effect on the air quality arises (Directorate of Environmental Assessment and Planning, 2009). For more on public health in a broader sense, see **Box R**.

A number of actions have been taken since the early nineties of the last century to enhance matters. Ministerial Order (1) of 1998 with respect to environmental evaluation projects -Article 2- states that all new projects, in addition existing projects undergoing development, shall be subject to environmental impact assessment (EIA). The extent and details of that environmental assessment is subject to the decision of the relevant authorities. Also, the national environment standards for air and water decree has been reviewed and an updated standard were issued that is in line with the government's approach for a sustainable environment. Moreover, investing in the latest technology for power and desalination plants has contributed to reduced pollution and lower emissions of such plants in addition to improved productivity. The government action plan for 2014-2018 has induced the development of a new zoning strategy for the country that will help provide a better prospective and a more viable action towards the residential infringements.

4.2.1.2. The Agricultural Sector and Biodiversity

The limited presence of green spaces in old and new cities in Bahrain has threatened several ecosystems in the country. Further, the concomitant decline in agriculture towards urbanization is an additional contributing factor to the intensification of sand storms,

BOX R:
IMPROVING THE QUALITY OF PUBLIC HEALTH

Increasing obesity is one of the most serious public health issues in Bahrain. Increasingly sedentary lifestyles and shifting dietary patterns have led to rising obesity rates. Nowadays, 40% of adults and 24% of youth (6-24 years) have been classified as obese (Bahrain VNR report 2018, p.48). The growing prevalence of obesity results in increasing rates of chronic non-communicable diseases (NCDs) like diabetes, cancer, chronic respiratory and cardiovascular diseases, which in turn increases governmental healthcare costs.

According to the national Health Improvement Strategy (2015-2018), demographic growth combined with increasing life expectancy rates creates a higher demand for health services. The most urgent threat to the well-being of the Bahraini population is the escalating rate of non-communicable diseases, which account for about 78% of deaths (World Health Organization, 2014). This has detrimental effects on the quality of life, life expectancy, labor productivity and health expenditures as the whole Bahraini population—citizens and residents—have access to affordable and highly subsidized healthcare services.

Health authorities are currently rolling out the new "National Health Plan 2016-2025," which aims to revamp and upgrade Bahrain's health insurance coverage system. The new plan will depend on greater flexibility in healthcare plans, public-private partnerships, and a comprehensive health strategy that incorporates a greater emphasis on mental health, prevention of non-communicable diseases, and overall holistic well-being (Supreme Council of Health, 2016)

Bahrain's experience in significantly reducing the rate of sickle cell anemia has provided the country with important lessons when it comes to preventative healthcare measures, and targeted interventions. Sickle cell anemia is a preventable genetic disorder, and implementing measures such as a wide public health campaign and premarital screening has helped decrease sickle cell deaths by 40% from 2013-2017, and a reduction in babies born with sickle cell disease by 99% (Ali, 2017).

Bahrain has identified its major public health concerns, and has formulated national plans and strategies to tackle them over the next years, in line with SDG3, namely to "ensure healthy lives and promote wellbeing for all at all ages." Through continued implementation and reassessment of these plans, public health is improving.

which increased along with it the level of desertification. Many local crops have become extinct in recent times, some of which had cultural significance and economical value, such as the aromatic plants that are used in producing local medicines. This has required Bahrain to become an importer of these products (Directorate of Environmental Assessment and Planning, 2009).

To address the damage, the agricultural strategy issued in 2011 encouraged farmers to preserve

their land and expand the use of greenhouses in agricultural production. The strategy also encouraged the establishment of farms with modern farming techniques helping to sustain resources, particularly water, and also to satisfy the local market needs of aromatic plants used in producing local medicines

4.2.1.3. Waste

Waste management in Bahrain is critical because of the very high urban population. Waste generation is increasing yearly, with waste coming from domestic, medical, agricultural, and industrial sources; which vary in the risks that they pose. The limited size of the country, coupled with the increasing urban sprawl, together make the availability of safe disposal sites critical as waste can result in polluting air, water and soil if mishandled. The Municipalities Affairs authority and SCE are, in partnership, preparing a waste strategy, which is in the final stages of development, to create a road map for addressing the waste problem.

4.2.2. Water

4.2.2.1. Water Resources

Groundwater was the main water source of Bahrain for many decades prior to the oil era, as the country was well known for its natural springs, submarine freshwater springs, and aquifers (see the introduction for how this relates to the country's name). However, the continued growth of the country, especially after the discovery of oil, resulted in a dramatic increase in groundwater consumption, which has led to an increase in the salinity level of the water and a decrease in the water table level (Al-Jenaid et al., 2012).

Today, the water sources for Bahrain comprise of groundwater, treated sewage effluent, and desalination. According to EWA, water production in the country is primarily reliant on desalinated seawater, as groundwater represented only 8.7% in 2017 (EWA statistics, 2017). The contribution of groundwater in the water mix dropped significantly between 2013 and 2017.

The desalination program started in Bahrain 1975 and since then the progress in this approach has improved over the years. Nowadays, Bahrain has thermal and membrane-based technologies or reverse osmosis (RO) desalination plants. **Table 4.2.2.1** presents the technology and production for all water plants in Bahrain (Albuflasa, 2018).

The Sitra and Hidd stations are thermal water plants, as well as also being power plants: the heat extracted from power generation is used in a heat recovery boiler to produce the steam for desalination units within the station. Al-Dur and Ras Abu Jarjur are membrane-based water plants; the former treats seawater and the latter is for brackish water (high salinity groundwater). The thermal desalination plants have always dominated water production in Bahrain, whereas the RO plants have suffered from technical challenges, especially with the seawater treatment. However, when the new Al-Dur station was commissioned in 2015 to replace the old Al-Dur desalination only station, the technical difficulties were resolved by using different membrane technology (**Figure 4.2.2.1**) (Albuflasa, 2018).

Water consumption in Bahrain can be categorized into three sectors: domestic, commercial and industrial. **Figure 4.2.2.2** shows the distribution of consumption.

Domestic consumption is overwhelmingly the biggest share, followed by commercial, and industrial. However, the industrial figure is slightly misleading because most of the heavy industries, such as Alba, GPIC, and Bapco, have their own desalination plants (Albuflasa, 2018).

Station	Desalination Technology	Installed Capacity (MW)
Sitra	Thermal	25
Hidd	Thermal	90
Al-Dur	RO (Seawater)	48
Ras Abu Jarjur	RO (Brackish water)	16

Table 4.2.2.1
Water Production Capacity, 2018

Source: EWA via Albuflasa (2018)

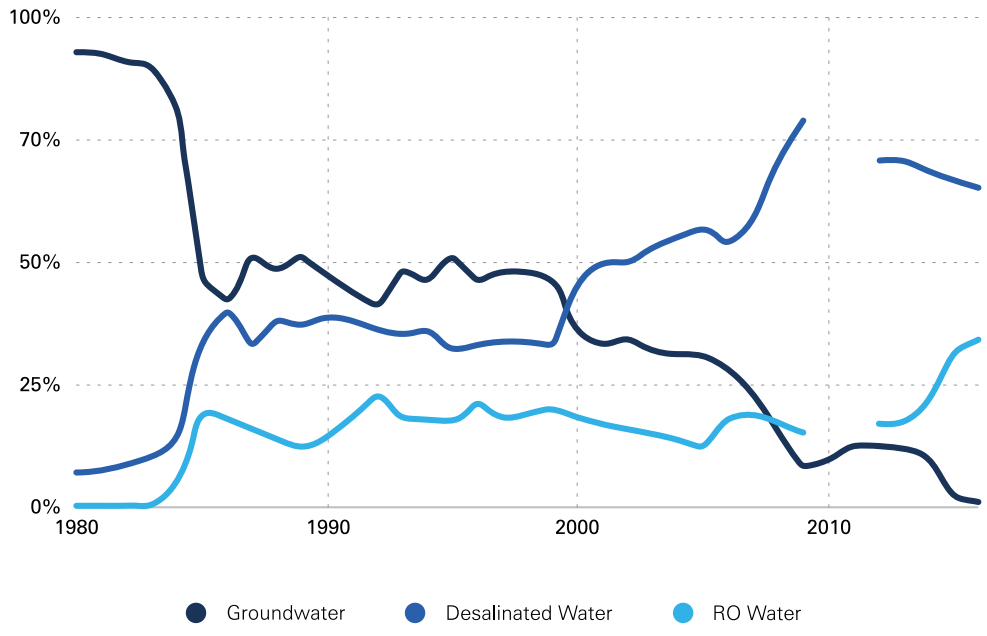

Figure 4.2.2.1
Water Production Source (%), 1980-2015

Source: EWA via Albuflasa (2018)

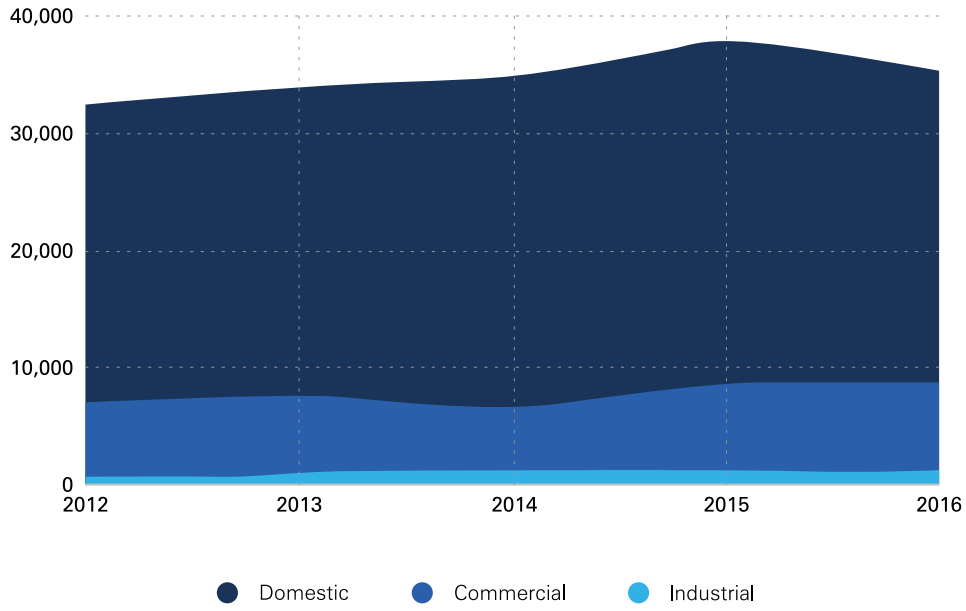

Figure 4.2.2.2
Average Daily Water Consumption, 2012-2016

Source: EWA via Albuflasa (2018)

4.2.2.2. Water Quality

As mentioned above, Bahrain used to rely on groundwater and water springs to fulfil its demand for sweetwater. However, this situation was unsustainable due to the rapid growth of demand (Directorate of Environmental Assessment and Planning, 2009). Bahrain had no option but to resort to water desalination. In 2009, over half of the municipal water needs were met by water desalination. However, desalination contributes to marine pollution in terms of thermal brine discharges and their impacts affect the surrounding coastal and marine environment. Decree No. 10 (1999) sets water quality standards for discharges by source from desalination plants and industries to better manage water quality and effectively control pollution.

Water quality is also closely related to the state of biodiversity. The reduction of water springs' flow and their gradual depletion has increased the soil's salinity, which directly affects the ecosystem and natural habitats such as plants, fish and migratory birds (Directorate of Environmental Assessment and Planning, 2009).

As a result, Bahrain established the Water Resource Council (WRC) in 1982 to ensure the optimal utilization of water. At present, the WRC is preparing Bahrain's water strategy in light of the National Water Strategy and its implementation plan for the period 2017-2030, building on a recent agreement with the Arab Gulf University.

4.2.3. Air Quality

Bahrain relies heavily on industries that can adversely affect air quality, and all those industries depend primarily on gas for electrical power. However, as part of the Vision

2030's emphasis on sustainability, Bahrain has modified the portfolio of foreign investments it attracts in an effort to limit the dependence on heavy industries. Nevertheless, there has been a deterioration in air quality, induced by several sources that are summarized in **Table 4.2.3.1**.

Overall, Bahrain faces various challenges regarding air quality. These include pollutants generated during energy production, and coming from vehicles and industrial activity. Moreover, pollutants generated by construction work and its related activities, particularly with the presence of sandstorms and the absence of sufficient green land, along with desertification. Bahrain could also benefit from an alert system for early signs of air pollution, as well as an increase in the number of air quality monitoring stations, which currently number only 3 operational units. Finally, there

Fixed Sources	Mobile Sources
Source	Source
Oil production/refining	Vehicle exhausts
Natural gas production	Transboundary pollutants
Power generation	Dust and sand storms
Petrochemicals	
Aluminum	
Manufacturing	
Quarries	
Landfills	

Table 4.2.3.1
The Influence of Different Sources on Bahrain's Air Quality

Source: Directorate of Environmental Assessment and Planning (2009)

is an inadequate number of specialists working in this field, as well as a lack of sufficient research in the field of air quality, especially homegrown research (see chapter 2.2).

To address these challenges, a set of national air quality standards have been established, and there are plans to increase the number of air monitoring stations. In addition, there are government-led efforts to monitor nitrogen and sulphur dioxide emissions associated with motor vehicles (Al-Jenaid et al., 2012). The SCE has also been tasked by the government to formulate a national air quality strategy in response assessments of the existing challenges.

Beyond local air quality, Bahrain has taken several steps to contribute to global efforts to combat climate change. The country signed the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 (Al-Jenaid et al., 2012), and the Paris Agreement 2015, with the aim of improving its atmospheric conditions. Details of this and other international obligations can be found in **Table 4.2.3.3**.

Several initiations have been launched to fulfill the country's aspiration for a better environment, including the preparation of Bahrain's first and second national communication reports, and

is currently preparing the third, in additional to the biannual report, in accordance with the UNFCCC framework; and the SEC's programs NEEAP and NREAP.

However, despite these commitments, reflected in several international agreements and national declarations and plans, a detailed action plan is yet to be implemented. In addition, policies should encourage more efficient-energy consumption by residents, building on what was achieved in this regard by the reduction of power subsidies. Potential methods including providing incentives to residents to switch to more efficient products and equipment.

Convention	Content	Accomplishments
UN Framework Convention on Climate Change Date of Signature: Jun 1992; Ratification: Dec-1994.	Limiting concentrations of greenhouse emissions	Issued the first National Communications Report (2005): the second Report is in process.
Vienna Treaty and Montreal Protocol on substances that deplete the ozone layer. Date of Signature: Sep 1989; Ratification: Apr-1990	Limiting the depletion of the ozone layer	Prepared and implemented several programs to gradually eliminate contaminants.
Paris Agreement, the first global deal on climate change, at the UN headquarters in New York. Ratification: Apr-2016	To combat climate change and adapt to its effects.	Prepared and planning several programs.

Table 4.2.3.3
Bahrain's International Agreements

Source: Al-Jenaid et al. (2012), Albuflasa (2018)

4.2.4. Biodiversity

In terms of biodiversity, Bahrain has a unique and vulnerable ecosystem. Despite the desert environment that predominates the terrestrial landscape, it supports a diversity of plants, particularly the narrow fertile strip at the northern and northwestern coastline that was heavily cultivated with date palms, thereby providing food and shelter for many animals such including various mammals, birds, reptiles and insects. Relative to terrestrial and inland ecosystems, Bahrain supports a wider range of marine habitats. The bottom of Bahrain's territorial sea borders hosts a very fertile mud and sand base that facilitates the life of other creatures, including fish and shorebirds (Segneanu et al., 2013).

These habitats faces many challenges, including urban encroachment on to natural habitats; high soil salinity due to low rainfall, which adversely affects agriculture; and land reclamation, which affects marine biodiversity. Further, increased temperatures due to climate change have adversely impacted biodiversity in general, and marine life in particular, causing bleaching of coral reefs, (Directorate of Environmental Assessment and Planning, 2009).

Bahrain attempted to gather all stakeholders in the biodiversity field in the National Biodiversity Strategy and Action Plan, which covered the period 2016-2021. Further, legislation has been passed to protect natural life and nature reserves such as Alareen, Ras Sanad, Tubli Bay, Mashtan Island, Dohat Arad, and Hawar Island (Directorate of Environmental Assessment and Planning, 2009). Bahrain marine protected areas account now for 21% of Bahrain's total area. For more on biodiversity, see **Box S**.

BOX S: FISHERIES AND WILDLIFE

In addition to its tangible economic value as a resource, the fisheries sector has intangible value as a quintessential element of Bahrain's history and cultural heritage. Bahrain's current environmental strategy links the preservation of its marine and terrestrial wildlife with achieving environmental sustainability, and promoting cultural and eco-tourism. This is illustrated in Bahrain's current national strategy to revive the natural pearling industry. In Bahrain's pre-oil economy, exporting natural pearls was one of the biggest sources of trade revenue.

The country is now seeking to revive this sector by regulating fishing and pearling activities, and investing in institutions such as the Bahrain Institute for Pearls and Gemstones ("Danat"). The Institute was established in 2017 with a vision to "become the world's preferred institute for natural pearls and gemstones' third-party verification services and scientific research." (Danat, 2018).

Bahrain ratified the Convention on Biological Diversity in 1996, and launched its first National Biodiversity Strategy and Action Plan (NBSAP) in 2007. In 2016 it launched its second NBSAP for 2016-2021 in collaboration with UN Environment, and the Global Environment Facility (GEF).

The new NBSAP identifies four ecosystems in Bahrain: marine and coastal ecosystems, including coral reefs, mangroves, seagrass beds, salt marshes rocky shores and mudflats; the agriculture ecosystem, which constitutes 1.4% of Bahrain's total surface area and has date palm as main crop; a desert ecosystem which is home to a number of wild mammals and migratory birds and plant species that are resilient to heat and harsh environmental conditions; and the formerly abundant freshwater springs and streams now largely depleted due to overexploitation.

It is worth noting that after Australia, Bahrain is home to the second largest population of dugongs, an endangered species of marine mammals. They feed on seagrass and their habitat is threatened by any rise in water pollution and degradation due to coastal development.

Bahrain has declared a number of protected areas such as Al Areen Wildlife Park and Reserve, Tubli Bay, Arad Bay, Mashtan Island, Reef Bul, Thamah and Hawar Islands, which host the largest breeding colony of the "Socotra cormorant" bird in the world. The biggest threats to Bahrain's wildlife include land reclamation, dredging, oil spills and pollution, the overexploitation of marine resources and the overall negative effects of climate change. To face these threats, Bahrain has committed to 12 national targets in its NBSAP 2016-2021 ranging from "protecting an additional 10% of Bahrain's territorial marine and coastal areas" by 2021 to "rehabilitating mangroves by 25% and increase the populations of migratory bird species" (Convention on Biological Diversity, 2016).

4.2.5. Key Environmental Challenges

Bahrain is facing several environmental challenges, due to its nature as an island, and encroachment due to humans. The key challenges are as follows:

- The need to provide further executive support to the WRC to maximize the effectiveness of its proposals
- The deterioration of marine and coastal environments
- The need for superior management of waste and sources of pollution
- The need for superior management of the urban environment
- Agricultural lands desertification and loss

Some of these challenges have been addressed in other sections, but the root cause of these challenges is the tension between the desire to realize rapid economic growth, and the desire to preserve exhaustible resources while protecting the environment.

Greater levels of integration between environmental and economic policies would help in tackling these challenges. Laws and regulations alone cannot resolve the challenges that environmental and developmental issues pose, nor can overseas development assistance alone. What is required is an innovative mix of policies, economic instruments and market-based measures, which will induce changes in production and consumption behavior.

In addition, it is essential to promote environmental awareness, and to encourage citizens to participate in conservation and development programs. In parallel to these soft measures, it will be necessary to establish control measures for preventing the violation of the environment and to ensure the enforcement of environmental standards. Finally, environmental issues need constant reviewing and updating for codes, standards and indicators relating to air, soil, ground water, and surface water pollution, including ensuring adequate funding.

"Environmental sustainability depends on various elements among which natural resource management, conservation, and environmental awareness are cornerstones. Bahrain has come a long way in these domains; however, more work is still needed. To realize these ambitions, upgrading our educational systems and revitalizing our economic model are crucial. We have taken several steps in the right direction, and I am confident that we will eventually accomplish our goals."

- Dr. Eng. Suzan AlAjjawi
(Acting Director of Environmental Policies and Planning, Supreme Council for the Environment, Bahrain)

4.3. SUMMARY AND RECOMMENDATIONS

Bahrain's government has taken several steps to integrate renewable energy into their energy mix and reduce the dependency on oil-based power production. This movement to clean energy is coupled with legislating environmental regulations to protect human and natural resources. Nevertheless, more efforts should be made to enable more sustainable technologies, and to increase awareness about environmental issues. The responsibility for such measures falls upon all stakeholders in the country at different levels of involvement.

"With the Fourth Industrial revolution on the horizon, transitioning to a post-oil economy requires us to view the sustainable development goals as neither separate from, nor at the expense of, our economic prosperity. Rather, a policy of economic and environmental integration will be pivotal to Bahrain's long-term human flourishing. Making this shift means looking beyond Public-Private Partnerships, to Public-Planet Partnerships that mutually regenerate, and benefit from nature's trillions of dollars in free ecosystem services and open-source innovations."

- Ms. Leena Al Olaimy
(Cofounder and Managing Director, 3BL Associates, Bahrain)

With these points in mind, the report has the following recommendations for policymakers:

Recommendation 4.1: Set more rigorous and ambitious strategies for using renewable energy resources in the country.

Recommendation 4.2: Allocate adequate budgets to support governmental entities such as the SCE and the SEC, with the goal of enhancing renewable energy and augmenting measures that protect and conserve the environment.

Recommendation 4.3: Carry out feasibility studies for different renewable energies with the collaboration of designated homegrown research institutions in the country.

Recommendation 4.4: Integrate environmental policies with economic policies to guarantee that environmental obligations have been taken into consideration.

Recommendation 4.5: Propose an innovative mix of policies, economic instruments and market-based measures, which will make production and consumption behavior more green.

Recommendation 4.6: Promote a culture of environmental awareness and encourage more citizens to participate in conservation and development programs.

Recommendation 4.7: Establish control measures for preventing the violation of the environment and to ensure the enforcement of environmental standards.

5. FURTHER IMPROVING OPPORTUNITIES AND THE DISTRIBUTION OF RESOURCES

One of the three pillars of the Economic Vision 2030 is "fairness", which reflects the commitment to ensuring that all residents of the country are offered an opportunity to contribute to--and benefit from--the process of economic growth. See **Box T** for a discussion of the gini coefficient in Bahrain. This chapter focuses on two groups: women, and migrant workers, leaving consideration of other groups, such as youth or those with special needs, to future research. The main background paper used for this chapter is Young (2018).

BOX T:
HOUSEHOLD INCOME AND EXPENDITURE DISTRIBUTION IN THE KINGDOM OF BAHRAIN

Over the last three nationwide Household Expenditure and Income Surveys (1994/1995, 2004/2005, 2014/2015) average household expenditure at current prices shows a positive trend for both Bahraini and non-Bahraini private households. Increases in nominal household consumption expenditure coincided with decreases in the average household size from 6 to 4.8 household members (1994/1995 and 2014/2015, respectively).

The Lorenz Curve shows the cumulative proportion of income earned by cumulative income group. According to the Gini coefficient for household incomes on a scale of 0 to 100, the Kingdom of Bahrain is 60% unequal, with the value of the Gini coefficient 44% for Bahraini household incomes and 74% for non-Bahraini household incomes. Lower income inequality among Bahraini households reflects the broader range of sources of income compared to non-Bahraini households, whose income sources are limited to employment compensation; as well as the greater homogeneity of human capital among Bahrainis compared to foreigners.

5.1. WOMEN AND THE BAHRAIN ECONOMY

5.1.1. The History of Women's Participation in the Bahraini Society

The departure point is a detailed examination of Bahrain's women's achievements during the modern era, to ensure that an accurate picture is conveyed. Grassroots and top-down efforts at supporting women's contribution to Bahraini society are not an artifact of the postwar era, or a box-checking exercise in response international pressure. In fact, Bahrain has organically been a regional--and on occasion a global--leader in the empowerment of women since at least the turn of the 20th century.

In terms of the big picture, one should note that the constitution of Bahrain emphasizes women rights and gender equality, as it clearly states in Article (5) paragraph (B): "The state grants the opportunity for women to balance between their family duties and societal work, along with the equality of women and men in the political, social, cultural and economic life aspects, without prejudice to the rulings of Islamic sharia".

This modern formalization of the contribution of women is the culmination of decades of efforts. As early as the 1920's Bahrain opened the first girls elementary school in the region only a few years after establishing the first boys school. In 1950, the first girls secondary school was opened in Bahrain. In 1926, Latifa Al-Zayani and Maryam Alzayani were the first female teachers in Bahrain and in the GCC (Young, 2018). Unprecedented in the Gulf region, Bahrain offered opportunities or Bahraini women to pursue education abroad in the 1930s, and by the 1950s, Bahraini women were travelling abroad to pursue higher education (Young, 2018). In the 1940s women were participating in various sectors in the economy, and had a leadership role, particularly in nursing, with the first public women's hospital also being established in the 1940s (SCW, 2016). Bahraini women were granted equal rights to men in political participation as early back as the 1930s. (SCW, 2016).

The 1950s also witnessed increasing participation of women in media, with prominent female journalists such as Shahla Al-Khalfan and Moza Abdulla Al-Zayed (SCW, 2013). In the 1960s Hamda Khamis was one of the earliest female Bahraini writers to write in foreign newspapers as she frequently published articles in newspapers based in Iraq, Lebanon, Saudi Arabia, and UAE (SCW, 2013), while her contemporary, Shaikha Al Khaja, wrote in Al-Adwaa weekly magazine. The first Bahraini female to work as a radio presenter was Alees Samaan, who started her career in Bahrain Radio in 1966, and Kareema Zaidani became the first female TV presenter in 1975 (SCW, 2013); while Masooma Al-Moawda was the first woman to produce a highly successful TV drama show "Remains and Ashes" in 2004. The presence of females in media increased significantly during the past few decades, and by 2005, the share of female newspaper editors working in the Ministry of Information reached 50% (SCW, 2013).

In the 1960s women started having increasing roles as leaders in businesses and as

"While we have made great strides in gender equality, inclusive economic growth means further capitalizing on our diversity dividend to simultaneously ensure greater social equity and minimize lost economic opportunity. Based on my personal and professional experiences as an entrepreneur, Bahrain is well-positioned to stand out among the world's most inclusive startup hubs."

- Ms. Leena Al Olaimy
(Cofounder and Managing Director, 3BL Associates, Bahrain)

entrepreneurs (SCW, 2016), while in the 1970s Bahrain women started having an important role in law enforcement and the military (SCW, 2016). The first Bahraini female lawyer was Lulwa Al-Awadhi in 1976; while in 1989, Badria Salman was appointed as the first Bahraini female military officer to join the Bahrain Defense Force. Shaikha Haya bint Rashed Al Khalifa, was the first Bahraini women ambassador, and was assigned to Bahrain's mission in France in 1999. She was also the president of the 61st UN General Assembly in 2006. Al Khalifa was only the third woman worldwide to hold the position following female presidents from India in 1953 and from Liberia in 1969.

The 1970s marked the increasing official involvement of Bahraini women in sports. The first batch of women physical educators graduated in 1970s following the establishment of the Bahrain teachers institute for girls in 1968 (SCW, 2012). Thereafter, female tournaments were organized in a variety of different sports such as basketball, volleyball, table tennis, and handball. Bahraini women started participating in a variety of international sports competitions, earning a silver medal in the 5th Arab Tennis Championship held in Libya in 1978 (SCW, 2012). The seventies also marked the start of a flourishing financial center in Bahrain and its emergence as one of the main drivers of GDP growth. Since its early days women have played a key role in the financial sector as employees and directors. In 1998, Ms. Sabah Khalil Al-Moayyed was appointed as Director General of Eskan Bank (SCW, 2015a), the first Bahraini female to direct a bank.

In 2001, the SCW was established with the aim of empowering women in Bahrain and ensuring that women have equal opportunities in various fields of life. Since its establishment, the SCW has proposed, followed up and assessed various policies and legislations regarding the development of women's affairs. It has also been the primary point of reference for all institutions regarding women's affairs. The SCW also publishes reports and studies, and conducts workshops and campaigns to educate and spread awareness about various issues relating to women rights.

Women played a key role as both voters and as candidates in all general legislative elections that took place since Bahrain's transition to a constitutional monarchy at the turn of the millennium. Eight women nominated themselves to run for the parliamentary elections that took place in 2002, the first elections under the present system. However, none of the women candidates won in 2002. In the 2006 elections, out of the 18 female candidates, one secured a seat: Lateefa Al-Gaood became the first Bahraini women to be elected in the Council of Representatives in Bahrain, making her the first women in the GCC to win in a legislative general election. The first participation of women as a member of the legislature was in 2000, when four women were appointed to the Shura Council, followed by six in 2002. In 2004 Alees Samaan was the first women in the Arab world to chair a session of parliament, and she was also the first female GCC ambassador to the UK.

In 2001, Lulwa Al-Awadhi was appointed as SCW secretary-general at the rank of Minister, becoming the first woman in the GCC to hold such a position. In 2004 the first female cabinet minister, Nada Haffadh, was appointed as Minister of Health. Before her appointment, Haffadh served for two years in the Consultative Council of the parliament.

In January 2005 the second female cabinet minister was appointed, Dr. Fatima Al-Balooshi was appointed as Minister of Social Affairs. In 2006, Muna Al-Kuwari was the first female to be appointed as a judge. Ms. Al-Kuwari is the first woman in the GCC region to hold such a position. Since her appointment she

has served as a judge in the Juvenile Court, Civil Court, the Grand Appeals Court and the Grand Administrative Court, Labor Court, and the Civil Supreme Court of Appeal. Today 19 women serve as Judges in different courts in Bahrain (SCW, 2015b). Furthermore three women are elected and serve in the Council of Representatives, nine women are appointed in the Consultative Council, and eight women serve in the Municipal Council. Women represent 8% of the Council of Representatives and 22.5% in the Consultative Council (SCW, 2016).

Despite these admirable achievements, as will be seen in the remainder of 5.1, there remain significant obstacles that need to be overcome to ensure that Bahraini women are afforded equal opportunities to realize their potential.

5.1.2. Women in the Workforce and as Entrepreneurs

This section examines some of the detailed data regarding women's participation in the economy. An overarching picture is that while women make a robust--and in some case a growing--contribution, Bahrain is some way from achieving the benchmark of 50% female representation in every sector and at every level of the hierarchy. As will be seen, in some sectors, and some positions, the male-female disparity is acute, implying that Bahrainis must continue to strive to ensure that women are afforded equal opportunities to realize their potential. Most of the following data are drawn from Young (2018).

Figure 5.1.2.1 shows the division of the Bahraini population by gender and nationality for the period 2007-2016. As can be seen, the ratio of Bahraini males to females is around 50:50. The non-Bahraini population is mostly male and the share of male expatriates is rising over time, making females a minority in the total population. In 2017, females constituted only 27% of international migrants and they mostly worked in retail, services or within the household.

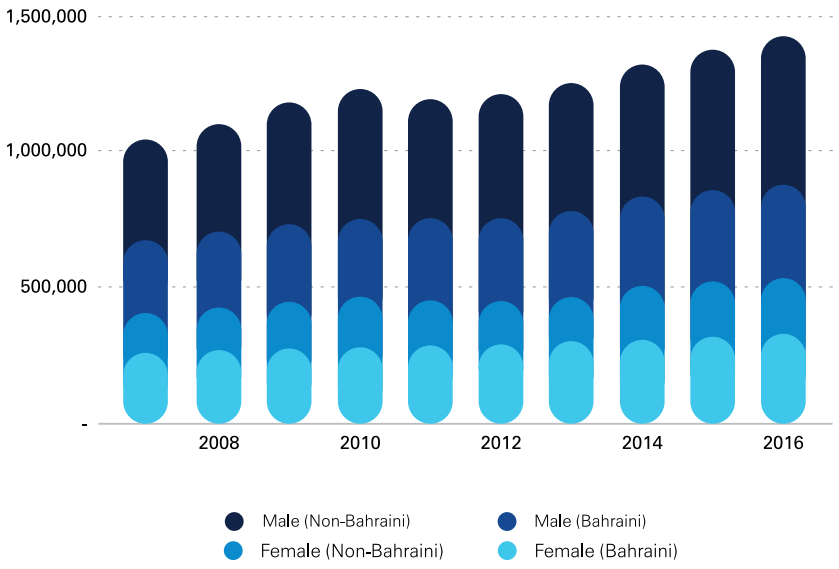

Figure 5.1.2.1
Population by Citizenship and Gender, 2007-2016

Source: IGA via Young (2018)

Bahraini women mostly work in the public sector, especially education and health. In fact, female migrant workers make a small contribution to the public sector: as can be seen in **Figure 5.1.2.2**, Bahraini women make up 50% of females working in the public sector, compared to 45% of females working in the private sector.

According to the SCW, women constitute 50% of the Bahraini workforce in the public sector and 34% in the private sector. In the education sector, Bahraini women constitute 73% of the total Bahraini workforce. Bahraini women represented 57% of lawyers in 2018, 64% of physicians in 2015, and 21% of engineers in 2017 (SCW, 2016). The percentage of women working in ICT and storage and in professional scientific and technical activities is around 30% (IGA, 2015). In 2013 the share of women working in the television department of the Information Affairs Authority was 19% while females constituted 49% of those working in the Radio department (SCW, 2016). The percentage of Bahraini women working in financial intermediation institutions is 36% of the total Bahraini workforce (SCW, 2016). The financial sector is one of the most important sectors where women are increasingly taking on leadership roles. As can be seen from **Figure 5.1.2.3**, women make up 8% of the board of directors in banks and are 5% of CEOs, 12% of executive managers and 17% of managers (IRM & SCW, 2015). The majority of Bahraini women occupy entry to middle management positions.

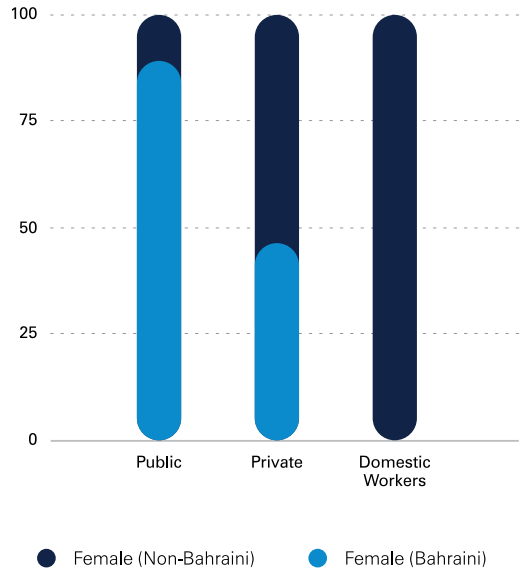

Figure 5.1.2.2
Female Employment by Sector (%), 2016

Source: LMRA via Young (2018)

Figure 5.1.2.4 shows the composition of the workforce in the private sector in Bahrain

"Our future economic path will be dictated by our ability to diversify our economy, while leveraging our legacy in finance, processing, and tourism. Investment in skills, R&D, and enterprise will be underpinned by a solid yet flexible education system that highlights science and vocational scholarship. The engagement of women will also prove very important."

- Dr. Irene Margaret Xiarchos (Economist, Food and Agricultural Organization of the UN, Egypt)

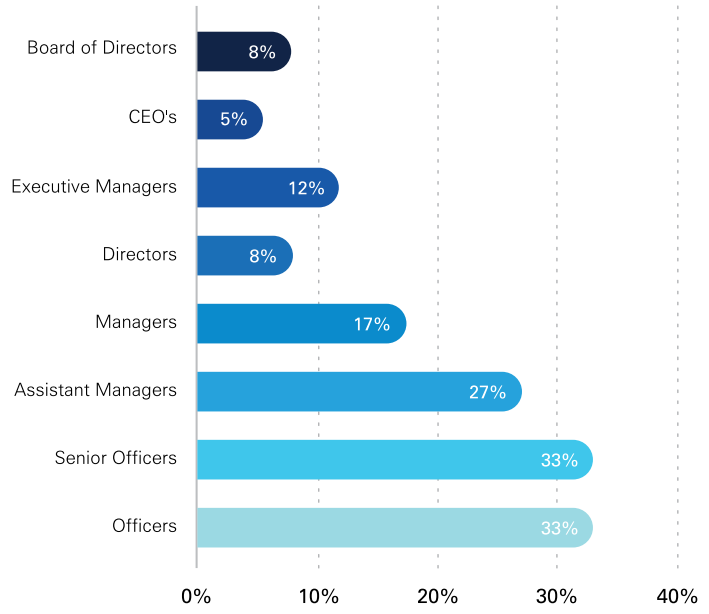

Figure 5.1.2.3
Women in the Financial Sector (%), 2015

Source: Intellect Resources Management W.L.L and SCW (2015)

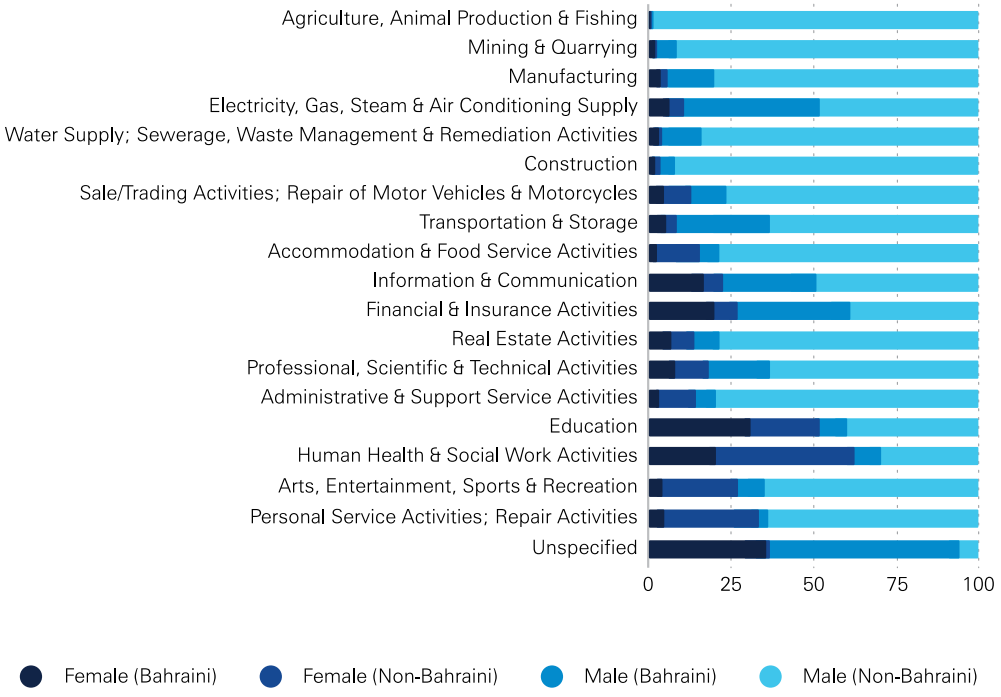

Figure 5.1.2.4
Private Sector Employment by Sector, Gender and Nationality (%), 2017

Source: LMRA via Young (2018)

in 2016 by economic activity, gender and nationality. Women in Bahrain participate in all types of economic activities, however their participation is particularly low in agriculture, fishing, and utilities, as well as in public administration, defense and social security.

Figure 5.1.2.5 shows the distribution of wages by gender and nationality in Bahrain. As can be seen from figure 5.1.2.5 Bahraini females are earning roughly the same wage or in some cases higher wages than Bahraini males particularly, in wages between BD 600-1,500 (roughly $1,500-4,000) (Young, 2018). Wage equality in Bahrain is supported by Article 39 of the Bahrain Labor Law for the Private Sector, Law no. 36 of 2012, which prohibits discrimination in the payment of wages based on gender, ethnic origin, language, religion or belief. In the public sector, wages are set by the Civil Service Bureau salary scales which are unified for both genders (Young, 2018). In 2015, the average monthly salary of a Bahraini woman working in the public sector was 807 BD compared to an 834 BD salary for men in the same sector (SCW, 2016).

Figure 5.1.2.6 shows the evolution of the unemployment rate in Bahrain by gender. As can be seen throughout the years women make up the majority of the unemployed population.

Bahrain has realized significant progress in supporting female entrepreneurs. According to the SCW (2015b) the share of commercial registrations owned by women increased to above 40% in 2014, and the latest data on the SCW website indicate that this figure reached 51% in 2018. A report by the International Labor Organization titled Women in Business and Management shows that Bahrain has the

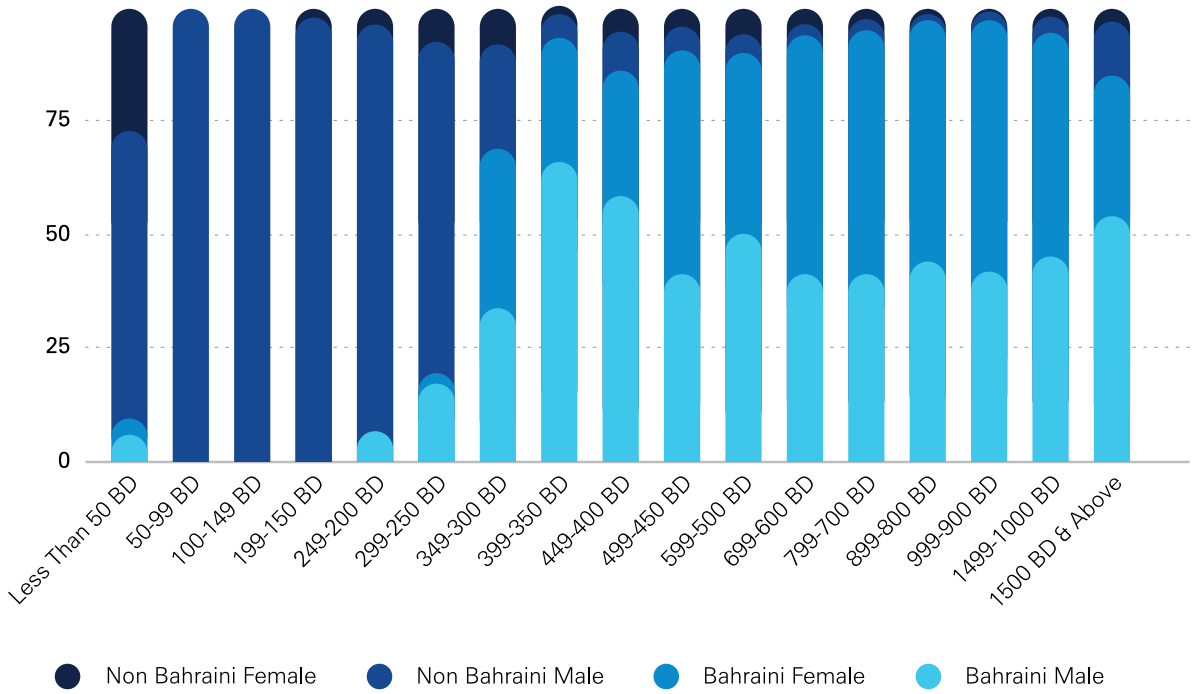

Figure 5.1.2.5
Monthly Wage by Gender and Nationality (% of workers), 2017

Source: LMRA via Young (2018)

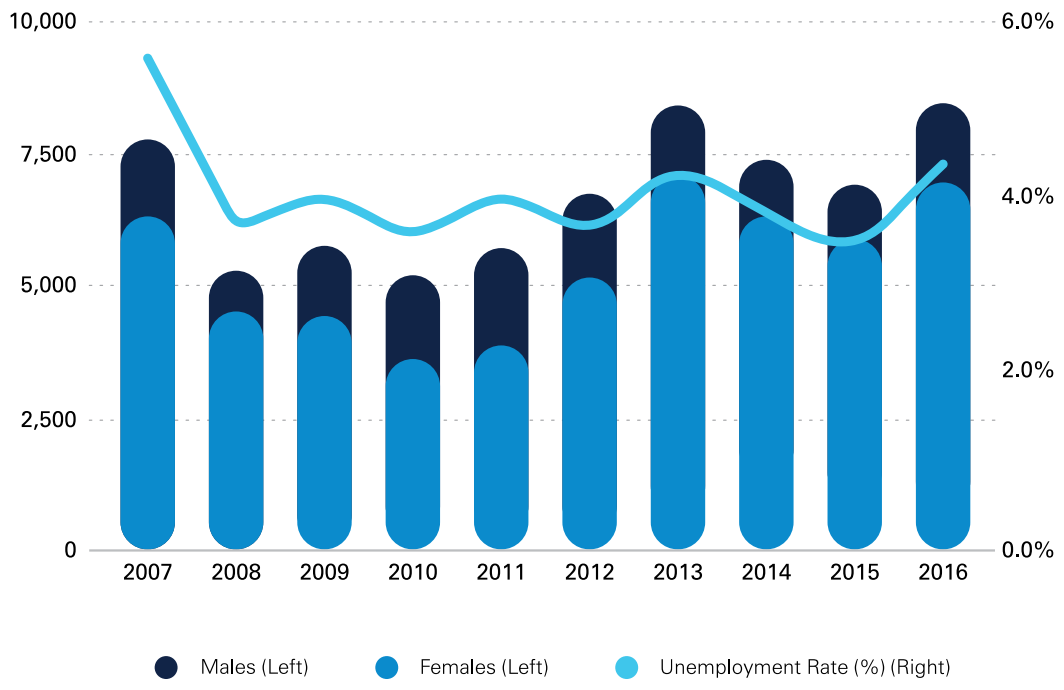

Figure 5.1.2.6
Bahraini Unemployment Rate and Unemployed Number by Gender, 2007-2016

Source: IGA via Young (2018)

highest female entrepreneurship rates in the region at 28%. Bahrain also has the largest increase in the number of companies whose boards have women members, which reached 14% in 2014 (ILO, 2016).

Bahrain has been at the forefront of helping businesswomen in the Arab world to overcome cultural and investment barriers for over 20 years through its Enterprise Development and Investment Promotion (EDIP) program, the Investment and Technology Promotion Office (ITPO) in Bahrain provides training and coaching to encourage self-employment and enterprise creation. In 2003, in cooperation with the Bahrain Businesswomen's Society, ITPO Bahrain launched the first EDIP program for women with the participation of 15 potential women entrepreneurs. The number of women entrepreneurs benefitting from the EDIP increased from 28% in 2003 to 51% by 2014.

Bahrain also realizes that one of the main challenges to female entrepreneurs is the availability of startup funding, especially in technology. For example a study by Harvard Business School shows that only 2% of total funding in the US goes to women receiving venture capital funding (Kanze et al., 2017). Therefore to help women to startup their own business, the "Women Entrepreneurship Program" was launched by the SCW together with Tamkeen in 2010. The program consisted of various training programs, direct grants, and easily accessible loans with subsidized interest rates targeted towards female entrepreneurs. More than 80 training and financing programs have been offered, benefiting over 15,000 women, including a $2.56 million portfolio to facilitate micro-financing for women (Young, 2018).

Tamkeen also funds incubators that targets female entrepreneurs, providing them with affordable retail space. For example Riyadat is a business incubator for Bahraini female entrepreneurs which was setup in 2013 by SCW, Tamkeen and the Bahrain Development Bank (Young, 2018).

Thus, overall, Bahrain is doing a good job of providing women with equal opportunities, especially when compared to regional peers, but the job is far from complete, as Bahrain–similar to virtually every country--still exhibits stark male-female disparities in many forms of economic activity.

5.1.3. Marriage, Education and Job Opportunities

In all countries, for women, economic participation is affected strongly by the decision to marry and to bear children. This section looks at the interplay between these pivotal choices.

Bahraini women are highly educated, and the percentage of women opting for higher education in Bahrain is higher than that of men. According to the 2018 Human Development Report by UNDP, the expected years of schooling for females in Bahrain is 16.6 while the expected years of schooling for males is 15.6. More females are pursuing higher education opportunities than males in Bahrain, the share of females graduating from higher education institutions was 64% between 2010 and 2016 (Young, 2018).

Bahrain ranked second in the world for the gender ratio of enrollments at the tertiary level (Young, 2018), while the percentage of females in primary and secondary education is around 50% (SCW, 2015b). The share of female graduates from Science, Technology, Engineering and Mathematics (STEM) programs is 46%, while the share of female graduates from Information, Communication and Technology (ICT) programs is 51% (UNESCO, 2016). Furthermore, Bahraini females significantly outperform their male counterparts in academic achievements, and as a result attain the majority of higher education scholarships and grants (SCW, 2015b).

The majority of young Bahraini women are educated and married, with the average age for Bahraini women to get married being 24 years, while the average marriage age for Bahraini men is 26 years (SCW, 2016). **Figure 5.1.3.1** shows the distribution of educational attainment for married women by age group in 2016. It can be noticed that the majority of women between ages 20 and 35 who are married also have a university degree (Young, 2018). It can also be noticed that illiteracy is rare among Bahraini women except for women above 50.

Even though Bahraini women's educational attainments have increased significantly over the years the contribution of Bahraini women in the labor force remains constant around 8% over the past decade. The significant increase in male foreign workers may be the main reason toward the stagnation of the share of Bahraini females in the total workforce. Another factor is that many women choose not to work due to cultural norms, family life, household economies, and unpaid responsibilities (Young, 2018).

In order to help females balance between family and work responsibilities, Bahrain provides institutional support for family leave and maternity policies that increase the retention rates of females. By law, Bahraini females are entitled to 60 days of paid maternity leave. Furthermore Bahraini females working in the public sector are entitled to shorten their working hours by two hours for two years after giving birth in order to breastfeed and

care for their newborn child. In the private sector a woman is entitled after the end of her maternity leave and until her child reaches six months of age to two breastfeeding hours, which decreases to one hour when the child is six months to one year of age. Furthermore, according to Article 34 of the Bahrain Labor Law, a working woman is entitled to obtain an unpaid leave to provide care for her child who is not more than six years of age for a maximum of six months in each case and for three times throughout the period of her service. Such policies can encourage women participation in the workplace and guarantee a path to re-entry to the workforce (Young, 2018).

Because many females in Bahrain are members of a household where both partners are participating in the workforce, one challenge to families in Bahrain is finding suitable childcare during working hours. Grandparents usually offer to help in taking care of the children during working hours however sometimes the grandparents are themselves working or physically unable to take care of young children.

There is a limited market of early childhood care or nurseries within the workplace in Bahrain. There are significant national efforts to improve conditions in nurseries and kindergartens, including programs by Tamkeen and the SCW; however, these relate primarily to dedicated childcare facilities, rather than ones within in the workplace. Introducing workplace childcare facilities and nurseries in different ministries and in private companies may encourage female participation in the work force and helps women better balance between their work and family responsibilities. For example a law can be issued which mandates all companies and institutions which reach a threshold number of employees to have a childcare facility.

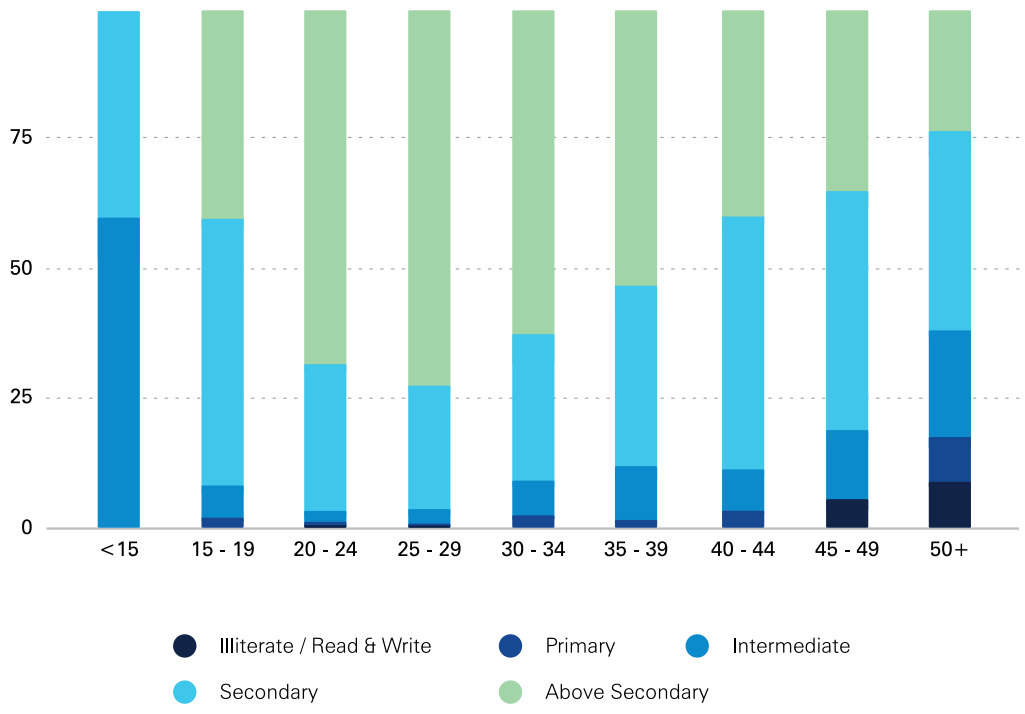

Figure 5.1.3.1
Distribution of Educational Attainment for Married Women by Age Group (%), 2016

Source: MJIA via Young (2018)

There are limited opportunities for women to work from home or to work on a part time basis. The availability of childcare and part-time work increases the participation rate of females in the workforce and increases the number of females having children (Del Boca, 2002). Furthermore, part-time work is associated with lower work-to-family interference, better time management ability, and greater life satisfaction for women (Higgins et al. 2000). In an effort to expand part-time work opportunities, the government launched a women's partial employment project in 2015, and it has succeeded in securing part-time jobs for over 2,000 women in sectors such as education and training, health and beauty, and real estate. Building upon such efforts would potentially yield considerable returns.

Overall, women in Bahrain have good access to health, education and job opportunities. Since the establishment of the SCW, many legislations have been amended, and new laws were issued, to ensure the protection of women's rights and societal equality. Bahraini efforts to empower women during the past decade were successful as the Global Gender Gap Report in 2015 by the World Economic Forum shows that Bahrain was the most improved country in the world in the economic participation and economy sub-index. It also has the highest score in the region on the wage equality for similar work indicator and score above average on educational attainment. But no country--including Bahrain--can claim to have overcome the issue of gender imbalance in economic opportunities, underlining the need to continue to build upon the existing successes.

5.2. MIGRANT WORKERS AND THE BAHRAIN ECONOMY

5.2.1. Preamble

5.2.1.1. Areas of Focus

Bahrain's labor market and the reforms introduced during the new millennium are huge topics that merit their own treatise. This section is not an attempt at covering the totality of Bahrain's highly complex and multidimensional migrant worker issues. Instead, the focus is on the economics of the Bahrain labor market, specifically the issues relating to the interests of migrant workers.

Therefore, among the topics that will not be covered are: human rights issues that do not fall under the economic domain; or the numerous labor market policies undertaken by the government in an attempt to improve the opportunities available to Bahraini citizens, such as Bahrainization quotas, or the imposition of foreign worker fees that are then used to fund Tamkeen. The exclusion of such important topics is undertaken purely in the interests of providing readers with a parsimonious rather than comprehensive treatment of labor market issues. Future research can hopefully shed light on these additional domains.

5.2.1.2 The Difficulty of Devising Migrant Worker Policies in Bahrain

As seen extensively in chapter 1, Bahrain's economy has several idiosyncratic properties that limit policymakers' ability to directly apply policy lessons learned elsewhere. This is especially true in the labor market, which is extremely unique both compared to other countries at present, and compared to what presently advanced economies experienced at any point during their development paths.

The most salient property is the abundance of migrant workers. **Figure 5.2.1.2.1** shows how the workforce has evolved in terms of national and non-nationals.

While employment among both nationals and migrants has been increasing, the latter has been growing at a considerably higher rate. As a consequence, Bahrainis went from representing 33% of total employment in 2006, to 24% in 2017. Similar figures are unheard of in advanced economies, either today or in yesteryear; even Singapore, which has a heavy dependence upon migrant workers, has citizens accounting for well over half of total employment.

Another uncommon trait is the presence of foreign workers from all rungs of the skill ladder. In advanced economies, migration systems are geared toward having migrant workers plug holes in the labor market that cannot be addressed by the local labor pool, which almost inevitably means moderately- or highly-skilled positions. In contrast, in Bahrain (as in other GCC countries), large volumes of low-skilled workers are allowed to ply their trade legally, without having to go through complex bureaucratic procedures.

As a result, the process of drafting labor market policies becomes much more challenging than usual. For example, in the case of monetary policy or commercial law, the government can draw upon the experience of numerous advanced economies that has accumulated over decades as a basis for optimal policy in Bahrain. In the labor domain, the opportunities are much more limited: Bahrain cannot look to countries such as the UK, USA, or France for readymade policies that can be imported, as none has ever had an economy where 75% of those employed are non-citizens.

Consequently, policymakers have to exhibit elevated levels of creativity when proposing reforms; and, equally importantly, they must have monitoring and evaluation systems in place to permit accurate analysis of reforms that have been proposed and subsequently implemented. That means collecting high quality data at high levels of frequency.

A final remark concerns the effect of migration on conventional economics statistics. **Box U** contains a discussion of how the large levels of migration seen in countries such as Bahrain require researchers to exhibit caution when interpreting traditional aggregate indicators, such as GDP per capita.

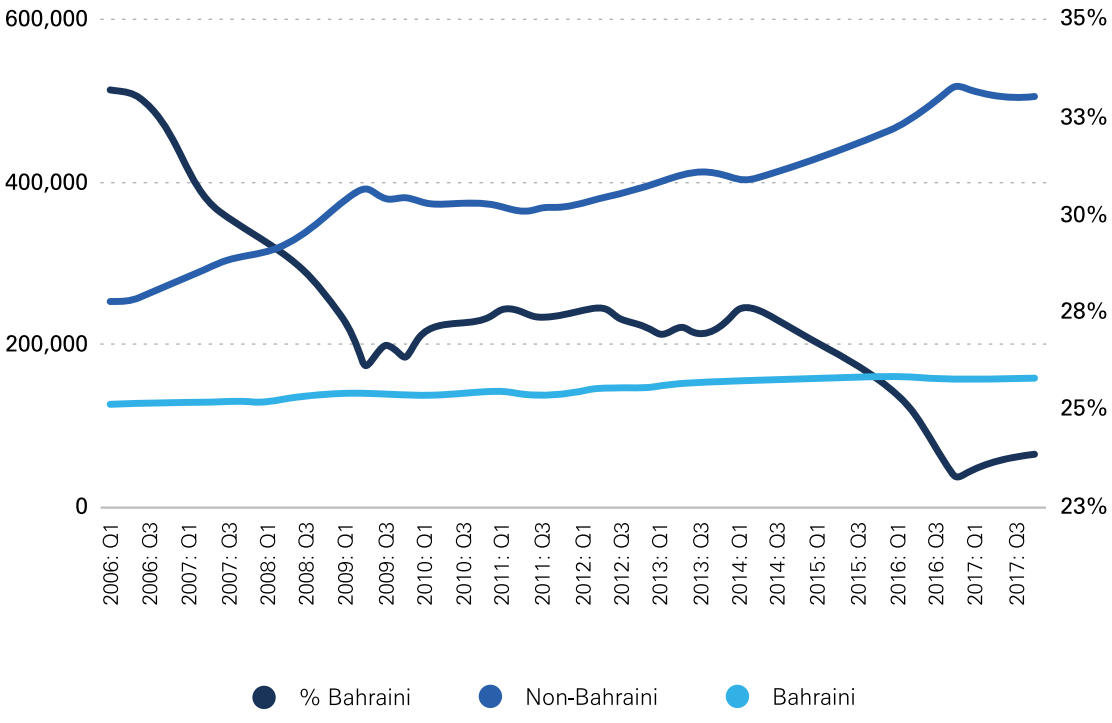

Figure 5.2.1.2.1
Total Number of Employed Bahrainis and Non-Bahrainis, 2006-2017

Source: LMRA

BOX U:
WILL ROGERS PHENOMENON AND BAHRAINI STATISTICS

Many leading indicators relating to the socio-economic well-being of the population are calculated on a per-capita basis, most famously GDP per capita. This is a very useful method for correcting economy-level series in a manner that permits comparisons between countries, or for the same country across different periods in time.

In the case of Bahrain, added caution is required when evaluating per-capita indicators due to migration-induced appearances of the Will Rogers phenomenon.

The Will Rogers phenomenon potentially arises when comparing different groups where the units that comprise the groups can move between the groups. The result is an obfuscation of the interpretation of per-capita indices. The easiest way to explain this is via a concrete example.

Suppose that each of North and South Korea have a population of three (3) people. The income of the three people in North Korea is {$1,000, $1,500, $2,000}, while that of South Korea is {$3,000, $3,500, $4,000}. Therefore, at the outset, the per capita income in North Korea is $1,500, compared to $3,500 in South Korea.

Now suppose that the North Korean with an income of $2,000 migrates to South Korea. Then the per capita income in North Korea decreases by $250 to $1,250, while South Korea's per capita income decreases by $375 to $3,125. Thus, despite the fact that no individual has experienced a change in income, income per capita in both countries decreases. A naive analyst examining the per capita income data without accounting for the possibility of migration would erroneously conclude that both countries are becoming poorer.

The Will Rogers phenomenon can be even more misleading when movement between groups leads to changes in the values of both the movers and those who stay in their group. Returning to our example, suppose that the $2,000 income North Korean, upon moving to South Korea, gets a $200 boost to their income, since they are working in a more productive environment. Moreover, each of the three South Koreans already there gets a $100 boost to their income because the new migrant boosts their productivity by plugging a hole in the labor market. Meanwhile, the remaining two North Koreans are unaffected, meaning that income in North Korea is {$1,000, $1,500}, and in South Korea it is {$2,200, $3,100, $3,600, $4,100}. The per capita income is therefore $1,250 in North Korea, and $3,250 in South Korea. Both figures are still lower than the pre-migration levels, despite that everyone has experienced either an increase in their income, or it has remained frozen. Inferring that falling per capita income in South Korea represents diminishing quality of life for its residents would be a grave error.

Bahrain has experienced large amounts of migration over the last 40 years. Moreover, the source countries and skill levels of the migrants vary substantially over time. As a result, the possibility of the Will Rogers phenomenon obscuring inference is very real, in series such as per capita income, labor productivity, human capital per worker, and so on, in contrast to low-immigration countries such as Japan. Unfortunately, data limitations impede the ability of analysts to precisely determine the incidence of Will Rogers phenomenon in the case of specific Bahrain data series. Therefore, as a second best, readers are advised to exercise caution when conducting associated inference, in acknowledgement of the possibility of Will Rogers phenomenon.

5.2.2. How Much Do Migrant Workers Benefit? Remittances in Bahrain

The employer-employee relationship is multidimensional, but its most important component is the financial compensation dispensed to the employee in exchange for the labor services rendered. In the case of migrant guest workers, remuneration is intimately tied to remittances, since the migrant's sojourn is temporary, and their goal is to transfer financial resources to their family back home.

Therefore, to get a sense of the extent to which migrant workers benefit from working in Bahrain, an analysis of the remittance statistics is a useful departure point, using the World Bank's large database of bilateral remittance flows.

5.2.2.1. The Enhanced Value of Remittances

Across the globe, migrant worker remittances are typically used to fund essential consumption, such as food or utilities; alternatively, they fund educational or commercial investments (De Haas, 2005; Semyonov and Gorodzeisky, 2008; Hanson, 2010). Children are often some of the biggest beneficiaries of remittance flows in terms of increased educational attainment (Rapoport and Docquier, 2006). More generally, scholars studying the effectiveness of remittances as anti-poverty devices find impressive estimates; for example, Adams and Page (2005) found that a 10% increase in per capita official remittances led to a 3.5% decline in the poverty rate.

The decentralized nature of remittances and the minimization of the number of intermediaries, most notably the absence of government officials, renders them a more reliable source of income for developing countries than foreign aid, or even FDI. This is because remittances are received directly by the person in need of them, as corrupt and/or incompetent bureaucrats in developing countries seriously impede the ability of foreign aid to deliver positive outcomes. The importance of remittances is amplified in countries with basic financial systems, wherein low-income households find themselves credit-constrained in the absence of remittances.

On the flip side, there is a common misconception among the citizenry of many countries that receive migrant workers that remittances unfairly drain the economy of resources that it rightly owns. This thinking leads to calls for policymakers to impose capital controls upon migrant workers to force them to spend their earnings in the domestic economy. In Bahrain, the government and the central bank have consistently rejected such demands, because regardless of the rhetorical defensibility of such claims, capital controls are invariably futile and are actually harmful. In the globally integrated financial markets of the 21st century, people will inevitably find a way around capital controls, and large investors will fear expropriation, making them less likely to invest. The only acceptable forms of capital controls are those relating to security concerns, e.g., as counter-terrorism measures; but as an economic policy they have failed time and time again during and after the Bretton Woods system of fixed exchange rates. With FDI playing such an important role in Bahrain's economy, authorities have wisely surmised that capital controls on remittances are a fundamentally counterproductive policy.

5.2.2.2. Remittances in Bahrain

Bahrain's open labor and capital markets afford migrant workers excellent opportunities to earn higher incomes, which they can then remit home in a manner that benefits them and their families according to the mechanisms described above. Data consonant with this view are presented below, drawn from Al-Ubaydli (2015), which is based on World Bank and International Labor Organization data.

Figure 5.2.2.2.1 shows the remittances going from a selection of countries to Bangladesh, Egypt, India, Pakistan, and the Philippines in 2010. These latter countries are all important sources of migrant workers in Bahrain. See **Box V** for more on Indian migration to Bahrain. As can be seen, in absolute terms, by virtue of its small size, remittances in Bahrain are small compared to GCC neighbors Saudi Arabia and the UAE, as well as to Australia, the UK, and the USA, all of which are traditional favored destinations for economic migrants. However, when one adjusts for population, Bahrain's remittances dwarf those of the western countries, exceeding them by a factor of eight or more, though it is worth noting that this can be partially attributed to the fact that foreign workers are guest workers, residing in Bahrain temporarily.

These findings are not an artifact of the small sample of sources and destinations for the remittances. In 2010, in a global ranking of gross remittances per capita, Bahrain ranked 17th, above Australia, the UK, and the USA, more than doubling the levels exhibited by the latter two countries. These data are a testament to the openness of Bahrain's labor markets.

While deflating remittances by total population

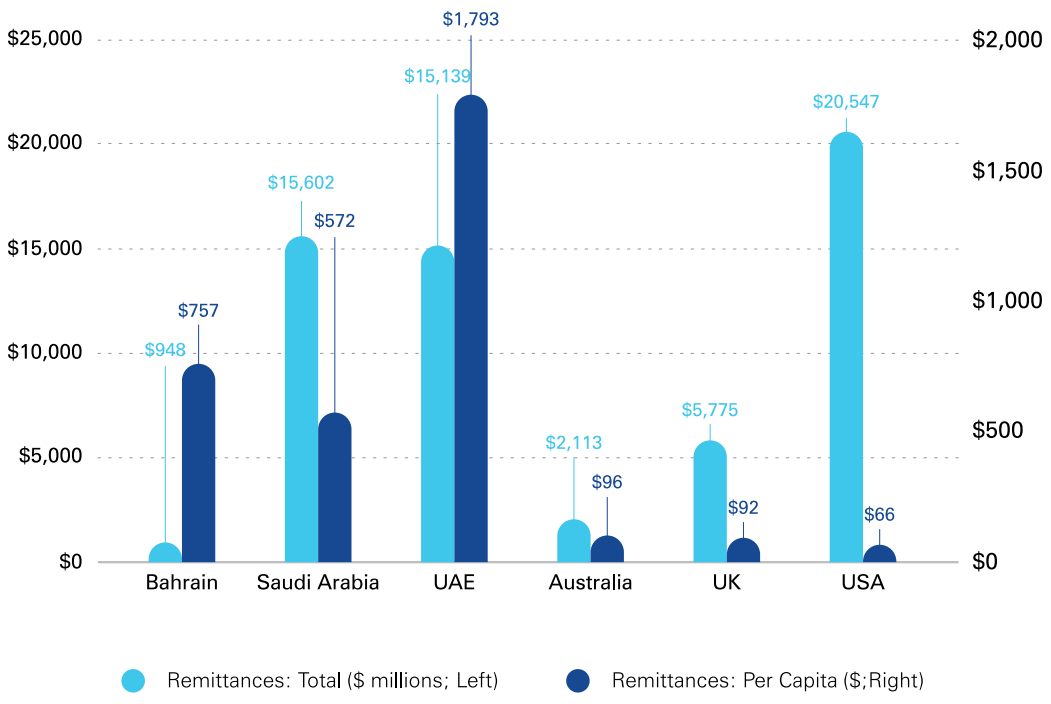

Figure 5.2.2.2.1
Remittances to Bangladesh, Egypt, India, Pakistan, and the Philippines, 2010

Source: World Bank

BOX V:
HUMAN CAPITAL AND MIGRATION

The discovery of oil in the 1930s led to transformational social, economic and political changes in the Gulf region. One of these transformations was the rapid expansion of Gulf economies, and the sudden increase in the demand for skilled and unskilled labor on a scale that the relatively small populations of these countries could not meet. From engineers, construction workers, to doctors and teachers, Gulf countries continue to depend on migrant workers from South and Southeast Asia and from neighboring Arab countries to support their economies.

According to Al-Ubaydli (2015) the flow of migrant labor in the Gulf can be seen as a "win-win" scenario since migrant workers are able to improve their living standard and that of their family though remittances, while receiving countries can meet their labor demand. According to the World Bank's Migration and Remittances Factbook (2016), remittances equaled about 7% of Bahrain's total GDP in 2014.

However, there are some drawbacks in the current regulatory frameworks that govern labor migration. For instance, there is much room for improvement to put forth more effective legal frameworks in both sending and receiving countries. This is needed to tackle the black market for work permits and visas, and to prevent any form of abuse and human smuggling. The Philippines offers a model for regulating its labor migration through its Overseas Employment Administration, which oversees licensed recruitment agencies, offers pre-departure orientation, and maintains close coordination with receiving countries through its diplomatic offices (Al-Ubaydli, 2015, p.5).

According to the LMRA, Bahrain's total labor force in 2017 reached 763,112 workers, 604,697 of which were non-Bahrainis. The top five countries of origin for migrants in Bahrain are India, Bangladesh, Pakistan, Egypt and the Philippines (UNICEF, 2013). Of the country's total migrant population of 1.5 million, close to 300,000 are Indian nationals, making the Indian community the largest expatriate group in Bahrain (Embassy of India in Bahrain, 2018).

The Indian diaspora in Bahrain dates back to the pre-oil era where they were concentrated in the old Manama Souq working in various trades. The flow of Indian migrants increased dramatically in the post-1973 oil era as Gulf countries were undergoing massive urban and economic development (Azhar, 2016). To commemorate this history, the BACA launched the "Little India" project to document and celebrate the Indian community's contribution to the social and cultural history of Bahrain (Bahrain Authority for Culture & Antiquities, 2015). The Indian part of the Manama Souq was renovated and a small public space was created to host community gatherings and seasonal festivities.

of the remitting country provides useful insights, so too does deflating the remittances to a certain country by the number of migrants from that country residing in the remitting country. In other words, as an example, when considering U.S. remittances to Brazil, it is useful to consider dividing the total amount by the number of people who live in the USA, and by the number of Brazilians living in the USA.

Figure 5.2.2.2.2 does this for four of the most important (numbers-wise) groups of migrant workers in Bahrain: Egyptians, Indians, Pakistanis, and Filipinos.

These are considerable figures that confirm the benefits that migrant workers are realizing from being in Bahrain. The inter-country difference is driven by differences in the workers' levels of human capital. For example, Egyptians working in Bahrain tend to occupy high positions, such as senior consultants in government ministries, in contrast to Indians, who often work as drivers or laborers.

The source of funds for these remittances is the wages earned by the migrant workers, which are invariably higher than what they might earn at home. Data limitations prevent anything approaching a comprehensive examination of the issue, but the limited data available are shown in **Figure 5.2.2.2.3**, which are monthly wage comparisons for a variety of occupations dominated by migrant workers during the early 2000s.

In all of these positions, earnings in Bahrain exceed what is available in the source countries by a substantial amount, sometimes by several orders of magnitude. For the most part, this is due to the productivity of these jobs being higher in Bahrain, due to the more favorable economic environment. For example, a nurse in Bahrain has access to much better medical

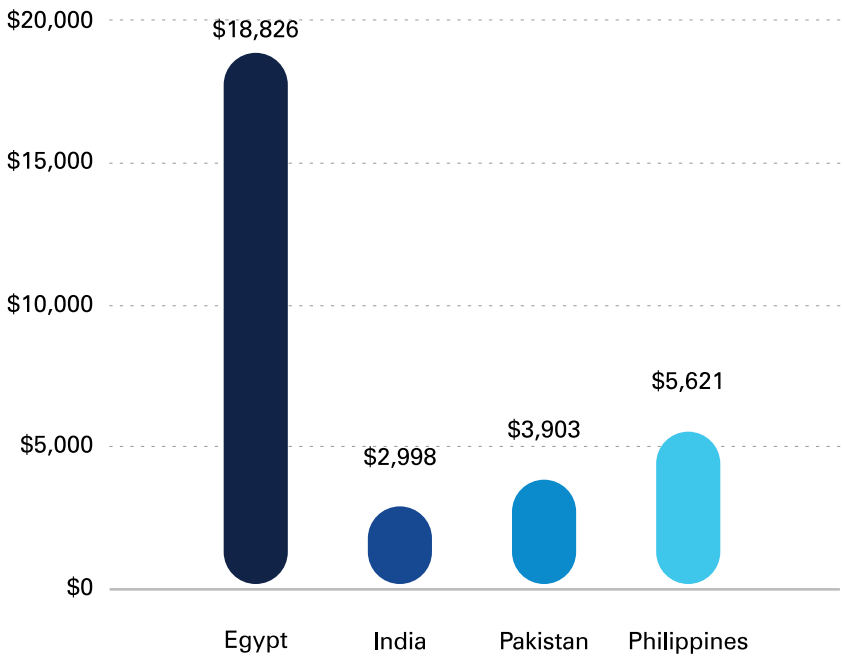

Figure 5.2.2.2.2
Remittances per Migrant Worker by Country ($), 2010

Source: IGA and World Bank

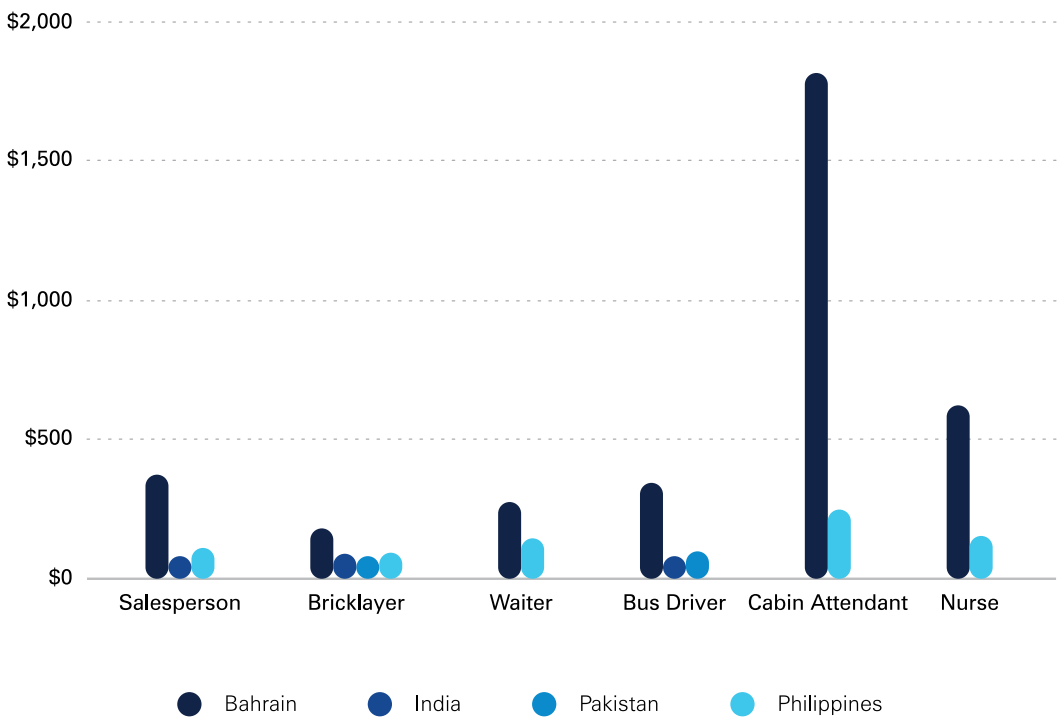

Figure 5.2.2.2.3
Monthly Wage Comparisons for Various Migrant-Worker-Dominated Occupations in the Early 2000s ($)

Source: ILO

devices, and potentially works with more experienced and better-trained doctors, than does one in the Philippines. See Al-Ubaydli (2015) for more on the sources of these wage differentials.

Further indirect evidence of Bahrain's ability to help migrant workers realize higher living standards for themselves and their families at home is provided by the data on the volume of migrants. Bahrain was recently classified in the highest tier in the U.S. State Department evaluation of human trafficking (TIP), confirming that while trafficking exists in Bahrain--as it does in every country in the world--it is an infrequent occurrence. Combining this with the fact that thousands of new migrant workers enter Bahrain every year (**Figure 5.2.1.2.1**), then it must be the case that the experience is a positive one, on average.

Finally, the fact that migrant workers benefit from their presence in Bahrain should not be construed as evidence that Bahrainis are therefore losing out as a consequence. The flow of human capital across political borders, like the flow of goods, services, and physical capital across political borders, is a positive sum transaction by default, meaning that both sides benefit. Bahrainis are able to procure lower-cost labor for their enterprises, and the cost of many services declines substantially as a consequence. As an example, the ability to hire domestic workers for low wages helps improve female labor force participation, by allowing households to purchase low-cost childcare and domestic assistance.

Admittedly, in chapter 1, attention was drawn to some of the adverse consequences of low-cost foreign labor on Bahrain's prospects for

diversification. However, these were related to the effect of low-cost labor on the incentives to innovate, rather than because the migrant workers were displacing domestic talent. Like free trade, migration is an issue where ill-informed polemics and xenophobia lead to irrational aversion, in spite of the manifest economic benefits. For a greater understanding of how Bahrainis and citizens of other labor-importing countries benefit from migration, see Al-Ubaydli (2015).

5.2.3. Major Policy Initiatives

As argued above, the fact that migrant workers continue to voluntarily come to Bahrain in large numbers constitutes clear evidence of their benefiting from the opportunities available. Nevertheless, in addition to what can be inferred from migration flows and remittance figures, the government has undertaken several policy initiatives aimed at improving the living standards of migrant workers in Bahrain. A selection of the most important ones are explored below.

5.2.3.1. Evolutionary Reforms to the Kafala System: The Flexibility to Change Employer

In advanced, western economies, economic migration (which is distinct from migration relating to humanitarian concerns) is generally handled through a system wherein migrant workers plug gaps in the labor market that cannot be addressed by the local labor pool. Moreover, migrant workers are given the opportunity to enter a process culminating in their acquiring citizenship in the host country, and permanently settling there with their family, completing their integration into the country. Since most western countries have dynamic labor markets and advanced educational systems, gaps in the labor market are limited and transient, meaning that the demand for foreign labor is small as a proportion of the aggregate demand for labor. This underpins the immigration systems being designed for organizing the entry of small (compared to the total labor force) numbers of foreigners, who are ultimately looking to reside in the economy permanently.

The background to Bahrain's migrant worker systems differs substantially and plays a critical role in explaining the resulting differences in the system itself. Prior to the discovery of oil, due to its arid, desert climate, Bahrain's economy was a long way from a modern, industrialized economy. This meant that the population that the island could support was small, too. Moreover, despite being a regional leader, the education system was still nascent. Oil offered the opportunity of rapid growth, but such growth would require importing large volumes of labor of all skill levels. This created a need for a system for managing migrant workers tailored to these unique circumstances.

The Gulf countries, including Bahrain, created the kafala system, which has the following key characteristics:

1. Migrant workers are guest workers, with no structured path to permanent residency or citizenship.
2. Migrant workers must be sponsored by a company or an individual, who is legally responsible for them.
3. The administrative procedure for securing a visa for a guest worker is very straight forward, taking only a matter of days, and is also relatively inexpensive.

4. The sponsor retains exclusive rights to the worker's labor services for the duration of the contract (typically two years); the worker cannot legally switch employers without the sponsor's permission.

Note that in contrast to the H1B system in the USA, for example, there is no need for employers to demonstrate to authorities that the local labor market is failing to satisfy their needs. In fact, the entire process is highly decentralized, with most of the steps being performed by the sponsor, the worker, and their respective representatives; the government's job is merely to collect modest fees, ensure broad adherence to health and safety standards, and to rubber-stamp the contract. This is by design: a system as slow, expensive, and centralized as securing a H1B visa would hamstring the economy.

The ease of importing labor under this system, as well as the high demand for imported labor resulting from the influx of oil income, together account for a labor force that is today 75% migrant workers. The fourth characteristic above (sponsor retaining veto right on the worker changing employer) was motivated partially by a desire to ensure that sponsors could invest in building the human capital of the migrant workers whom they sponsored--especially the job-specific human capital--without the fear of losing the capital invested in the sponsorship process. However, it also heavily shifted the employer-employee bargaining balance in favor of the employer, granting the sponsor monopsonistic power over the migrant worker's labor services for the duration of the contract.

The LMRA was created as an organization dedicated to assessing such issues and proposing and implementing solutions where appropriate. In 2009, the LMRA made Bahrain the first Gulf country to redress the power imbalance present in the original kafala contract, by granting workers the ability to change employer/sponsor, subject to giving sufficient notice to their existing sponsor. This was an example of a reform that was made more difficult by Bahrain's unique circumstances: while it was evident that a change needed to be made, there wasn't the breadth of ready-made alternatives available that you would find in other domains, such as monetary or health policy, because the labor market circumstances of Bahrain were unusual globally and absent in the context of the advanced economies typically considered as a model to be followed.

Since that time, other Gulf countries have emulated Bahrain's reforms, and migrant workers are able to realize higher standards of living than previously

5.2.3.2. Revolutionary Reforms to the Kafala System: Self-Sponsorship

While reforming the kafala system has had significant, positive effects, Bahrain, like all countries, continues to exhibit areas for improvement in its labor markets. A key problem that results from the kafala system--either in its original or reformed state--is visa-trading, and it has forced the LMRA to look outside the box for novel solutions.

To understand visa trading, it is useful to first appreciate the tradeoff that occurs when a country considers how restrictive to make entry for migrant workers. The departure point is that countries differ in the wages and economic opportunities that they can offer migrant workers. Good governance and plentiful natural resources mean that some countries have good opportunities, while bad governance and meager natural resources

mean that some countries have very limited opportunities. This global inequality creates an irrepressible demand by citizens of the latter countries to migrate to the former countries, a demand that is exacerbated by natural disasters and violence. The despair that some people feel in their home countries, and hence the risks that they are willing to take to escape, should not be underestimated by citizens of rich countries who fantasize about a suite of policies that drive inward migration to zero.

In a country with high wages and good economic opportunities, including those in the Gulf and the OECD, if authorities decide to make the system highly restrictive, such as in OECD economies, then this creates a demand for blackmarket entry, because people in poorer countries remain desperate to enter. Thus, strict immigration systems generate human smuggling as an unintended consequence. In contrast, if authorities decide to make the system highly lax, such as in the Gulf countries, then people will exploit the laxity to enter, and then perform economic activities that might violate the terms of entry; however, the incidence of human smuggling should be lower, since it is easier to simply exploit loopholes in the work visa acquisition process. This latter action includes visa trading.

More specifically, visa trading describes a situation where a migrant is sponsored for a specific position and then, upon their arrival in the host country, the migrant performs a substantively different job (Al-Ubaydli, 2015). This can be because the sponsor has unofficially "sold" the worker's visa to another sponsor, whom the worker now answers to informally. Alternatively, it can be because the original sponsor never intended for the worker to perform the job cited in the visa, and the worker is "released" into the black market to earn a living in exchange for financially compensating the sponsor. The key distinction between visa trading and conventional illegal immigration is that under visa trading, the worker enters the host country with sound work-related paperwork, but then subsequently enters the black market. In contrast, under conventional illegal immigration, either the entry is illegal, or it is for a non-work related purpose.

Hiring visa traded workers via the black market is attractive to sponsors because it allows them to bypass recruitment fees and to deny workers their full rights, such as housing, medical, and travel expenses. Unlike formal work contracts, the relationship can be instantly dissolved, too. However, due to the clandestine nature of the relationship, holding the worker legally accountable is more difficult, and it is harder to perform background checks on formal qualifications and skills. The original sponsor often avoids sanctions by registering the sponsored worker as "missing" after entry, while the absence of a formal relationship between the current employer and the worker protects the employer from sanctions. Workers who are sufficiently poor are often willing participants in the visa trading enterprise because of their poverty, despite the threat of sanctions, since the GCC black market still offers superior income to what they might earn at home. However, for many, the benefits are wiped out by predatory intermediaries who deceive prospective migrant workers into incurring large debts that are virtually impossible to pay off. Many are exploited by those who hire them via the black market since they have no legal recourse when, for example, an employer refuses to pay the worker's salary.

In Bahrain, these "free visa" workers (the term that has been applied to them) exist in the tens of thousands, according to LMRA estimates, though it is impossible to obtain a precise estimate due to the steps those involved take to conceal their clandestine activity. The LMRA has been very active in addressing the problem, deploying most of the theoretically available tools, such as inspections, worker

sanctions, employer sanctions, amnesties (see below), and awareness programs. All the while, the absence of analogous problems in OECD countries meant that Bahrain had to be creative in devising solutions, which ultimately led the LMRA toward a revolutionary policy: the flexi permit, in 2017.

The flexi permit is a renewable two-year permit which allows the eligible person to work and live in the Kingdom of Bahrain without an employer (sponsor); the person can work in any job with any number of employers on full or part-time basis. The primary condition for a flexi permit is paying regular monthly fees to the government, which ensure the legality of the work, and guarantee access to critical government services, such as health and legal recourse.

In effect, the flexi permit allows almost anyone who wants to live and work in Bahrain to do so. Moreover, since part of the motivation for the policy was tackling the free visa problem, the LMRA was seeking to give irregular workers the opportunity to return to legal status.

Given the revolutionary nature of the policy, it is far too early to draw conclusions about its long-term effectiveness. The LMRA is constantly gathering data (see below) with an eye to evaluating and refining its policies. However it should be commended for searching for a solution that went beyond the default option among OECD economies of imposing stricter restrictions and/or accelerating deportations. Despite the political popularity of enforcement-based responses to immigration problems, the LMRA was aware that they often adversely affect vulnerable people as they drive them underground.

More generally, due to the persistence of global inequality, no country, including Bahrain, will "solve" the problem of illegal migration, whether it takes the form of human smuggling or visa trading. But some policies are both inhumane and ineffective, while others less so. Bahrain's daring experiment will yield results that are of great interest to labor market scholars and practitioners across the world. For a fuller discussion of countermeasures to the various forms of illegal migration, see Al-Ubaydli (2015).

5.2.3.3. Amnesty and Victim Support

As mentioned above, Bahrain has also deployed traditional tools for countering illegal migration. In 2015, it launched an amnesty, which resulted in over 50,000 migrant workers using the opportunity to correct their status without fear of sanction. Over 75% preferred to stay in Bahrain, which constitutes further evidence of the generally favorable environment migrant workers experience in Bahrain compared to the alternatives available to them, including staying in their home country.

In addition to the amnesty, Bahrain recently established an expatriate protection center that acts as a shelter for vulnerable workers, as well as serving as a one-stop shop for the needs of migrant workers. Moreover, the LMRA also launched a fund to provide financial support for the victims of human trafficking during the court process, with the aim of both assisting the victims and motivating them to testify in court so that traffickers can be held accountable.

In 2018, Bahrain's robust efforts at improving the experiences of its migrant workers earned the acclaim of the U.S. State Department, which upgraded Bahrain to the highest tier in its Trafficking in Persons Report. It was the first Gulf country to reach that tier, and at present, it is the only Middle Eastern country in the top tier, with the exception of Israel.

5.2.3.4. Data

Having been established recently in 2006, the LMRA took advantage of the opportunity to make as many of its services as possible in electronic form. Part of the motivation was the now conventional desire to save costs and to deliver a higher quality service to users.

However, the decision to focus on digital services was also driven by a desire to streamline the process of gathering and analyzing labor market data. It has since launched a dedicated website "Bahrain Labor Market Indicators," wherein it makes much of its data available completely free to researchers and other stakeholders seeking reliable information on the state of Bahrain's labor market. The rich database is complemented by a quarterly newsletter that highlights some of the most noteworthy trends. These data have been especially useful for groups such as migrant worker rights activists and members of the Bahraini parliament who contribute to the formulation of labor market policies through their proposals and engagements with the LMRA.

The LMRA also produces large volumes of data that it does not release, out of privacy concerns (detailed compensation data, for example). However, it has a highly progressive attitude toward rigorous research, and is always willing to work with scholars who wish to use its data in a responsible manner.

One of this report's central recommendations is that the Bahrain government needs to allocate a greater volume of resources to the process of gathering and publishing data. The primary reason for this recommendation is that proposing, analyzing, and revising policies in an effective manner is critically dependent upon the availability of high quality data. The LMRA is one of the organizations that should be emulated in this regard, and its commitment to collecting and disseminating high quality data is a discreet but important contribution to the well-being of migrant workers in Bahrain.

5.2.3.5. Persistent Challenges

Despite the positive steps described above, Bahrain still has a lot of work to do in creating a positive environment for migrant workers, though it is hardly alone in this regard, since no country can claim to have devised anything approaching a solution to the problem of illegal migration. Bahrain's assent to the highest tier of the U.S. TIP report is a welcome development, but it is also an extremely recent one, meaning that for many years, the system suffered from several flaws.

Since many of the largest abuses faced by migrant workers are illegal, it is extremely difficult to obtain reliable data on their incidence. Instead, the report draws attention to some of the ones that merit policy makers' attention, according to the assessment of key stakeholders.

One major issue, which relates to the issue of visa trading, is the failure to provide migrant workers with their minimum rights. Human rights organizations document violations that include the withholding of passports from migrant workers by their sponsors; the failure to pay wages on time (authorities are introducing a wage protection system to ensure payment of wages); physical abuse--especially in the case of domestic helpers; unsafe working conditions in fields such as construction work; and many other cases. While authorities acknowledge the existence of such abuses, and dedicate considerable (and increasing) volumes of resources to tackling them, they are yet to be eradicated.

Another issue is the virtual absence of a route to permanent residency or nationality for migrant workers. As a sovereign state, Bahrain is not legally obliged to its guest workers a structured path toward citizenship. However, there can be little doubt that a large number of migrant workers--especially those from low-income countries--would welcome the opportunity to work toward permanent residency at least.

Part of the persistence of such challenges is the result of Bahrain's decision to create a system that allows such large numbers of migrant workers to enter the country: enforcement and compliance costs for migrant workers will always be higher when they represent 75% of your labor force rather than 10%. Nevertheless, the government must continue to take steps toward identifying abuses, and holding their perpetrators accountable, as part of its commitment to being a constructive member of the international community.

5.2.4. Future Directions

Labor migration is an incredibly complex topic that traverses multiple intellectual disciplines. The goal of this subchapter was not to provide a comprehensive analysis of the issue in Bahrain, as such an endeavor would require an entire volume. Instead, the report puts forward the more straightforward goal of analyzing some of the major policy initiatives, and of highlighting some of the key background issues that scholars from outside the region, or from non-economics disciplines, fail to acknowledge. In light of the overall theme of this report, a few recommendations are made, that may interest policymakers as they continue to plan for Bahrain's economic future.

The most important recommendation is that Bahrain must continue the cycle of deploying novel policies experimentally, gathering good quality data, analyzing the data scientifically, and refining the policies as necessary. Migrant worker issues are problematic across the entire world, and Bahrain's situation is full of idiosyncratic characteristics, affirming the need for intelligent experimentation in the pursuit of optimal policies. Stakeholder engagement throughout the process is important, too. For example, the Migrant Worker Protection Society has for many years been a highly effective and compassionate voice for migrant workers in Bahrain, and liaising with it and other similar organizations is critical toward ensuring that the rights of migrant workers are protected.

A second recommendation concerns the need to deepen cooperation with sending countries, most reasonably at the regional level, to tackle the abuses that plague worker migration. For some of the abuses described above, such as physical violence toward domestic helpers, or unpaid wages, authorities in Bahrain are best placed to take effective actions. However, some of the abuses that happen in Bahrain reflect chains of abuse that started before the migrant worker even arrived in Bahrain, meaning that Bahraini authorities need the cooperation of other governments.

To illustrate this, consider the problem of an exploitative intermediary who visits a rural village in a typical sending country, and recruits uneducated prospective migrants based on the promise of erroneously high wages in Bahrain, tricking them into incurring a large debt due to the false information. The Bahrain government needs the active involvement of authorities from the sending country to tackle such problems. Fora such as the Abu Dhabi Dialogue offer structured opportunities for this kind of coordination between sending and receiving countries, but higher levels of cooperation will be needed to get to the root of the problem.

A final recommendation relates to the issue of permanent residency and citizenship for migrant workers. As part of its own Economic Vision 2030, Saudi Arabia inferred that permanent residency is not merely a reward for being a law-abiding migrant worker over an extended period of time--it can be a crucial tool for attracting FDI, as foreign investors seek the security of permanent residency as a way of protecting their investments. As a result, it is taking steps toward introducing a Saudi analogue to the U.S. green card.

Bahrain should consider similar steps, both as a way of attracting FDI, but also as a way of improving knowledge transfer from migrant workers to Bahraini citizens. At present, migrant workers are offered two-year contracts which are not automatically renewed. As a result, in the case of medium- and high-skilled migrant workers, there is zero or possibly even a negative incentive to engage in knowledge transfer to citizens working alongside them, as they fear that successful knowledge transfer will precipitate the non-renewal of their contract as their services are no longer deemed necessary. One potential solution, therefore, is to provide the migrant workers who can contribute to building the human capital of nationals with permanent residency. Combined with a material incentive for successful knowledge transfer, such as a financial bonus or a promotion, such a policy could accelerate the development of the local workforce, especially in the strategically important sectors described in chapter 1.

5.3. SUMMARY AND RECOMMENDATIONS

Bahrain can rightfully assert that in the context of women and migrant workers, much has been achieved during the last 20 years, building on a history of cultural openness and tolerance. Some of the more successful programs and laws may even act as models for countries inside and outside the region. Nevertheless, robust progress should not be confused with realizing the end goal, as the data reveal the persistence of societal inequities toward both women and migrant workers. In the age of the SDGs, authorities cannot afford to rest on their laurels, and they must continue to find ways to ensure that all segments of society are given an equal opportunity to realize their potential. The following is a list of relevant recommendations:

Recommendation 5.1: Consider how to encourage the introduction of child care facilities within the workplace.

Recommendation 5.2: Continue developing the availability of part-time jobs to increase women's participation in the workplace.

Recommendation 5.3: Continue the cycle of deploying novel migrant worker policies experimentally, gathering good quality data, analyzing the data scientifically, and refining the policies as necessary.

Recommendation 5.4: Work more closely with labor-exporting countries to tackle abuse of migrant workers.

Recommendation 5.5: Consider offering migrant workers the possibility of permanent residency as a way of improving knowledge transfer.

CONCLUSION: POLICY OPTIONS FOR THE FUTURE BAHRAINI ECONOMY

The conclusion of this report begins by reminding readers of the recommendations presented in chapters 1-5, and then goes on to synthesize those recommendations in light of the report's theme, sustainable economic growth. Among the list of 40 recommendations, 10 that merit the greatest attention from policymakers are highlighted. A synthesizing discussion concludes.

RECOMMENDATIONS MASTER LIST

Economic Diversification

Recommendation 1.1: Structure public sector hiring in a manner that takes into account the fact that generous and abundant public sector jobs undermine the private sector's job-creation capabilities.

Recommendation 1.2: Ensure that migrant worker policies take into account the fact low-cost foreign labor undermines the incentive to innovate.

Recommendation 1.3: Refrain from deploying import-substitution strategy unless it is with an eye to creating businesses that can eventually compete on global markets.

Recommendation 1.4: Continue to develop early childhood and vocational education, as well as supporting Tamkeen's efforts at building private-sector capacity.

Recommendation 1.5: Adopt the development of non-oil exports, especially tradable goods, as a strategic goal, while securing larger markets for Bahrain via additional free trade agreements.

Recommendation 1.6: Develop the government's role as a strategic venture capitalist.

Recommendation 1.7: Continue to exhibit patience and discipline in the deployment of Bahrain's tourism strategy.

Recommendation 1.8: Continue investing in diversifying the tourist base.

Recommendation 1.9: Evolve Bahrain's tourism strategy to take advantage of the opportunities offered by Saudi Arabia's Vision 2030.

Recommendation 1.10: Improve the quality of economic integration and compliance data made available to researchers and the general public.

Recommendation 1.11: Evolve formal and informal punishment mechanisms to ensure compliance with GCC economic integration directives.

Recommendation 1.12: Exert greater effort at explaining the benefits of GCC integration to the GCC populations.

The Economy of the Future

Recommendation 2.1: Continue to improve teachers' quality and teaching methods by considering performance based compensation taking advantage of independent quality assessments.

Recommendation 2.2: Identify the skills gap in Bahrain through conducting comprehensive and periodic studies.

Recommendation 2.3: Continue to improve traditional, vocational and technical curricula and update them based on the skills gap study.

Recommendation 2.4: Increase collaboration between the private sector and educational institutions in identifying skills gaps and in improving education.

Recommendation 2.5: Organize a multi-stakeholder forum on R&D in Bahrain that will result in a coherent plan for increased private R&D, while avoiding the drawbacks of publicly-funded R&D.

Recommendation 2.6: Focus on building active homegrown scientists to improve that rate of effective technology absorption, and to maximize the chance of securing the first-mover advantage associated with a cutting-edge technology.

Recommendation 2.7: Build upon the financial technology research cluster by looking for a manufacturing sector in which Bahrain can develop a niche.

Recommendation 2.8: Continue to wield government organs such as the IGA and TRA as pioneers in improving productivity throughout the Bahrain economy.

National Finance and Macroeconomic Stability

Recommendation 3.1: When imposing new indirect taxes, focus on goods and services that have negative environmental and health spillovers.

Recommendation 3.2: Work toward the complete elimination of subsidies to basic commodities, and the introduction of direct, means-tested financial transfers in their place.

Recommendation 3.3: Continue to implement and refine the Economic Vision 2030 to build a diversified economy.

Recommendation 3.4: Continue working with GCC partners in implementing fiscal reforms, including soliciting their financial and technical assistance.

Recommendation 3.5: GCC countries should exploit synergies in building a vibrant GCC level Islamic finance sector.

Recommendation 3.6: Efforts should be made to harmonize Islamic Finance laws and regulations in the GCC.

Recommendation 3.7: Islamic Banks in Bahrain should focus more on expanding their operations internationally.

Recommendation 3.8: Develop the Islamic finance educational system so that Bahrain can start marketing itself as a leader in Islamic finance education.

Sustainable Energy

Recommendation 4.1: Set more rigorous and ambitious strategies for using renewable energy resources in the country.

Recommendation 4.2: Allocate adequate budgets to support governmental entities such as the SCE and the SEC, with the goal of enhancing renewable energy and augmenting measures that protect and conserve the environment.

Recommendation 4.3: Carry out feasibility studies for different renewable energies with the collaboration of designated homegrown research institutions in the country.

Recommendation 4.4: Integrate environmental policies with economic policies to guarantee that environmental obligations have been taken into consideration.

Recommendation 4.5: Propose an innovative mix of policies, economic instruments and market-based measures, which will make production and consumption behavior more green.

Recommendation 4.6: Promote a culture of environmental awareness and encourage more citizens to participate in conservation and development programs.

Recommendation 4.7: Establish control measures for preventing the violation of the environment and to ensure the enforcement of environmental standards.

Improving Opportunities for All

Recommendation 5.1: Consider how to encourage the introduction of child care facilities within the workplace.

Recommendation 5.2: Continue developing the availability of part-time jobs to increase women's participation in the workplace.

Recommendation 5.3: Continue the cycle of deploying novel migrant worker policies experimentally, gathering good quality data, analyzing the data scientifically, and refining the policies as necessary.

Recommendation 5.4: Work more closely with labor-exporting countries to tackle abuse of migrant workers.

Recommendation 5.5: Consider offering migrant workers the possibility of permanent residency as a way of improving knowledge transfer.

SYNTHESIS

The goal of this report is to help Bahrain realize sustainable economic growth. The introduction emphasized two aspects of sustainability: diversifying the economy so as to decrease dependence on oil and gas, which are exhaustible factor inputs; and ensuring that Bahrain's economic policies are consistent with the goal of environmental longevity. These both relate to human development in the intertemporal sense: maximizing the opportunities available to Bahrainis several years from now.

Bahrain's Economic Vision 2030 is an important first step toward achieving sustainable economic growth. In fact, it was one of the first strategic plans to prioritize goals such as sustainability and equality, well before more recent, mainstream efforts such as the UN's 2030 Agenda for Sustainable Development with its SDGs. In this sense, this report falls very much under the Vision's umbrella, and can be considered a supporting document.

This report adds value from several angles. First, by assembling an authorship team composed of dedicated researchers, the hope is that this report can make contributions to the government action plans based on cutting-edge scientific findings. These include scholarly

"The process by which a development strategy is drawn-up is one important aspect for successful sustainable growth. It should strive to balance diverse societal needs and desires, without jeopardizing future generations. The planning process for sustainable development should promote risk assessment and move from a predictive to an adaptive framework, using the best available knowledge, to support decision making in conditions of uncertainty. During the planning process, stakeholder participation is crucial, since there is little chance of success if the process is done without full participation. Any plan or agreement is only as good as the process that generated it."

- Dr. Mark Dimech
(Officer in Charge and FAO Representative, Food and Agriculture Organization of the UN, UAE)

advances in the economic development literature that have occurred since the Vision's inception in 2008.

Second, there have been several key developments in the world economy that present new opportunities for policymakers. One of the most salient is the launch of the SDGs, which are rapidly becoming a focal point for economic policy across the world. In particular, at the launch of its Economic Vision, Bahrain's emphasis on sustainability was quite unique from a global perspective, as sustainability was not yet a mainstream concern; today, in the wake of the SDGs, key stakeholders such as foreign investors now want to see tangible evidence that proposed projects will promote sustainability, meaning that policymakers have to place additional emphasis on the issue of sustainability. The government has already taken steps in this regard by integrating the SDGs into the current and future government action plans (a cabinet order), and as of 2018, they were 78% aligned.

Another important change has been the launch of Saudi Arabia's Economic Vision. The transformative nature of the plan, as well as its emphasis on putting Saudi Arabia on a positive growth trajectory, presents many exciting opportunities for the Bahraini economy. Seizing them may require considering new policies.
Finally, the 2014 decline in oil prices has created economic pressure. Bahrain must exhibit greater assertion in the implementation of its Economic Vision.

With this in mind, the report's most important recommendations are as follows.
First, in light of the latest academic scholarship on economic development, policymakers should consider placing a greater emphasis on the development of a tradable goods sector. Authorities have so far sought to create a larger contribution from manufacturing, but they have also allocated significant resources to the development of services such as Islamic finance, tourism, and logistics. They may wish to reconsider the weights, with the goal of encouraging a stronger contribution from a tradable goods sector. This is because tradable goods generally exhibit greater interlinkages with the rest of the economy, they offer the prospect of significantly higher productivity growth than services, and their technological advances are more likely to be applicable to other sectors, too. A thorough investigation would be required to pinpoint the ideal sector, but potentially useful prospects include manufacturing components relating to the petrochemicals sector, such as those necessary for the construction of oil rigs. Further, there should be a push to creating export capacity, both in this tradable goods sector, and in the economy's other services, including Islamic finance.

Second, the government must prioritize increasing private R&D, without falling into the trap of simply funding it directly. This should be part of a broader strategy to improve the homegrown capacity to produce cutting-edge research, albeit in a narrow range of sectors. The historical model of importing technology and foreign experts must be reformulated if Bahrain is to sustainably diminish its dependence upon oil. Policies should exhibit greater consistency with the fact that the effective absorption of foreign technologies goes hand in hand with the effective development of new technologies within Bahrain, and that both require the presence of competent scientists who are integrated into the local economy and intend to stay there for many years. Ideally, these would be Bahraini nationals, but in the event that foreign expertise is procured, it must be done so in a manner that maximizes the incentive for knowledge transfer. The best way to realize improved policies in this domain would be to launch a multi-stakeholder forum dedicated to boosting private R&D.

Third, the government must continue to expand its economic integration within and beyond the GCC, as building an effective tradable goods sector and establishing robust, private-sector R&D both require a large market. In the case of the GCC, that means working with partners to overcome the prevalent barriers to integration, possibly by adopting novel formal and informal mechanisms. Beyond the GCC, that means building upon the 2004 FTA with the USA by looking for additional FTA partners.

Fourth, in terms of Bahrain's labor markets, there needs to be a more systematic and periodic review of the skills gap, as this will enable policymakers and private-sector stakeholders to improve the effectiveness of their educational and labor market activities. While the survey itself should be government-led, the resultant efforts at correcting labor market imbalances should be led by the primary stakeholders, including labor market entrants, educational institutions, and employers. Moreover, in an attempt to expand the employment opportunities available to all segments of society, a formal system governing part-time work should be considered by authorities.

Fifth, policymakers should consider the possibility of increasing the level of integration between environmental policies and economic ones. In the pre-SDG era, such an initiative would have been a luxury. But today, in light of Bahrain's dependence on FDI, it is essential that environmental and economic strategy are devised under the same umbrella, to avoid contradictions, and to exploit synergies. One example of how they can reinforce each other is in the realm of fiscal policy, where the government should work to eliminate conventional energy subsidies, and where it should consider tackling fiscal problems by imposing indirect taxation on wasteful energy consumption.

In terms of sustainable economic growth, the environmental-economic axis is the most important focus for integration. However policymakers may wish to consider other important axes. For example, Bahrain has been very successful in introducing innovative and effective labor market policies designed to improve the economy's performance while affording migrant workers the best protections. But there needs to be greater coordination between labor market policies and R&D policies, stemming from the recent scientific literature's assessment that low-cost labor hamstrings the economy's capacity to innovate. Most Bahrainis correctly perceive a relationship between job opportunities for

"This Report will guide us communicators and outreach players in the 'localization' of the SDGs and this is important step in enabling the people of the Kingdom of Bahrain to make a larger contribution to the development agenda. UNIC Manama praises the Report's emphasis on the importance of gathering high-quality data, as no meaningful media, communication or outreach effort can succeed if not based on real data."

- HE Mr. Samir Aldarabi
(Director, UN Information Centre for the Gulf States, Bahrain)

citizens and those for migrant workers, which underlies initiatives such as Bahrainization. But few Bahrainis are aware of the importance of intelligently crafting migrant worker policies to maximize the rate of innovation in the kingdom.

The final recommendation is an overarching one, which is the importance of improving the quality of data available in Bahrain. Diagnosing prevailing challenges and refining existing approaches are both virtually impossible in the absence of good quality data. Bahrain's statistical office, the IGA, has done an admirable job in light of the resources it has been afforded, especially via its cooperation with UN statistical experts, most recently during the Derasat hosting of the Inter-Agency and Expert Group on the SDG Indicators in November 2017. It must continue to deepen those ties, but it must also be afforded a greater allocation of resources, based on the understanding that this is a long-term investment in policy effectiveness that will ultimately pay for itself.

Moreover, the mainstreaming of the SDGs serves to accentuate the need to gather high quality data and at a high frequency. **Box W** and **Box X** contain more details on the issue

BOX W: IMPROVING DATA QUALITY IN BAHRAIN

The IGA in Bahrain is the main entity responsible for data collection and national statistics, including conducting surveys such as the national census and the national household income survey.

One of the ways to improve data quality in Bahrain is improving coordination between the research and data units of each government agency. Enhancing communication procedures and frameworks would further facilitate the verification of data, helping to identify and fill data gaps.

One of the major data gaps in Bahrain includes environmental indicators such as data on air quality and pollution. One way to address such data gaps is through collaborating with students, faculty and researchers in the academic sector. The University of Bahrain has recently launched a Masters and a PhD program in Sustainable Development, as well as a Masters in big data analysis. Graduate projects and theses produced under these programs would present an opportunity to develop methodologies and studies on such data gaps. The SCE is currently working with the University of Bahrain and Arabian Gulf University in an effort to improve data on air quality and pollution.

Bahrain already boasts the legislative and institutional frameworks to enhance its data collection processes and mechanisms, and general data quality. This is particularly evident in the country's commitment to the SDGs. The National Information Committee (NIC) was formed specifically to better collect data on Bahrain's first Voluntary National Review, which was presented in New York during the High Level Political Forum (HLPF) in July 2018. The VNR process constitutes an important learning process for all government agencies. The IGA is also currently working with the GCC statistical office (GCC Stat) to enhance data quality in several areas, including foreign trade, national accounts, and labor markets.

of data collection in Bahrain. Improving the quality of data will also enable the authors of future national human development reports to tackle more conventional questions relating to human development in greater detail, such as those in the domain of gender differences, as they require disaggregated economic data.

BOX X: BIG DATA

As the largest producer and custodian of official statistics in Bahrain, the IGA plays an important role in providing comprehensive updated statistics on Bahrain's economy, society and environment. This covers population estimates, national accounts, energy, consumer price index, foreign trade, labor force, vital statistics, tourism, households, business, investment and so on. These statistical products rely on a variety of different traditional structured data sources, such as censuses, cross-sectoral surveys and opinion polls, administrative records, time series, population samples, longitudinal data, and so on. Numerous statistical data products and reports are released annually and are accessible on the IGA online portal.

An IGA task force is currently weighing how to use "big data" for producing official statistics. It is hoped that big data would help to better understand the trends and dynamics in the services sector and general business environment, including personal and corporate finance, productivity measurement, factors driving performance, innovation, and ongoing industrial and community transformations and environmental assets in Bahrain. The concept and technique of collecting and mining big data has become a reality associated with the digital revolution. Currently, 10% of big data stems from structured statistics based on conventional data sources, while unstructured data constitutes the remaining 90%. However, with advances in the digital realm and the exponential expansion of the use of social media, the proportion of unstructured data keeps growing.

Unstructured data comes in different formats comprising audio, image, video and text from a variety of sources including URLs, social networks, mobile phones, GPS, security cameras, computer logs, purchase transactions, sensors, 3D simulation models, and so on. The amount of digital data from mobile phones and electronic platforms generates a steadily increasing flow of big data on a daily basis. This has led to the emergence of innovations in digital computing and data science methods including artificial intelligence, and the internet of things, among other developments, which allow for its processing and simultaneous manipulation. Information from big data can supplement official statistics to produce more accurate, detailed and relevant high-quality information, in shorter time, at lower costs, and with reduced response burden (Hackl 2018). Concerns include data bias and data confidentiality.

Big data could provide a new lifeline to statistical insights and support policy and decision-making processes in the interest of serving broader development needs. In particular, they could be useful to monitor human and sustainable development goals.

However, harnessing big data to gauge (and predict) individual and corporate behavior requires further investments into the science of big data analytics. Financial and regulatory challenges and societal awareness would also need to be addressed. The private sector collects most of the big data that might soon be viewed as a valuable public good. Public-private partnerships are therefore likely to expand in the area of data analytics. The challenge will be to ensure their sustainability over time, as well as the need for clear frameworks that define the roles and expectations of each party (Alsayyad and Nawar 2017).

The IGA and sectoral statistical offices could jump start creating "big data" by merging administrative data sets with national census data. With improved coordination within and among sectoral agencies, and ensuring full compliance with legal requirements and obligations, multiple partnerships could be established with the private sector over time. In other countries and internationally, several big data pilot projects are already underway using official statistical datasets, offering valuable information about best practices (Hackl 2018).

LIST OF BACKGROUND PAPERS	
"Educational best practices: Lessons for Bahrain,"	by Ghada Abdulla
"Renewable Energy in Bahrain,"	by Hanan Albuflasa
"The impact of renewable energy on the Bahrain economy,"	by Abdulaziz Al-Doseri
"How tourism can contribute to sustainable economic growth in Bahrain,"	by Omar Al-Ubaydli
"GCC Economic Integration: Opportunities and Challenges,"	by Omar Al-Ubaydli and Erik Jones
"ICT and Innovation in Bahrain,"	by Aisha Bushager
"Islamic Finance in Bahrain: Past, Present, and Future,"	by Atef Elshabrawy
"Turning entrepreneurship into a growth driver,"	by Jarmo Kotilaine
"Laying the Foundations for Sustainable Growth,"	by Jarmo Kotilaine
"Fiscal Sustainability in the Kingdom of Bahrain,"	by Rasheed Sbia
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STATISTICAL ANNEX

	HUMAN DEVELOPMENT INDEX	HEALTH (LIFE EXPECTANCY) INDEX	EDUCATION INDEX	INCOME INDEX
2000	0.792	0.838	0.643	0.921
2001	0.792	0.841	0.645	0.916
2002	0.791	0.843	0.646	0.91
2003	0.793	0.846	0.646	0.912
2004	0.792	0.849	0.641	0.913
2005	0.791	0.851	0.637	0.915
2006	0.793	0.854	0.64	0.914
2007	0.796	0.856	0.644	0.915
2008	0.796	0.858	0.647	0.909
2009	0.794	0.86	0.651	0.894
2010	0.796	0.862	0.654	0.894
2011	0.798	0.865	0.664	0.887
2012	0.8	0.867	0.664	0.89
2013	0.807	0.869	0.674	0.896
2014	0.81	0.871	0.685	0.892
2015	0.832	0.873	0.723	0.913
2016	0.846	0.875	0.758	0.912
2017	0.846	0.878	0.758	0.911

Table A1
Bahrain HDR Components

Sources: UNDP (2018).

NO.	INDICATORS	2005			2010	
		BAHRAINI	NON BAHRAINI	TOTAL	BAHRAINI	NON BAHRAINI
1	Population. (No.)	484,810	404,013	888,824	570,687	657,856
2	Dependency ratio, young age (0-14) (per 100 people ages 15-64). (%)	59	16	39	50	11
3	Median age. (years)	23	32.9	29.3	23	32
4	Dependency ratio, old age (65 and older) (per 100 people ages 15-64). (%)	7	1	3	7	1
5	Population, ages 15–64 (No.)	302,153	358,594	660,747	365,646	588,661
6	Population, ages 65 and older (No.)	20,630	2,053	22,683	23,669	2,630
7	Population, under age 5 (No.)	53,851	15,438	69,289	63,996	25,387
8	Population, urban (%)		88			100
9	Sex ratio at birth. (male to female births)	150	103	105	103	104

Table A2
Demographic Trends

Sources: 1-8: IGA; 9: Ministry of Health; in 8, 2005 data refers to 2001 data.

NO.	INDICATORS	REFERENCE SDGS INDICATORS	2005	
			BAHRAINI	NON BAHRAINI
1	Adult Mortality Rate. (per 1,000 people)	SDG3	1.8	1.2
2	Deaths due to malaria. (per 100,000 people)	SDG3.3	0	0.4
3	Deaths due to tuberculosis. (per 100,000 people)	SDG3.3	1.6	0.4
4	HIV prevalence, adult (% ages 15-49), total	SDG3.3	0.0	-
5	Infant mortality rate. (per 1,000 live births)	SDG3.2	8.9	8.4
6	Infants lacking immunization, measles. (% of one-year-olds)	SDG3.b	0	0
7	Public health expenditure (% of GDP). (%)	SDG3.c		2.5
8	Stunting (moderate or severe) (% under age 5). (%)	SDG2.2	-	-
9	Under-five mortality rate. (per 1,000 live births)	SDG3.2	11.0	10.3
10	Adolescent birth rate. (births per 1,000 women)	SDG3.7	13.8	44.2
11	Maternal mortality ratio. deaths per 100,000 live births)	SDG3.1	8.3	0.0

Table A3
Health

Sources: 1-11: Ministry of Health; in 9, percentages are based on child screening (0 - >5) years at primary health care 2012

	2015			2016			2017		
TOTAL	BAHRAINI	NON BAHRAINI	TOTAL	BAHRAINI	NON BAHRAINI	TOTAL	BAHRAINI	NON BAHRAINI	TOTAL
1,228,543	647,835	722,487	1,370,322	664,707	759,019	759,019	677,506	823,610	1,501,116
26	50	12	27	50	11	26	50	11	25
30	24	33	31	25	33	31	25	33	31
3	7	1	3	6	1	3	7	1	3
954,307	411,870	639,609	1,051,479	422,994	680,427	1,103,421	430,910	735,390	1,166,300
26,299	27,795	5,791	33,586	27,086	5,895	32,981	31,848	6,307	38,155
89,383	74,814	31,256	106,070	75,520	26,096	101,616	76,115	32,977	109,092
		100			100			100	
103	102	103	102	107	104	106	-	-	-

	2010			2015			2016		
TOTAL	BAHRAINI	NON BAHRAINI	TOTAL	BAHRAINI	NON BAHRAINI	TOTAL	BAHRAINI	NON BAHRAINI	TOTAL
1.5	1.6	0.6	1.0	1.8	0.8	1.1	1.6	0.6	1.0
0.1	0	0	0	0	0	0	0	0	0
1.1	0.9	0.6	0.7	0.9	0.6	0.7	0.8	0.1	0.4
-	0.0	-	-	0.0	-	-	0.0	-	-
8.9	6.7	8.0	7.7	8.3	5.0	7.4	5.2	5.3	5.3
0	0	0	0	0	0	0	2	0	0
		2.4			3.4			3.2	
-	-	-	-	-	-	2.4	-	-	-
10.9	9.7	8.3	9.4	10.4	6.2	9.3	6.2	7.5	6.6
17.7	9.6	38.8	14.7	9.8	34.7	14.5	8.4	36.4	13.7
6.6	14.6	0.0	11.0	19.2	56.0	28.6	-	-	-

NO.	INDICATORS	REFERENCE SDGS INDICATORS	2005	
			BAHRAINI	NON BAHRAINI
1	Expected years of schooling Primary to Teriarry (years)	SDG 4.3		NA
2	Adult literacy rate (% ages 15 and older)	SDG 4.6	84	89
3	Government expenditure on education (% of GDP)	SDG 1.a		2.6
4	Gross enrolment ratio: pre-primary (% of preschool-age children)	SDG 4.2	46	45
5	Gross enrolment ratio, primary (% of primary school-age population)	SDG 4.1	109	99
6	Gross enrolment ratio, secondary (% of secondary school-age population)	SDG 4.1	96	103
7	Gross enrolment ratio, tertiary (% of tertiary school-age population)	SDG 4.3	20	35
8	Mean years of schooling (years)	SDG 4.6	6.9	6.8
9	Pre-Primary school teachers trained to teach (%)			58
10	Primary school teachers trained to teach (%)	SDG 4.c		76
11	Upper seconday school teachers trained to teach (%)	SDG 4.c		86
12	Lower seconday school teachers trained to teach (%)	SDG 4.c		87
13	Pupil-teacher ratio,Pre- primary school (number of pupils per teacher)			15
14	Pupil-teacher ratio, primary school (number of pupils per teacher)			14
15	Pupil-teacher ratio, Lower Secondary school (number of pupils per teacher)			13
16	Pupil-teacher ratio, Upper Secondary school (number of pupils per teacher)			12

Table A4
Education

Sources: 1: 2010 reference to 2012 data from UIS based on National data, 2015 and 2016 from UNDP (2016, 2018); 2: IGA, 2015 estimated data; 3: Ministry of Education; 4-7: Ministry of Education and IGA; 8: 2005 and 2010 Barro-Lee, 2015 and 2017 data from UNDP (2015, 2018); 9-16: Ministry of Education, 2005 data in row 9 refers to 2006 data.

	2010			2015			2016		
TOTAL	BAHRAINI	NON BAHRAINI	TOTAL	BAHRAINI	NON BAHRAINI	TOTAL	BAHRAINI	NON BAHRAINI	TOTAL
	13	14	14	16	17	16	16	17	16
87	96	92	95	96	93	95	96	93	95
		2.4			2.9			2.8	
45	52	52	52	56	57	56	56	56	56
104	109	99	104	108	100	104	105	98	102
100	99	103	101	102	104	103	101	102	102
28	34	58	44	45	48	41	45	51	48
6.9	6.5	6.8	6.8	9.4	9.4	9.4	9.5	9.3	9.4
		49			52			53	
		78			83			84	
		86			86			85	
		87			84			84	
		16			15			14	
		13			12			12	
		13			11			11	
		9			9			9	

NO.	INDICATORS	REFERENCE SDGS INDICATORS	2005	2010	2015	2016
1	Adult mortality rate, Male. (per 1000 people)	SDG 3	1.8	1.0	1.2	1.1
2	Adult mortality rate, Female.(per 1000 people)	SDG 3	1.1	0.9	1.0	0.8
3	Labour force participation rate, female. (%)	SDG 8	-	43.7	43.5	43.5
4	Labour force participation rate, male. (%)	SDG 8	-	87.3	86.9	87.2
5	Legislators, senior officials and managers, female. (%)	SDG 5	-	22	22	44
6	Life expectancy at birth, female. (years)	SDG 3	75.6	73.8	78.1	78.1
7	Maternal mortality ratio. (deaths per 100,000 live births)	SDG 3	74.1	76.2	76.2	76.2
8	Share of seats in parliament. (% held by women)	SDG 3.1	6.6	11	29	-
9	Percentage of Unemployment, female to male. (ratio)	SDG 5.5	7.5	15	15	15
10	Percentage of Unemployment, female to male. (ratio)	SDG 8.5	1.2	4	4	4

Table A5
Gender

Sources: 1-2, 8: Ministry of Health; 3-5: IGA estimates; 6-7: UN estimates; 9: SCW; 10: Ministry of Labour and Social Development.

NO.	INDICATORS	2010		
		BAHRAINI	NON BAHRAINI	TOTAL
1	Employment to population ratio (% ages 15 and older) 1	45.7	88.8	71.3
2	Employment in agriculture (% of total employment)	0.6	1.2	1.1
3	Employment in services (% of total employment)	80.1	58.3	63.7
4	Labour force participation rate (% ages 15 and older)	47.8	87.8	71.7
5	Percentage of unemployment	3.6	NA	3.6

Table A6
Work Employment Vulnerability

Sources: 1-4: IGA estimates based on 2010 Census; 5: Ministry of Labour and Social Development.

NO.	INDICATORS	REFERENCE SDGS INDICATORS	2005	2010	2015	2016
1	Gross National Income (GNI) per capita. (BHD 2010 Prices)	SDG 8.5	8077.1	7142.4	8046.8	7995.5
2	National savings. (% of GNI)		51.9	53.2	33.2	35.1
3	Gross domestic product (GDP) per capita. (BHD 2010 Prices)		7673.8	8089.5	8129.1	7960.1
4	Gross fixed capital formation (% of GDP)		14.3	27.2	23.7	25.5

Table A7
Income

Sources: IGA

2015			2016		
BAHRAINI	NON BAHRAINI	TOTAL	BAHRAINI	NON BAHRAINI	TOTAL
46.4	87.6	70.9	46.0	87.9	71.2
0.7	1.2	1.1	0.7	1.2	1.1
80.2	58.5	64.3	80.2	58.5	64.1
48.0	87.6	71.6	48.2	87.9	72.0
3.3	NA	3.3	4.3	NA	4.3

NO.	INDICATORS	REFERENCE SDGS INDICATORS	2005	2010	2015	2016	2017
1	Broadband subscriptions. (per 100 people)		6	35	145	171	164
2	Internet users. (% of population)	SDG 17.6, 17.8	-	73	93	98	-
3	Mobile phone subscriptions. (per 100 people)	SDG 9.c	86	128	186	213	163

Table A8
Mobility and Communication

Sources: TRA; in 1, 2005 data refers to 2006; in 2, 2010 data refers to 2011.

NO.	INDICATORS	2005	2010	2015	2016
1	Exports as percentage of GDP. (%)	77.6	67.1	86.3	82.2
2	Imports as percentage of GDP. (%)	47.2	42.5	69.3	64.8
3	Foreign direct investment, net inflows (% of GDP)	-	11.46	0.20	0.79

Table A9
Trade and Financial Flows

Sources: IGA; in 3, Inward FDI Stocks for 2010 included equity of non-resident shareholders equity (using Balance of Payment Manual Revision 5) while data for 2014 to 2016 also includes debt instruments (and applied methodology for Balance of Payments Manual Revision 6).

NO.	INDICATORS	REFERENCE SDGS INDICATORS	2005	2010	2015	2016
1	Fresh water withdrawals (% of total renewable water resources) 2	SDG 6.4	152.3	109.5	100.60	95.6
2	Renewable energy consumption (% of total final energy consumption)	SDG 7.2	0	0	0	0

Table A10
Environmental Sustainability

Sources: 1: Ministry of works, Municipalities Affairs, and Urban Planning, and IGA; 2: EWA.

NO.	INDICATORS	REFERENCE SDGS INDICATORS	2005	2010	2015	2016
1	Homicide rate. (per 100,000 people)	SDG 16.1	0.2	0.1	0.44	0.4
2	Birth registration. (% under age five)	SDG 16.9	100.0	100.0	100.0	100.0
3	Homeless people due to natural disaster. (per million people)	SDG 1.5 , 11.5 , 13.1	0.0	0.0	0.00	0.0
4	Homeless people due to natural disaster. (per million people)	SDG 3.4	2.0	0.9	1.34	0.7
5	Suicide rate, male. (per 100,000 people)	SDG 3.4	6.6	2.0	1.89	2.5
6	Percentage of abused women out of the total number of Bahraini women. (%)	SDG 5.2	0.1	0.3	0.30	0.3

Table A11
Human Security

Sources: 1, 4-5: Ministry of Health and IGA; 2: IGA; 3: Ministry of Interior; 6-8: SCW.

NO.	FUNDAMENTAL HUMAN RIGHTS TREATIES	ENTRY INTO FORCE	YEAR OF RATIFICATION
1	**ICERD**: International Convention on the Elimination of All Forms of Racial Discrimination, 1965	4 Jan 69	27 Mar 90
2	**ICCPR**: International Covenant on Civil and Political Rights, 1966	23 Mar 69	20 Sep 06
3	**ICESCR**: International Covenant on Economic, Social and Cultural Rights, 1966	3 Jan 76	27 Sep 07
4	**CEDAW**: Convention on the Elimination of All Forms of Discrimination against Women, 1979	3 Sep 81	18 Jun 02
5	**CAT**: Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, 1984	26 Jun 87	6 Mar 98
6	**CRC**: Convention on the Rights of the Child, 1989	2 Sep 90	13 Feb 92
7	**ICMW**: International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families, 1990	1 Jul 03	
8	**CRC-AC**: Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflict, 2000	12 Feb 02	21 Sep 04
9	**CRC-SC**: Optional Protocol to the Convention on the Rights of the Child on the sale of children, child prostitution and child pornography, 2000	18 Jan 02	21 Sep 04
10	**ICPED**: International Convention for the Protection of All Persons from Enforced Disappearance, 2006	23 Dec 10	
11	**CRPD**: Convention on the Rights of Persons with Disabilities, 2006	3 May 08	22 Sep 11

Table A12
Human Rights

Sources: 1: UNDP 2018

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