

## **Responsible investment** New thinking for financing renewable energy



# Contents



---

04

Foreword

---

05

Acknowledgments

---

06

Executive summary

---

07

Introduction

---

08

Regulatory, economy and  
policy support

---

16

Innovative financing  
alternatives

---

19

Industry and practitioners'  
perspective

---

23

Thought leaders'  
perspectives

---

27

**Appendix A: Country cases**

I. MENA: Saudi Arabia, UAE,  
Bahrain  
II. Asia: Malaysia, Pakistan  
III. Europe: Kazakhstan,  
Turkey and UK

---

48

**Appendix B: Abbreviations**

---

49

**Appendix C: Thought  
leadership reports**

# Foreword



**Dr. Hatim El Tahir, FCIS**  
Director, Islamic Finance Group  
Leader, Deloitte Middle East  
Islamic Finance Knowledge  
Center (IFKC)

We are delighted to announce the release of our sixth Deloitte Islamic Finance report in a series of publications aimed at engaging and educating industry stakeholders' about the opportunities for corporates, governments and investors and its value proposition as a catalyst for economic growth in the Middle East and beyond.

This industry study comes at a time when Islamic financial services are increasingly playing a crucial role in financing development and infrastructure projects in the Middle East. Needless to say, this industry creates numerous opportunities for both governments and private sector corporates to diversify their sources of capital and project funding.

The study examined energy regulatory frameworks in eight countries and looked at the renewable energy initiatives and government support on those countries and assessed the size and patterns of investment projects in KSA, UAE, Bahrain, Malaysia, Pakistan, Turkey, Kazakhstan and the UK.

Islamic Finance is no doubt a key contributor to economic growth in almost all of the countries of the Middle East, and the industry, supported by international multilateral development banks (MDBs), has for several decades helped raise capital for numerous infrastructure projects around the world.

This study presents an analysis of the main drivers and factors for building the business case of a new thinking to finance sustainable development in the energy and renewable energy sectors.

Our discussions with energy practitioners, policy-makers, Islamic Finance professionals and thought leaders have produced interesting consensus over the debate on whether Islamic Finance can play a major role in financing sustainable development and energy projects in core markets where it operates. And, if so, how can Islamic Finance leaders capture opportunities in the renewable energy industry and take a lead as a responsible investment platform in the development and economic growth of societies?

The development of green Islamic Finance in Asia and the Middle East, for example, would arguably create an opportunity for both governments and corporates to diversify their investment capital and provide a new asset class featuring a balanced risk-sharing element for issuers, and fixed-income returns for investors.

We are pleased to share with you this report, based on original research combined with the insights and first-hand experience of many of Deloitte's leading practitioners and industry experts. We hope you find this report insightful and informative.

# Acknowledgments

We extend our thanks to the respondents of our online survey questionnaire and Deloitte professionals who contributed to this report. We are particularly grateful to the industry thought leaders who generously offered their time and gave insightful comments on the report. Their participation was instrumental in identifying the key factors that may drive interest in green Islamic Finance. In particular, this group included Stella Cox, CBE, Managing Director, DDCAP Group; Professor Simon Archer, Visiting Professor ICMA Center, HBS University of Reading; Peter Casey, Advisor, Advisory Board Member, IFSB, ESCA Daud Vicary Abdullah, President & CEO, INCEIF; Sohail Jaffer, Deputy CEO, FWU Takaful and Omar Shaik, Executive Board Member, Islamic Finance Council UK.

## Report contributors

### Deloitte project team

- Dr. Hatim El Tahir, Director, Islamic Finance Group
- Sultanbek Khunkaev, Senior Manager, Monitor Deloitte

- Michelle Melki, Senior Consultant, Monitor Deloitte
- Sakinah Jamil, Senior Manager, Risk Advisory
- Sajida Ali, Business Analyst, Islamic Finance Group
- Rana Thoba, Energy & Resources, Industry Coordinator

### Industry contributors & associate researchers

- Professor Yelena Kalyuzhnova, Vice Dean (International), Henley Business School, Director, the Center for Euro-Asian Studies, University of Reading.
- Dr. Irum Saba, Assistant Professor, Center of Excellence in Islamic Finance (CEIF), Institute of Business Administration, Pakistan.
- Dr. Nihat Gumus, Financial Sector Specialist, Center for Applied Research in Finance (CARF), Bogazici University.
- Dr. Alaa Alaabed, Chief Research Officer, Finocracy.
- Mohamed Isa, School of Business and Economics, Loughborough University.

### Industry supporters



# Executive summary

An increasing emphasis on energy efficiency has given rise to a new way of thinking in relation to alternative energy sources. Both regulatory regimes and financial institutions have taken steps to address opportunities and challenges to finance the renewable energy industries.

For example, the GCC states have established ambitious energy efficiency programs and set clear targets in renewable energy strategies. These strategies have created opportunities for the private sector, financial institutions, as well as energy manufacturers, operators and distributors.

Our study reveals a number of challenges associated with these opportunities, which investors and governments need to address to help make energy efficiency programs work.

The challenges revealed in our report, analysis and responses from industry practitioners are summarized below:

- Fast-changing industry technology and falling cost of renewable energy.
- Inefficient procurement practices, regulations and laws.
- Political instability in some parts of the Middle East.
- Lack of consumer awareness of the benefits of renewable energy.
- Lack of education in funding through Islamic Finance.
- Investors looking for high and quick returns (renewable energy technology is expensive).
- Conflicts with oil and gas revenues.

Our report also identified three broad game-changers for Islamic Finance to tap into the emerging real economy sector opportunities. These are:

## Policy development and regulation

- Despite the achievements made over the past few years, there is still significant room for improvement in regulation to accommodate for Islamic Finance and promote the renewable energy industry.
- Nearly half (48%) of the survey respondents indicated that the Gulf Cooperation Council countries, Jordan, Egypt and Lebanon have the most desirable regulatory and government commitment to renewable energy.

## Innovative Islamic financing

- Islamic financial structures will broaden equity capital and provide new risk-return profiles for project funding and investors.
- Three-quarters (75.6%) of respondents believe that there is a need for broadening equity capital in energy and renewable energy investment through Islamic Finance.
- Industry regulators and standard-setters will need to promote and design new, innovative green investment structures and the necessary documentation process to promote these structures amongst investors and governments.

## Government support and awareness

- Governments and industry stakeholders will need to work more closely to design strategies and implementation methods for renewable energy and funding requirements.
- 61.7% of the survey participants agree on the availability of a defined renewable energy strategy in their market, while 28.3% believe it is in progress.

61.7%

of the survey participants agree on the availability of a defined renewable energy strategy in their market

28.3%

believe the defined renewable energy strategy is in progress

# Introduction

The global energy landscape will experience a major transformation in the coming decades, with renewables and natural gas the big winners in the race to meet energy demand growth until 2040, according to the latest edition of the World Energy Outlook, the International Energy Agency's (IEA) flagship publication.

The IEA reported that a cumulative US\$44 trillion in investment is needed in global energy supply, 60% of which goes to oil, gas, and coal extraction and supply, including power plants using these fuels, and nearly 20% to renewable energies. An extra US\$23 trillion is required for improvements in energy efficiency.

A large share of future investment is in renewables-based capacity that tends to run at relatively low utilization rates, so every additional unit of electricity generated is set to necessitate the provision of 40% more capacity than during the period 1990-2010. The increased share of spending on capital-intensive technologies is balanced in most cases by minimal operational expenditures, e.g. zero fuel costs for wind and solar power. According to the IEA's World Energy Outlook 2016, nearly 60% of the power generated in 2040 is projected to come from renewables, and almost half of this from wind and solar Photovoltaic (PV).

In many parts of the world, corporates and governments have made a commitment to renewable energy and set clear targets and strategies to support sustainability goals.

Regulatory and policy support has returned as a major driver for the renewable industries in the countries we examined for the purposes of this report. Financing alternatives have been supported by multilateral development banks (MDBs) and energy-specialized agencies and industry groups, and have helped make the sector more attractive to the private sector.

## The IEA reported that a cumulative US\$44 trillion in investment is needed in global energy supply

The Organization for Economic Cooperation and Development (OECD) reported in 2011, in its Green Growth Strategy, that the sustainable energy of the future will require new thinking and new systems – essentially a transformation in the way we produce, deliver and consume energy. As such, a new way of thinking should comprise a new financing mechanism to fund energy projects.

Clean energy will become mainstream according to the UAE's State of Future Report, launched at Davos in January 2017. The latter anticipates that by 2020, the electricity generated from renewable sources will be greater than the current combined demand of China, India, and Brazil. And by 2025, 15% to 20% of households will run on solar energy, while electric cars will make up 90% of all vehicles by 2035.

Financing decisions of corporates have also been affected by the rising need for funding infrastructure projects in Europe, the US, Asia, Africa and the Middle East. This is evident in the growth of the green bond market in many parts of the world.

Green or socially responsible investment (SRI) around the world is perceived as complementary to the principles of Islamic Finance, which advocates financing and

investing in real economy sectors to develop communities and societies.

Moreover, the energy sector remains attractive to foreign and local investors, owing to the favorable global business environment and proactive sustainable and environment regulatory changes. However, financing these capital intensive projects remains a challenge. In this report, based on original research and the engagement of industry leaders and practitioners, we attempt to assess the value proposition of Islamic Finance as an alternative financing model for such an industry, which adequately matches with the principles of creating jobs, developing societies and financing real assets that Islamic Finance advocates.

# Regulatory, economy and policy support

More than 70 governments around the world, including all IEA member countries, have put in place targets and policies to support development of renewable energy technologies

According to the OECD website, “policy-makers and businesses are making commitments to the renewable energy industry. National targets for renewable energy are spreading. More than 70 governments around the world, including all IEA member countries, have put in place targets and policies to support development of renewable energy technologies. In doing so, they improve energy security and access to modern energy services, reduce dependence on energy imports, protect the environment, provide employment and strengthen the competitive edge of domestic industry. However, there is still an urgent need to accelerate the pace of change.”

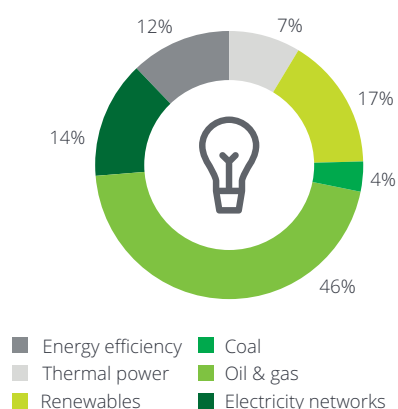
Regulatory reforms and government support around the world for the renewable sector, such as the US’ Investment Tax Credit for solar and

Production Tax Credit for wind, and Malaysia’s introduction of the social impact bond, have contributed to creating awareness of green infrastructure and use of ethical investment.

The tables below summarize an enviable range of investment opportunities as well as the economic outlook and government supporting initiatives. Key to these developments are the regulatory and policy support activities in our selected country group.

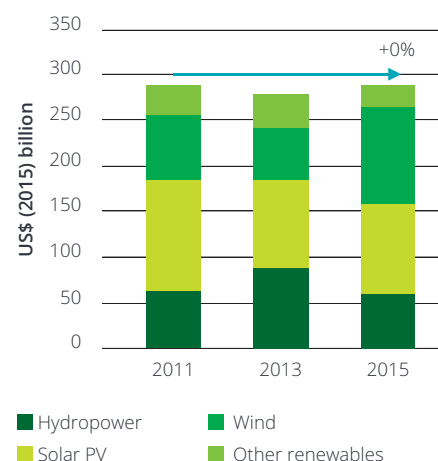
For instance, electricity demand in the GCC has risen sharply and is driven by factors such as population growth, urbanization, industrialization, and low electricity prices. These factors will continue to place greater demand on power generation capacities, according to APICORP. (APICORP, May 2016).

**Global Energy Investment, 2015**  
US\$1.8 trillion



Source: IEA, World Energy Investment Outlook 2016.

**Global Renewable Power Investment**





## Market trends & initiatives in MENA, Asia and Europe



### Economic and market outlook



**MENA - GCC**

- Low oil prices are creating strains on the region's energy exporters, which now face higher budget deficits and rising debts.
- The growth rate of electricity will be much higher in Asia, the Middle East and Sub-Saharan Africa.
- Saudi Arabia is seen as the region's biggest consumer of oil.
- The growth of natural gas will be particularly strong in the Middle East. Saudi Arabia and Bahrain will continue their shift towards natural gas usage.
- The UAE is working to diversify its energy mix to reduce its ecological footprint and to become a long-term player in the global energy industry and market.



### Investment and financing initiatives

- The Dubai Supreme Council of Energy has partnered with the World Bank to develop a green investment strategy, which could incorporate Sukuk.
- According to a new report published by the Arab Petroleum Investments Corporation, total committed and planned energy investments in the MENA region, including Iran, will reach US\$900 billion over the next five years.
- Bahrain has established the Sustainable Energy Unit, which is responsible for developing strategies, policies, and regulation for greater energy efficiency.



**Asia**

- Driven by rapid economic and demographic change, Southeast Asia's energy demand increased by more than 50% between 2000 and 2013.
- Energy demand is projected to almost double in the Asia and Pacific region by 2030.
- There is an urgent need for innovative ways to generate power in a socially, economically, and environmentally sustainable manner.
- China, in particular, is the largest consumer of energy and accounts for nearly 50% of global coal consumption.

- Asian markets comprise 85% of global coal power investment.
- To secure Asia's energy needs, US\$2.5 trillion of cumulative investment in energy supply infrastructure to 2040 is required, which is an annual average of almost US\$100 billion.
- Annual investment in the power sector is growing at the highest rate, driven by the expansion of renewables, followed by investment in the natural gas sector.
- New institutions, such as the Asian Infrastructure Investment Bank (AIIB), could potentially represent an alternative source of funding.
- Pakistan's hydropower plant 100 billion rupees (US\$955 million) Sukuk issue marked one of the largest infrastructure deals in the country to use Islamic financing.



## Economic and market outlook



Europe









- Turkey's economic expansion, rising per capita income, positive demographic trends, and the rapid pace of urbanization have been the main drivers of energy demand, which is estimated to increase by around 6% per annum until 2023.



## Investment and financing initiatives

- According to the Energy Policies of IEA countries, Turkey's includes large investments in energy infrastructure, especially in electricity and natural gas. These are needed to avoid bottlenecks in supply and to sustain rapid economic growth.
- In 2015, Turkey's Capital Markets Board has approved the issuance of 100 million lira (US\$38.4 million) via Sukuk by Turkiye Finans Katilim Bankasi and a debut lira-denominated deal by Zorlu Energy. Therefore, the issuance of corporate Sukuk could help broaden the country's Islamic capital market.
- Based on the Global trends in renewable energy investments 2015 report of Frankfurt School-UNEP Centre, the investment in Europe advanced less than 1% to US\$57.5 billion. There were seven billion-dollar-plus financings of offshore wind projects, boosting the investment totals for the Netherlands, the UK and Germany. These included, at the euro equivalent of US\$3.8 billion, the largest single renewable energy asset finance deal ever, outside large hydro – that of the 600MW Gemini project in Dutch waters.

## Government support for the renewable energy sector

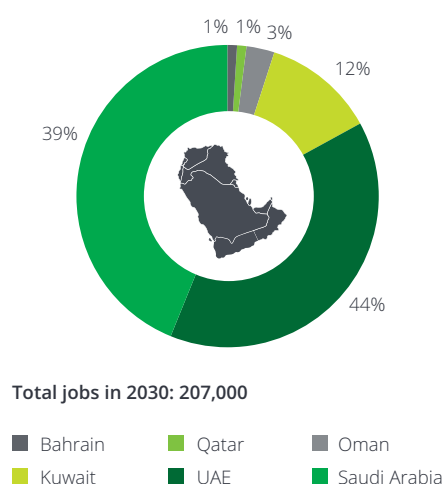
| MENA - GCC  | Asia   | Europe   |
|---|--|--|
| <p><b>KSA</b></p>  <p><b>K.A.CARE 2020:</b> Aims to achieve short-term targets, such as 3.45 GW of installed renewables capacity by 2020; universally, however, this is still perceived as ambitious.</p> <p><b>UAE</b></p>  <p><b>REmap 2030:</b> Aims to achieve at least 10% use of renewable energy in the country's energy mix by 2030 and 25% in the country's power generation mix.</p> <p><b>Clean Energy Strategy 2050:</b> Aims to make Dubai a global center for clean energy and a green economy.</p> <p><b>Bahrain</b></p>  <p><b>Bahrain Sustainable Energy Unit:</b> Established in conjunction with the United Nations Development Program.</p> | <p><b>Malaysia</b></p>  <p><b>Malaysia's Green Technology Master Plan 2015:</b> Approved to bring forth a new emphasis on policy coordination and integration that will reduce redundancies in efforts across organizations while maximizing mitigation of CO2 equivalent emissions in the five key sectors of energy, transport, building, waste and water.</p> <p><b>Pakistan</b></p>  <p><b>Pakistan's Renewable Energy Policy:</b> Prepared in 2006 by the Ministry of Water and Power to develop renewable energy plans for the country. It invited renewable energy investment from IPPs (independent power producers), developed transparent principles for tariff determination, facilitated projects in obtaining carbon credits, and obliged the Central Power Purchasing Authority (CCPA) to buy electricity for qualified renewable energy projects.</p> | <p><b>Kazakhstan</b></p>  <p><b>Concept of Transition of the Republic of Kazakhstan to Sustainable Development 2024:</b> Addresses the vision, goals, tasks and basic measures to achieve sustainability in all sectors of the country's economy for the period 2007 to 2024.</p> <p><b>UK</b></p>  <p><b>Renewable energy Directive 2020:</b> Commits to sourcing 15% of its final energy consumption from renewable sources by 2020.</p> <p><b>Other:</b> The UK plans to close a quarter of current generating plants and build a new generation capacity with prioritized investments in the renewables sector.</p> <p><b>Turkey</b></p>  <p><b>2014:</b> The government issued a communique on Wind and Solar Measurement Practices for Pre-license Applications in Wind and Solar Energy Markets.</p> <p><b>2015:</b> The government established a law on the technical evaluation of license applications for wind energy facilities.</p> |

## Renewable strategies and potentials for Islamic financing

| Policy development and regulation |   |   |   |  |
|-----------------------------------|---|---|---|--|
|                                   | Renewable energy strategies/initiatives   | Regulation and government guidance level  | Factors that impact the growth of renewable energy  | Regulatory initiatives that support the use of Islamic Finance structures  |
| MENA - GCC                        |   |   |   |  |
| <b>Saudi Arabia</b>               | <ul style="list-style-type: none"> <li>Plans to build 16 nuclear power plants by 2032</li> <li>Aims to achieve 3.45 GW of renewables installed by 2020</li> </ul>   | <ul style="list-style-type: none"> <li>Has a Ministry of Energy, Electricity, Congregation Regulatory Authority and K.A.CARE</li> </ul>   | <ul style="list-style-type: none"> <li>Budgetary, strategic direction and renewable policies</li> </ul>   | <ul style="list-style-type: none"> <li>By default, all financing arrangements are made under Islamic principles</li> <li>Commercial banks willing to give loans in presence of enabling policies</li> </ul>  |
| <b>UAE</b>                        | <ul style="list-style-type: none"> <li>Clean Energy Strategy 2050</li> <li>REmap 2030</li> </ul>  | <ul style="list-style-type: none"> <li>Plans to include more policy planning in its renewable energy strategy</li> <li>Dubai Supreme Council of Energy (DSCE) has several responsibilities to improve renewable energy consumption</li> </ul>   | <ul style="list-style-type: none"> <li>Costs of oil and gas, costs of renewable energy, size of the country's export revenue and its role in the energy industry</li> </ul>   | <ul style="list-style-type: none"> <li>Aims to amplify the role of Sukuk in renewable energy developments through green Sukuk</li> <li>DSCE and World Bank agree to develop a green investment strategy incorporating Sukuk</li> </ul>                       |
| <b>Bahrain</b>                    | <ul style="list-style-type: none"> <li>Sustainable Energy Unit in conjunction with United Nations Development Program</li> <li>Bahrain Energy Vision aims for 5% of its installed capacity to be generated from renewables by 2020</li> </ul> | <ul style="list-style-type: none"> <li>EWA and NOGA oversee the energy industry. There is no designated authority to promote renewable energy</li> </ul>  | <ul style="list-style-type: none"> <li>Will require a dedicated institution or industry body to lead renewable energy projects</li> <li>Unknown technology-specific targets</li> </ul>  | <ul style="list-style-type: none"> <li>The Central Bank of Bahrain (CBB) and in particular the Bahrain Bourse have in place sound regulations for issuing green Sukuk and other Sharia'-compliant investment structures.</li> </ul>                          |
| Asia                              |   |   |   |  |
| <b>Malaysia</b>                   | <ul style="list-style-type: none"> <li>National Bio-fuel Policy 2006</li> <li>National Green Technology Policy and Action Plan 2009</li> <li>Sustainable Energy Development Authority Act</li> </ul>  | <ul style="list-style-type: none"> <li>There are several delays and challenges in getting permits because of financial problems; however, the government has established Mysuria in the recent 2017 budget to help generate secondary income for 1,620 homes from renewables</li> </ul> | <ul style="list-style-type: none"> <li>Goods and services tax (GST)</li> <li>Climate- monsoon winds</li> <li>Renewable energy funds are small</li> <li>Limited government support</li> </ul>  | <ul style="list-style-type: none"> <li>Government encourages Sharia'-compliant financing</li> <li>Energy related financing: <ul style="list-style-type: none"> <li>Sawiti-Agro-bank-Sawiti</li> <li>Green Technology Financing Scheme</li> </ul> </li> </ul> |
| <b>Pakistan</b>                   | <ul style="list-style-type: none"> <li>Renewable Energy Policy 2006</li> <li>Alternative and Renewable Energy 2011</li> <li>Development of renewable energy for Power Generation 2012</li> </ul>  | <ul style="list-style-type: none"> <li>Has several authorities that support renewable energy: <ul style="list-style-type: none"> <li>Water and Power Development Authority</li> <li>Alternative Energy Development Board</li> </ul> </li> </ul>   | <ul style="list-style-type: none"> <li>Banks shifting their focus from financing renewable energy projects</li> <li>Infrastructure and machinery are costly</li> <li>Investors require high return on investment to compensate for higher perceived risk</li> </ul> | <ul style="list-style-type: none"> <li>Meezan Bank Pakistan finances energy projects</li> </ul>  |

| Policy development and regulation |  |  |   |   |
|-----------------------------------|--|--|---|---|
|                                   | Renewable energy strategies/initiatives  | Regulation and government guidance level   | Factors that impact the growth of renewable energy  | Regulatory initiatives that support the use of Islamic Finance structures   |
| Europe                            |  |  |   |   |
| Kazakhstan                        | <ul style="list-style-type: none"> <li>• "On the Support of Renewable Energy" Law 2009</li> <li>• The government intends to simplify the renewable energy process by 2030</li> </ul>   | <ul style="list-style-type: none"> <li>• Legislation is up-to-date; however, rules supporting investors are unclear</li> <li>• Developing national renewable energy-facilitating development plan</li> </ul> | <ul style="list-style-type: none"> <li>• Value of feed-in tariffs</li> <li>• Green-tariffs</li> <li>• Competition between old and new technologies</li> <li>• Unequal tax of renewable energy and other energy sources</li> </ul>         | <ul style="list-style-type: none"> <li>• Road Map 2020</li> <li>• Green Sukuk</li> </ul>  |
| UK                                | <ul style="list-style-type: none"> <li>• Electricity Market Reform (ERM)</li> <li>• Renewable Energy Directive 2020</li> </ul>   | <ul style="list-style-type: none"> <li>• Several energy sector legislative acts and EMR initiatives support renewable energy projects</li> </ul>   | <ul style="list-style-type: none"> <li>• Permitting issues</li> <li>• Financing needs</li> <li>• Operator capabilities</li> </ul>   | <ul style="list-style-type: none"> <li>• Enhanced capital allowances</li> <li>• The government has introduced legislative measures to establish the involvement of Islamic Finance in projects</li> </ul>                   |
| Turkey                            | <ul style="list-style-type: none"> <li>• Usage of Renewable Energy Resources to Produce Electricity 2005</li> <li>• Amendment of Renewable Energy Law 2010</li> <li>• Mechanism to Support Renewable Energy 2011</li> <li>• Renewable energy targets 2023</li> </ul> | <ul style="list-style-type: none"> <li>• There are some legal arrangements; however, they are not enough</li> </ul>  | <ul style="list-style-type: none"> <li>• Macro-risks</li> <li>• High installation and operation costs</li> <li>• Technological over-dependence on foreign resources</li> <li>• Limited awareness</li> <li>• Government support</li> </ul> | <ul style="list-style-type: none"> <li>• Islamic banking through Musharakah, Ijarah, Mudharabah, Istisna types of structures</li> <li>• Sukuk issuances under Istisna, Ijarah, Mudharabah, Musharakah structures</li> </ul> |

Breakdown of direct jobs in the renewable energy sector in the region by country in 2030



Source: IRENA

Green finance initiatives around the world have bolstered and raised awareness of socially responsible investment (SRI) and social impact financing solutions

### The rise of the green economy

The OECD and the IEA have been actively supporting the transition to a greener model of growth, and in 2011 the OECD launched a Green Growth Strategy to help policy-makers and stakeholders address the major environmental challenges of today's world while expanding economic opportunities.

Since 2008, the World Bank has now issued over US\$9.7 billion equivalent in green bonds through more than 125 transactions in 18 currencies. In the first quarter of 2016, two Chinese financial institutions issued green bonds worth US\$4.5 billion.

Green finance initiatives around the world have bolstered and raised awareness of SRI and social impact financing solutions: the World Bank's Green Bond program, the International Finance Corporation (IFC) through lately investing in renewable Sukuk, the Asian Development Bank (ADB) and the Islamic Development Bank (IDB) have all contributed to the development of

new investment structures which provide the guarantees and credit enhancement required for private sector investors.

The country group selected for this report provides the desired growth rate and regulatory and policy support for energy finance. Pakistan and Turkey have a combined population of 268 million and an average population growth rate of 4.8%. Saudi Arabia, the largest economy in the Middle East, where energy contributes 45% to the GDP of US\$646 billion, stands as a strong base for supporting an Islamic Finance strategy to finance its renewable energy projects. However, the investment and regulatory environment is less attractive than that of the UAE, which has adopted and hosted a number of international renewable initiatives to spur growth in this sector.

The Asian Development Bank (ADB) and the Islamic Development Bank (IDB) have all contributed to the development of new investment structures which provide the guarantees and credit enhancement required for private sector investors

The fundamental causes of a debt-based financial system, which led to the global financial crises, have yet to be addressed and resolved

# Innovative financing alternatives

There is undoubtedly a need for innovative financing solutions that feature a new and revised business model to replace the traditional debt-based financing approach

The raft of regulatory and governance reforms around the world designed to make our global finance system safer has yet to prove helpful or to spur interest from the private sector to invest in the real economy sectors. The fundamental causes of a debt-based financial system, which led to the global financial crises, have yet to be addressed and resolved. The fiduciary responsibilities of the financial sector players and investors alike need to be aligned to serve sustainable development.

## **The emerging popularity of Sukuk**

Current market conditions may well present a unique opportunity. There is undoubtedly a need for innovative financing solutions that feature a new and revised business model to replace the traditional debt-based financing approach that arguably led to the global financial crisis of 2008.

With these kinds of challenges in mind, multinational energy corporates are arguably now seeking alternative sources of capital. Clearly, the diversification of funding renewable energy projects will add more benefits to economic growth, sustainable development and greener economies.

A number of countries in the Middle East are currently considering green bond and green Sukuk issuance at sovereign level. For instance, Jordan has recently issued sovereign Sukuk, which was supported by two multilateral development agencies – the Islamic Corporation for the Development of the Private Sector (ICD) the private sector arm of the Islamic

Development Bank (IDB), and the Japan International Cooperation Agency (JICA). Although the initial size of the transaction was relatively small at US\$48 million, the issue is a notable development in the region and will encourage more issuance. It is interesting that Jordan has been active in developing solar power capacity with assistance from the International Finance Cooperation (IFC). The latter was also instrumental in structuring an Islamic syndicated loan to finance a power project in Iraq.

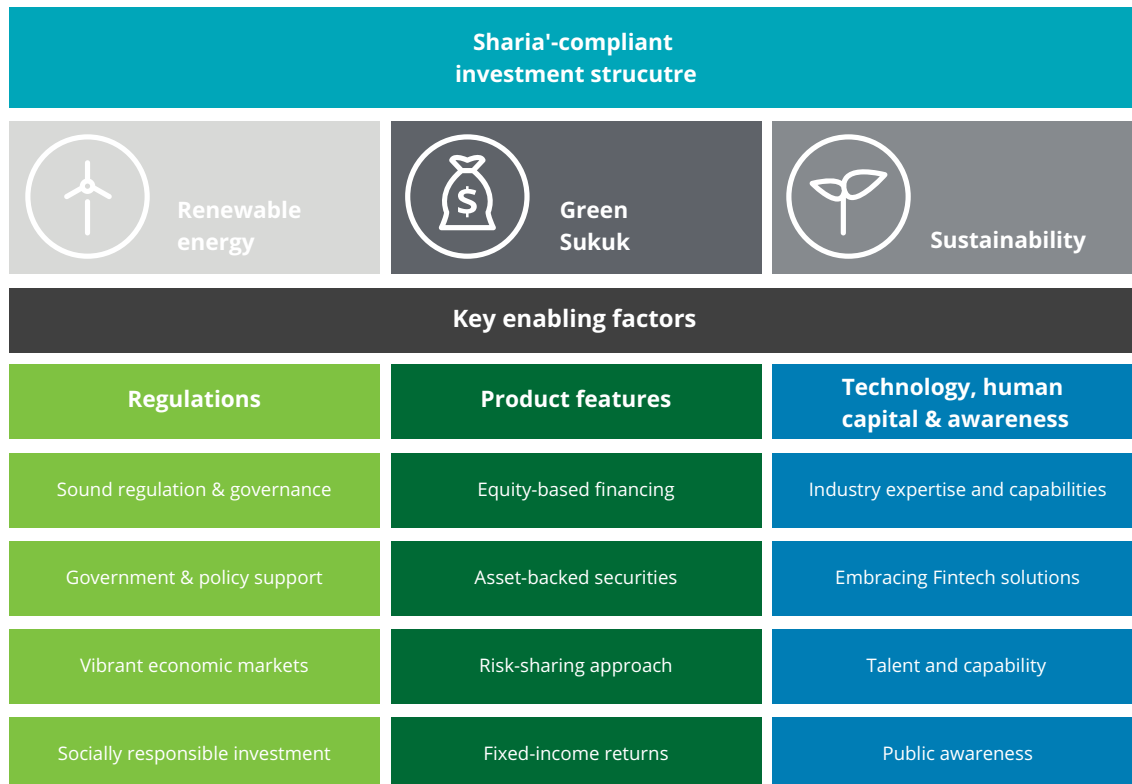
## **Sharia'-compliant investment structures**

A significant share of Sukuk issuance has been structured to reduce risks through guarantees and credit enhancement measures developed by multilateral development banks (MDBs), such as the highly-rated IDB and its affiliated organizations. This has taken place primarily to entice private sector participation in the economic growth of the Organization of Islamic Cooperation (OIC).

Other structures include Wakala investment, Ijarah lease, Mudarabah and Musharakah. The use of these instruments depends largely on the type of assets and services required in a particular project.

The diagram below charts the main considerations of a Sharia'-compliant investment structure.

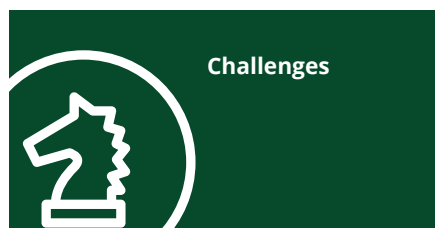




A significant share of Sukuk issuance has been structured to reduce risks through guarantees and credit enhancement measures developed by multilateral development banks



- Volatility in oil and gas could escalate interest in alternative renewable energy sources.
- Considerable and increasing emphasis on energy efficiency and renewable energy projects (e.g., solar, wind).
- Clear renewable energy targets and strategies in place in several countries of the Middle East, Asia and Europe.
- Sound liquid banking system in the Middle East including Islamic banking.
- Maturing Sukuk market and other selective Sharia'-compliant investment structures which offer suitable financing options for projects in the GCC, Malaysia and Pakistan, given their commitment to and support for Islamic Finance.
- Desert areas are available to build renewable energy projects in many countries (no need to harm green areas).
- Availability for regional electricity transfer.
- Governmental initiatives exist.



- Renewable energy regulation – in some countries - needs to be improved and serve to attract foreign investors.
- Lack of developed debt and capital market in the Middle East and Pakistan.
- Limited know-how.
- Inefficient procurement practices, regulations and laws.
- Political instability in some parts of the Middle East.
- Lack of consumer awareness of the benefits of renewable energy.
- Lack of education in funding through Islamic Finance (educate people on business models and finance options).
- Investors are looking for high and quick returns (renewable energy technology is expensive and the returns are unattractive. Therefore, establishing or developing government policies is crucial).
- Conflicts with oil and gas revenues.
- High installation and operation costs.
- Technological over-dependence on foreign resources.
- Need for increased government support.
- Lack of available projects in the pipeline.
- Lack of well-financed renewable energy funds to support developing renewable energy projects.
- Subsidization of fossil fuel impedes growth of renewable energy – Turkey.
- Absence of attractive mechanism to promote microfinance.
- Very few local financial institutions are currently involved in financing renewable energy projects – Turkey.
- Government agencies outside energy ministries and utilities are not sufficiently prepared to deal with renewable energy related issues - Turkey.
- The fast changing nature of technology and falling cost of renewable energy.

Renewable energy regulation – in some countries - needs to be improved to attract foreign investors

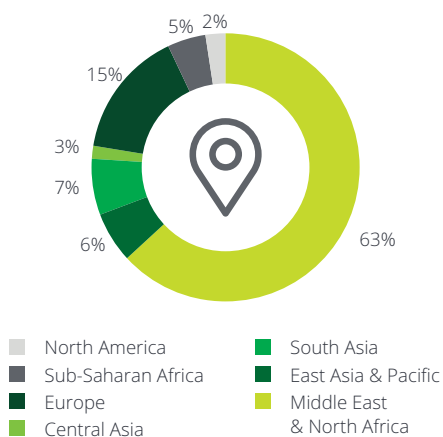
# Industry and practitioners' perspective

This section summarizes the feedback from the online survey questionnaire, that aimed to acquire a better understanding from industry practitioners and gauge the sentiment of investment professionals and energy professionals in terms of how Islamic Finance may or may not be a fit to fund projects.

The survey targeted executives from organizations whose primary industry was oil and gas production, solar generation, banking, asset management or professional services. The survey encompasses large local, international and vertically integrated companies.

## I. Industry & demographic information

### Indicate your geographic location

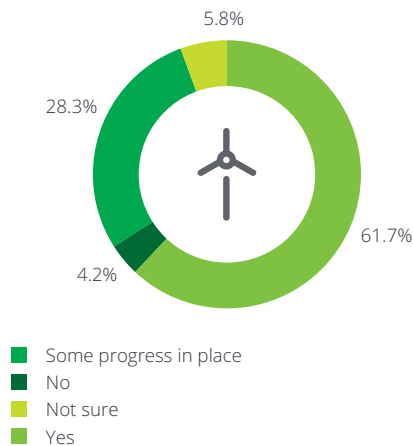


- 63% of respondents were from the Middle East and North Africa, 15% from Europe, 13% from east and south Asia, 5% from Africa and 3% from central Asia.
- In terms of demography, the majority of responses mainly consisted of

participants from the Middle East and Europe, which indicates that there is considerable growth potential for renewable energy in the region.

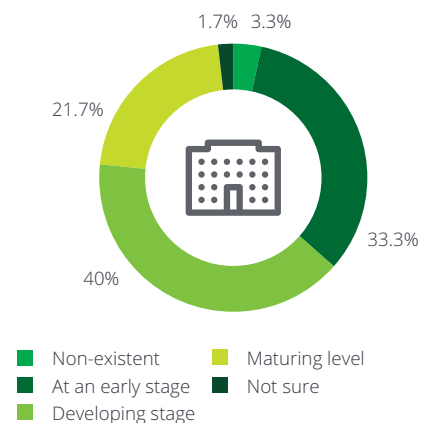
## II. Policy development and regulation

### Is there a defined renewable energy strategy/initiative in your market/jurisdiction?



- 61.7% of the participants agree on the availability of a defined renewable energy strategy in their market, whereas, 28.3% believe there is some progress in place and 5.8% are unaware of any availability.
- This supports our initial observations while building our country cases which indicate that there is still room for improvement in regulatory and government policy support to attract more investment and private sector participation in the renewable energy industry.
- The EU has a defined strategy where each member state reports on their progress of reaching the 20% EU-wide renewable energy target by 2020 (EEA report, 2016).

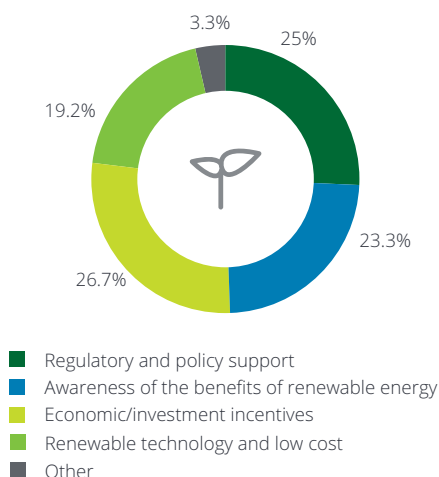
### What is the regulation and government guidance level relating to sustainable and renewable energy within your country/region?



- Only 21.7% of respondents believe that the regulation relating to sustainable and renewable energy within their region is at a mature level; 40% of respondents believe it is at a developing stage and 33.3% that it is at an early stage.
- There seems to be consensus among our respondents on the importance of investing in renewable energy. For instance, the MENA region sets targets to reach by 2020 and 2030. They have passed specific laws and established entities to monitor their process. For example, K.A.CARE in Saudi Arabia is responsible for the promotion of renewable energy. In Morocco, Law 13-09 (2009) sets the framework for renewable energy projects and ADEREE is liable for promoting it. (Dii policy paper, 2015).
- Bahrain established its Sustainable Energy Unit in conjunction with the United Nations Development Program.
- The European Council adopted an

energy and climate framework for 2030. Commitments include an indicative 27% improvement in energy efficiency (EEA report, 2016, p.13).

#### Which factors have most impacted the growth of renewable energy in your country?

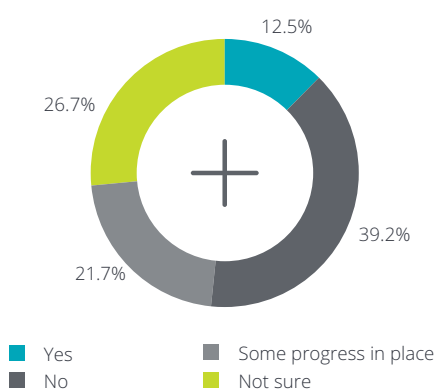


- 26.7% of respondents agree that economic and investment incentives have the most impact on the growth of renewable energy, followed by 25% stating regulatory and policy support.
- The respondents' view is that the top factors impacting the growth of the renewable energy sector are economic and investment incentives, regulatory

and policy support, and awareness of the benefits of renewable energy.

- 21.7% confirm "limited experience of financing and investment institutions" creates the greatest challenge to the development of renewable energy. Interestingly, nearly 8.3% believe scarce capital may have been a challenge.

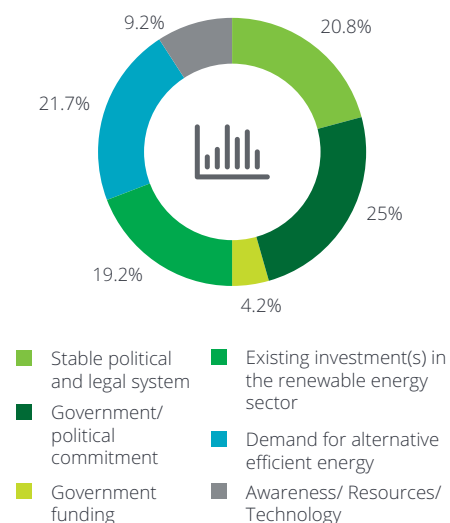
#### Are there any regulatory initiatives that support the use of Islamic financial structures for the energy sector?



- 39.2% believe there are no regulatory initiatives that support the use of Islamic financial structures for the energy sector and 21.7% state that some progress is in place whereas 26.7% are unsure.
- Clearly, this is one of the main challenges for Islamic Finance to tap into the

renewable energy sector. Without adequate enabling laws and market education, Islamic Finance will remain a 'no option' for investors in renewable energy sectors. Legislators will need to understand the peculiarity of the business model and make the necessary adjustments to laws to accommodate, for example, the removal of double tax in

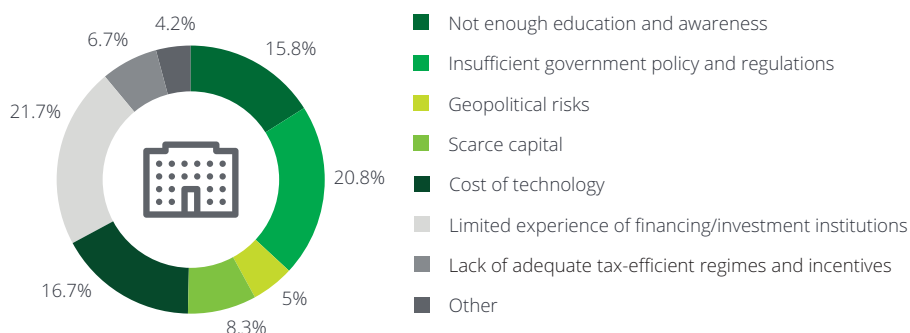
#### What makes a market attractive for investments in renewable energy?



Ijarah contracts.

- Government commitment and a demand for alternative efficient energy were the top choices amongst respondents.
- The least significant option, mentioned by only 4.2% of the respondents, is government funding.
- In a previous question, respondents agreed that the main challenge to the development of renewable energy is insufficient government policies. Again, respondents (25%) agree that government commitment creates a more attractive market for renewable energy investments.

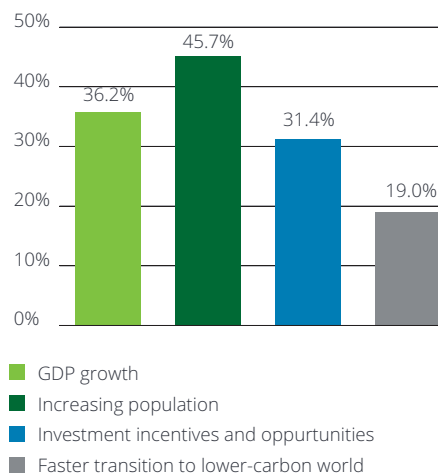
#### Which of the following are the most significant challenges to the development of renewable energy within your country/region?



Organizations prefer to use solar projects because the region has the capability to produce large amounts of solar energy due to the large open spaces exposed to the sun

### III. Industry trends and potential

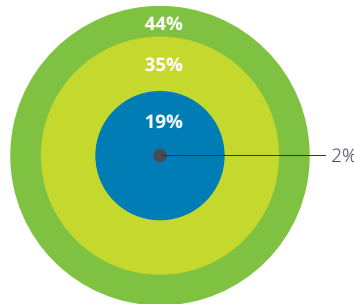
What are the main drivers of energy demand in your market?



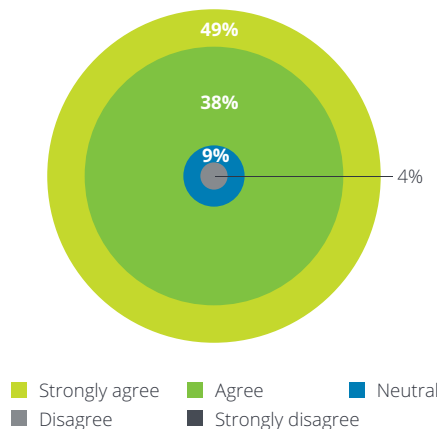
- 45.7% agree that the main driver of energy demand in the market is the increase in population and GDP (36.2%).
- This indicates that energy demand is driven largely by the increase in the population.

Indicate your level of agreement with the following statement

My organization views investing in the renewable energy sector as an opportunity



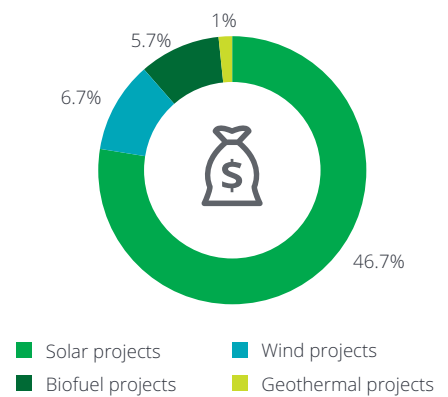
Renewable energy technologies have the potential to fundamentally transform the way people consume energy in our country/region



- 44% of respondents agree that investing in renewable energy is an opportunity and 49% of respondents strongly agree that renewable energy technology may transform people's way of consuming energy.

- With high energy demand and consumption, this result indicates that there is great potential for renewable energy.
- The most common type of renewable energy infrastructure among the organizations surveyed is solar projects.
- Increasing investments in renewable

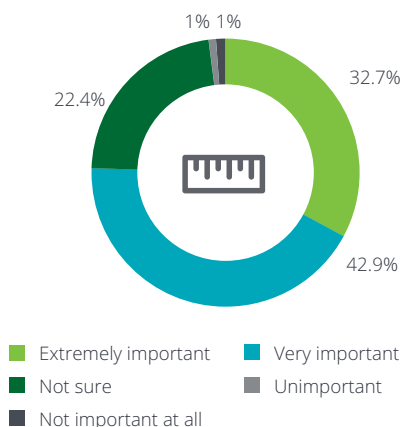
If you are currently involved in this sector, please indicate the size of investment based on the type of renewable energy infrastructure within your company.



energy will reduce the level of dependence on primary energy. Solar and wind energy are important pillars of the energy mix and demand for these projects will increase due to the growing concern over environmental issues and climate change.

- Moreover, organizations prefer to use solar projects because the region has the capability to produce large amounts of solar energy due to the large open spaces exposed to the sun. Hence they could earn more revenues.

#### How important is the need to broaden equity capital in energy investment through Islamic Finance?



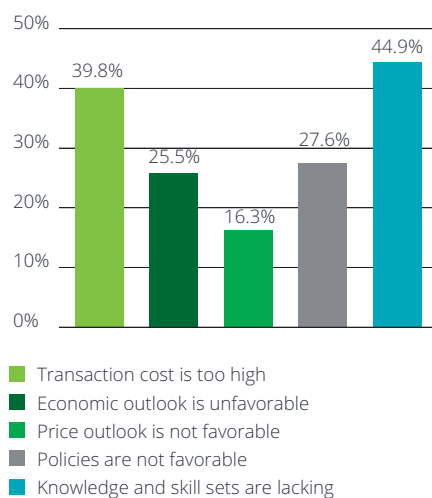
#### IV. Energy financing solutions

- Three quarters (75.6%) of the respondents believe there is a need to broaden equity capital in energy investment through Islamic Finance.
- This result signifies the interest of industry practitioners in diversifying investment capital by considering alternative financing methods such as Islamic Finance.

The UAE and Saudi Arabia are considered to be the leading emerging renewable energy markets

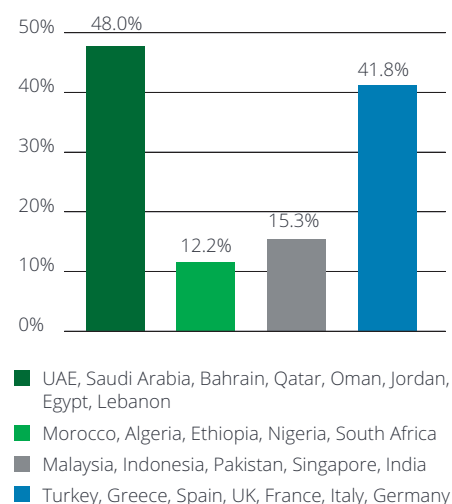
- Classic banking loans (56.1%) followed by private equity funds (46.9%) and clean energy funds (29.6%) are evidently the commonly used methods to finance renewable energy.
- Although banks still play a key role in financing renewable energy projects through syndicated loans, this may soon change given the new Basel capital regulatory requirements and will create a need for capital market instruments such as green bonds or green Sukuk to finance projects in the Middle East and Asia, at least.
- Capital market investors could replace banks given that the projects offer high yields and low correlation with other types of fixed income instruments.

#### Which of the following determines your decision to use Islamic Finance means to fund renewable energy projects?



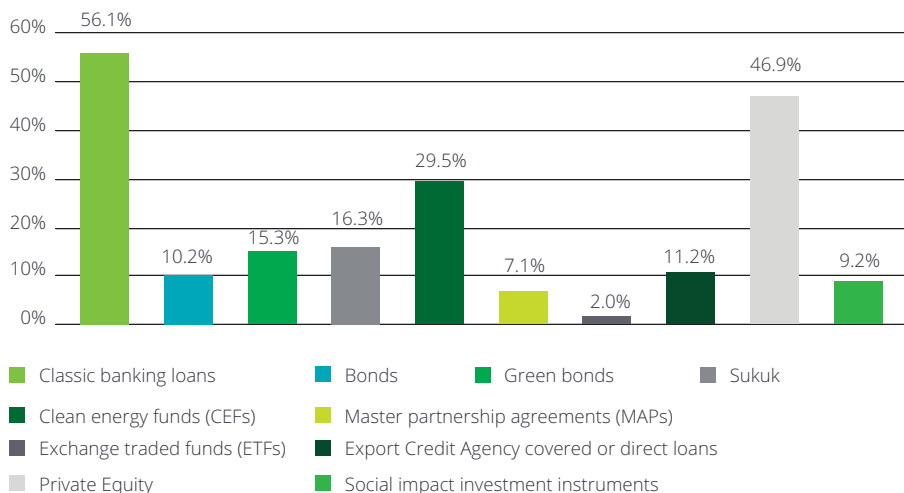
- 44.9% of participants rely on knowledge and skill-sets in deciding whether to use Islamic Finance to fund renewable energy projects or an alternative method.
- 39.8% perceive the transaction costs of renewable energy projects to be too high.

#### In your continent, which of the following countries have the most desirable regulatory and government commitment to renewable energy?



- 48% of the respondents consider the Gulf Cooperation Council countries, Jordan, Egypt and Lebanon to have the most desirable regulatory and government commitment to renewable energy.
- The UAE and Saudi Arabia are considered to be the leading emerging renewable energy markets in both the short and long term.
- Evidently, these countries have a clear commitment to renewable energy strategies and have provided regular awareness seminars promoting a shift to renewable energy sources (NOGA, 2015/ IRENA, 2016).
- Our research also shows Saudi Arabia to be an emerging renewable market as it continues to sign international agreements in renewable energy.

#### Which of the following are mostly used to finance renewable energy in your market?



# Thought leaders' perspectives

Moving ahead, several nations will likely come to acknowledge the growing challenges of moving toward a 'green economy'; without a visionary strategy and planning, renewable energy funding will not be sustainable.

This section sheds light on some of the critical and interesting premises of how Islamic Finance could make an impact on issues such as environment change and sustainability.

## Is there an investor market for Sukuk?

The question we raised to industry thought leaders of whether the structure of Sukuk, for instance, would be attractive to funding renewable energy received mixed views and enthusiasm. Initially, there appears to be some consensus on the connection between Sukuk and renewable energy.

"A practical point raised by our project finance and infrastructure leader - the key point from my perspective - is if we can get some kind of indication that specific Islamic/Sukuk providers are keen and able to finance such projects competitively (after having a good understanding that these are greenfield, non-recourse projects); only then can we say what makes Islamic Finance attractive," noted Umer Ahmad.

However, if Islamic Finance is to be attractive, one or more of three things has to materialize, in the opinion of Peter Casey: a) It widens the pool of investors; b) It reduces the cost of finance; or c) It allows a different and helpful financing

structure. Peter argues that Istisna' seems to be very well adapted to project financing, and a combination with Ijarah can allow returns to be paid through the construction stage. However, if these contracts are used simply to mimic a conventional bond, with pre-determined returns, and are subject effectively only to the credit risk of an ultimate obligor, that structure is no more useful than a bond. In principle, the investors' ownership rights over the assets may be helpful – but they are helpful only if they have financial value. Whether they do, to any material extent, depends on whether the investors (or trustees acting on their behalf) can realistically take over the assets and find another organization that can operate them profitably.

Islamic Finance is an attractive option to fund renewable energy projects as the objectives of Islamic Finance are entirely consistent with the objectives of Islam under the Maqasid al Sharia', which represents a duty of care for the entire planet, according to Daud A Vicary. Linkages between sustainable and renewable energy sources being funded by Islamic Finance structure ensure not only a sustainable eco-system but also a sustainable financial eco-system. These initiatives are for the benefit of all so long as we focus on building models that are easily replicated, then we will have great impact very quickly, said Daud.

This view is also shared by Sohail Jaffer, who believes that the ethical, environmentally sustainable and community welfare principles underpinning Islamic Finance hold

**Istisna' seems to be very well adapted to project financing, and a combination with Ijarah can allow returns to be paid through the construction stage**

huge potential for funding green and sustainable projects including renewable energy, waste to energy, geothermal, wind farms, forestry, health and education.

Islamic Finance needs to engage more constructively and create further awareness that the objectives of Islamic Finance are entirely consistent with environmental, social and governance (ESG) objectives, UN principles for responsible investment (PRI) and indeed the 17 UN sustainable development goals (SDGs). Organizations such as the Responsible Finance Institute (RFI) Foundation are creating a great deal of awareness, asserted Daud A Vicary.

Other views include those shared by Professor Archer, who asserts that Islamic Finance in practice has so far shown itself to be mainly concerned with Sharia' compliance in a juristic rather than an ethical sense. To some extent this may be attributable to the largely juristic rather than ethical education and training of the Sharia' scholars who sit on institutions' Sharia' boards. There are some signs that this situation may be beginning to change, such as the engagement of leading figures in Islamic Finance with the SRI movement.

Islamic Finance's participation in energy projects include Saudi Aramco, UAE's Dolphin Energy and Petronas of Malaysia. The MENA region is looking to considerably boost the proportion of electricity generated from solar energy. The Istisna-Ijarah structure is favored by international lenders to finance renewable energy projects, noted Sohail Jaffer.

### Moving beyond Sharia' compliance

Omar Shaikh argues that there is a big opportunity for the Islamic Finance sector to develop a new asset class (Islamic Finance version 2), that moves beyond being Sharia'-compliant – 'halal' - to what is referred as 'tayyab' or 'halal plus', which seeks to incorporate ESG, SDGs and social returns. This not only opens up a much larger global market opportunity but can also help address the critics within the Islamic Finance sector who feel certain synthetic structured Islamic Finance products fail to realize the spirit of Sharia' alongside the latter, according to Omar Shaikh.

**Stella Cox, CBE, Managing Director, DDCAP Group**

### The Millennial Generation: driving new thinking for collaboration between institutional markets - investors and asset owners

Trends of the recent past have shown that there is almost universal global support for renewable energy and a broadly articulated desire to draw power from naturally occurring, inexhaustible sources of supply, rather than deriving it from the fossil and nuclear fuel supplies of the past. Given the ethos that underlies Islamic financial practice, there should be a natural link between the considerations of social impact and responsible governance to which Islamic investors subscribe that will encourage other subsets of the

socially responsible investment sector to explore access to, and thereafter varying levels of collaboration with, Sharia'-compliant investors and financiers. Initially this could be simply on the basis of gaining greater understanding and awareness of the fundamental principles and practices adhered to by each.

Reputational risk from environmental, social and governance (ESG) factors, which include specific considerations for the energy sector that are not limited to pollution, climate change and working

other parts of the ethical financial marketplace. This has resulted in the more recent establishment of the RFI Foundation, of which I am a member of the Board of Trustees. RFI is an industry body established with the aim of bringing together various forms of responsible financial practice, including ESG, by encouraging consensus as the basis for convergence between individual standards, practices and regulations. RFI perceives that there is a major opportunity to further expand the responsible finance sector by engaging its asset owners, and

## Discussions are underway to explore the current and prospective role of Islamic Finance in the promotion of sustainable development

conditions, are contributing to drive momentum in renewable energy objectives. Whereas the stewardship that is embraced by Islamic financial practitioners reflects social impact and governance, it is a financial industry subset that has developed from the emerging markets, many of which have economies driven by traditional energy and fuel revenue. Accordingly related environmental issues and impact have historically been less of a consideration. This perspective is changing and, interestingly, being driven by the requirements and demands of the clients of banks, financial institutions and asset managers, particularly those clients who are from the millennial generation. Already, there are examples of Islamic financial market leaders and practitioners seeking to explore and collaborate with

the institutional investors that drive the global financial system, to explore the benefits of the inclusion of the ethical and socially responsible principles of Islamic Finance.

Similarly, discussions are underway to explore the current and prospective role of Islamic Finance in the promotion of sustainable development. A previous roundtable discussion hosted at the Jeddah headquarters of the IDB brought together senior Islamic financial practitioners, the co-chairs of the Intergovernmental Committee of Experts on Sustainable Development Financing (ICESD) and representatives of various sub groups of the UN system. Its purpose was to enable the Islamic financial experts to provide input to the ICESD report, proposing alternatives to supplement



an effective, sustainable development financing strategy and facilitate the mobilization of alternative resources. As recently as October 2016, responsible financial industry leaders met again during a dedicated session on Islamic Finance co-presented by the RFI Foundation and the UN Environment Program Finance Initiative.

Is it important that such collaborations develop between industry bodies and key influencers and that effective thinktanks are established to add process and propose the standards and practices that may be accommodated by the wider market place. These collaborations will also encourage the participation of the institutional market, of investors and asset owners, as has been demonstrated by the responsible investment momentum driven by the growth and success of the PRI during the last ten years.

Responsible investment is an approach to investing that aims to incorporate environmental, social and governance factors into investment decisions, to better manage risk and generate sustainable long term returns. ESG factors play a material role in determining risk and rewards and, increasingly, form part of investment managers and financier's fiduciary duties to clients. Amongst the PRI's six principles for responsible investment are that owners and asset managers include ESG considerations in ownership and practices; seek appropriate disclosure on ESG factors from entities seeking investment and promote acceptance and implementation of the principles within the wider investment industry. PRI encourages organizations and firms to work together to enhance effectiveness in implementing the principles and to report on their activities

and the progress they have made towards implementing them. According to statistics released by PRI, assets managed in accordance with its responsible principles have increased from US\$6.5 trillion to US\$62 trillion (as at April 2016) over the past ten years and signatories to the principles have increased from 100 to 1,500 over the same period.

## Responsible investment is an approach to investing that aims to incorporate environmental, social and governance factors into investment decisions, to better manage risk and generate sustainable long term returns

### Point of view: Thomson Reuters The emergence of SRI Sukuk

Over the years, SRI Sukuk has become one of the most innovative financial structures in Islamic Finance, intended to drive private sector funding towards social service initiatives, while adhering to Islamic Finance laws. The underlying mechanism of the structure shows that investors pay the upfront costs of such initiatives, with the amount of return conditional upon its success.

There has been a growing trend towards SRI Sukuk and that is mainly due to the natural progression of the Sukuk market, the growing awareness of investors toward ethically and socially responsible investment, and the stricter capital requirements for banks to finance infrastructure projects.

### Notable issuances

Historically, a few SRI Sukuk have been issued in the global market to finance environmental-friendly projects. The first SRI Sukuk was issued in 2014 for US\$500 million by the UK-based International Finance Facility for Immunization (IFFIm) through a Murabahah structure.

The amount raised was used for children's immunization across some of the world's poorest countries through the Vaccine Alliance, also known as Gavi. This deal was regarded as one the most innovative structures and received a number of awards in areas such as innovation from Euromoney and the best achievement in transformational finance from the Financial Times. Following the success of the first Sukuk, IFFIm returned to the Islamic capital markets for the second issuance in September 2015 issuing US\$200 million for the same cause.

Another notable SRI Sukuk was issued out of Malaysia by Khazanah Nasional Bhd and was regulated by the Malaysian Securities Commission. The issuance was again for a good cause, and in this deal the funds were used to finance the roll-out of 20 Trust Schools under Yayasan Amir's (YA) Trust Schools Program for 2015. YA, a not-for-profit foundation incorporated by Khazanah, works to improve academic standards in Malaysian Government schools through a strategic partnership with the Ministry of Education. As of December 2015, there were 62 schools in the Trust School Program.

### Challenges associated with SRI Sukuk

Almost everything comes with challenges, even in social finance. Perhaps the key challenge of SRI Sukuk is exposing investors to high risk profiles as most of these Sukuk are based on the success of

the project. The second challenge is the absence of a proper measurement of project performance, which puts the investors in a vague position.

Among other challenges is the lack of secondary market for Sukuk in general and more specifically SRI Sukuk. However, despite the challenges, SRI Sukuk is expected to grow as most of the investors invest in SRI Sukuk for a good cause rather than merely the financial return.

### Conclusion

In this report, we observe how renewable energy strategies and practices have developed across the country group examined. The size of investment and development in renewable energy varies significantly among the country group, with the UAE and Saudi Arabia leading the development of sound regulatory and awareness programs to promote the sector. Solar power emerges as the main type of efficient energy sources identified in most of the countries examined.

Driven by continued government support and corporate commitment in the Middle East and other regions examined in this study, the renewable energy sector will grow in importance as an asset class and will undoubtedly attract more investors.

However, in all countries examined, Islamic Finance is nowhere near the level of traditional bank and project financing methods, suggesting that industry players and governments will have to adopt new regulatory reforms and practices to allow Islamic Finance to take part in this new industry. Malaysia as it often does, has continuously advocated the importance of Islamic Finance in its development strategies and particularly with regard to infrastructure and social impact funding. In addition, a host of regulatory measures, practices and awareness-raising among industry stakeholders will be required to ensure a better and effective role for Islamic Finance. Key to this is the development of sound regulations for the Islamic debt capital market in the Middle

East, in particular where these best practices are lacking in its nascent capital markets.

### Going forward

As we write this report, the Board of IDB has approved US\$170 million in funding for the Dubai Electricity and Water Authority's (DEWA) 800MW solar project under development by Masdar.

The three-phase project, which is part of the Rashid al Maktoum solar development, has a total cost of US\$924 million.


Developing a common language is a vital step to help financial institutions and renewable energy firms work together effectively and give private investors the confidence to get involved. It is this kind of collaborative and educational approach that will build the responsible investment and greener economies to which our societies aspire.

Developing a common language is a vital step to help financial institutions and renewable energy firms work together effectively and give private investors the confidence to get involved

# Appendix A: Country cases

## Country case 1: Saudi Arabia

### Overview of the energy industry in Saudi Arabia

|   |   |  |
|---|---|--|
| <b>Saudi Arabia economic indicators</b><br><br> | <b>GDP</b>  | <ul style="list-style-type: none"> <li>• GDP – US\$646.00 billion (World Bank, 2015)</li> <li>• Real GDP growth – 3.5% (World Bank, 2015)</li> <li>• Oil GDP (share of total nominal GDP) 42.7 % (MEP, 2015)</li> </ul>  |
|   | <b>Population</b>                                     | <ul style="list-style-type: none"> <li>• Total population – 31 million (World Bank)</li> </ul>   |
|   | <b>Major industries</b>                               | <ul style="list-style-type: none"> <li>• Crude oil production, petroleum refining, basic petrochemicals and chemicals</li> <li>• Construction, mining and metals</li> <li>• Religious tourism and real estate</li> </ul> |
|   | <b>Energy investment &amp; financing institutions</b> | <ul style="list-style-type: none"> <li>• Saudi Arabian Electricity Company</li> <li>• King Abdullah City for Atomic and Renewable Energy</li> <li>• ACWA Power</li> <li>• Saudi Aramco</li> </ul>                        |

- Electricity capacity: 78.5 GW at the end of 2015, targeted to reach 120 GW by 2032
- Electricity generation: 312 TWh end of 2015, forecast to reach 354 TWh in 2020 with around 15% of generation forecasted to come from renewables.

Saudi Arabia's hunger for electricity from a young and expanding population will continue to underpin growth in electricity demand. Indeed, consumption is forecasted to grow by 20% until 2020. The government has set ambitious plans for the energy sector and aside from increasing total generation capacity to 120 GW by 2032, it plans to curb its dependency on traditional fossil fuels, aggressively introduce renewables and nuclear power, as well as undertake major efficiency improvements. Moreover, the Kingdom has plans to gradually liberalize the sector and allow for increased private sector participation.

The Kingdom has plans to gradually liberalize the sector and allow for increased private sector participation

#### Overview of energy industry

- Saudi Arabia has nearly 16% of the world's proven oil reserves. In light of recently announced plans for further capacity expansion, the country is likely to remain the largest oil exporter in the world throughout the forecast period (2016-20). (EIU, July 2016)
- Petroleum products will continue to account for two-thirds of the Kingdom's total energy mix, with natural gas comprising most of the remaining third. (EIU, July 2016)

#### Current energy mix

- Oil: 59% installed capacity, 48% generation and Gas: 41% installed capacity, 52% generation
- Energy share of the economy is 45% of national GDP

#### The regulatory and industry framework: key initiatives

- The Ministry of Energy, Industry and Mineral Resources (MEIMR) is the governmental body tasked with developing policies and long-term plans for the energy sector including those of overall share and role of renewables in the energy mix.
- The Electricity and Cogeneration Regulatory Authority (ECRA) regulates the electricity sector, including regulation of issues related to renewables integration into the grid.
- The King Abdullah City for Atomic and Renewable Energy (K.A.CARE) acts as

independent regulator in the renewables space, focusing on R&D, forward looking policy development and developing a vision for renewables as economic sector and an industry in the Kingdom.

- The policy framework underscoring renewable energy is still in the process of being fully defined, and so are the institutions that support it. Established by Royal Decree in April 2010, the K.A.CARE is the entity responsible for developing and overseeing renewable energy and nuclear programs through overseeing procurement processes, developing regulation, and defining legal and commercial requirements for the sector. In 2013, K.A.CARE released a white paper outlining the suggested procurement process for renewable energy projects, which was to be owned by an entity called the Sustainable Energy Procurement Company. In addition, the paper touched on key aspects of the required infrastructure and regulatory framework. Not much progress has been made by K.A.CARE since and ambitions had to be significantly reduced.

#### Key initiatives

- Saudi Arabia has no nuclear energy production; however, it is seeking to introduce a share of nuclear energy and renewables to its electricity generation mix. The government is planning to build 16 nuclear power plants by 2032, at a total cost of US\$80 billion.
- K.A.CARE had launched an ambitious renewable energy program with challenging targets for 2032; however, little progress was made on the program.
- As part of the country's National Transformation Program, K.A.CARE has set less ambitious targets to be achieved

## The government is planning to build 16 nuclear power plants by 2032, at a total cost of US\$80 billion

in the short term: currently, it aims to achieve 3.45 GW of renewables installed capacity by 2020, however even those plans are universally accepted to be ambitious.

- In January 2015 the president of K.A.CARE, revealed that the government had pushed back its renewable energy targets from 2032 to 2040.

#### Finance and investment

Despite an energy mix wholly dominated by fossil fuels, a sector that has yet to be competitive, and a challenging economic and political situation, the Saudi renewables is still seen as having great potential to attract investors. Favorable natural conditions, strong will from government, and proven IPP models will help attract the private sector and spur investments.

#### Saudi Arabia's investments and potential in renewable energy

Saudi Arabia has all potential to become a solar renewable energy power house. Abundant solar potential coupled with availability of gas generation for load leveling creates almost perfect conditions. Clearly this potential is very well understood by decision-makers who would introduce different renewable projects and roll-out ambitious renewable targets. As it stands today the assumption is that Saudi Arabia would introduce around 9.5GW of installed capacity renewables by 2032 or by 2040 depending on the budgetary and the strategic

direction that it will take in the next few years. This will potentially create one of the most attractive renewable investment markets in the world. However, there are a number of concerns especially around ability of the Kingdom to sustain investments purely based on fixed IPP related schemes.

We believe that in order for those plans to come though, some small scale renewables integration policies need to be put in place as well as large scale installations based on market mechanisms.

#### Challenges and opportunities in renewable energy investments

Saudi Arabia has a well-proven framework for IPP involvement with a simple off-take PPA scheme by SEC and long-term fuel supply agreements, guaranteeing returns in currency pegged to US dollar.

However upcoming energy subsidy reforms might put additional pressure on new IPP arrangements from both PPA tariff and long term fuel supply price arrangements.

As these reforms move forward conventional generation IPP are likely to be pushed towards a scheme that assumes share of the returns to be acquired on competitive market. Potentially limiting private equity capital financing appetite.

Budget deficit could potentially decrease appetite for government funded or financed projects, therefore opening a line of opportunities for financing institutions.

Very ambitious renewables investment plans have not historically been supported by an underlying investment incentive scheme attractive for investors. Therefore, both limited number of projects and opportunities exist today in the Kingdom for potential investors.

Unless the subsidies are lifted and strong market based renewable incentives are introduced, it is unlikely that government will be able to execute renewable plans.

#### **Potentials for Islamic Finance in energy sector**

##### **The current state of Islamic Finance in energy for Saudi Arabia**

Financing has not been a barrier for large-scale renewable energy projects.

Commercial banks have been willing to offer loans with long tenors and reasonable interest rates in the presence of enabling frameworks.


As the market matures and the regional commercial banks gain experience with renewable energy projects, debt conditions are becoming more attractive.

A more daunting financing challenge is seen in the small-scale solar PV market as banks are not willing to lend due to small project sizes, long payback periods and the lack of off-taker guarantees. Regardless of the type of financing available all of the financing in Saudi Arabia is conducted according to Islamic principles. It is safe to expect 100% of the future financing to be conducted based on Islamic principles.

As the market matures and regional commercial banks gain experience with renewable energy projects, debt conditions are becoming more attractive

# Country case 2: UAE

## Overview of the energy industry in the UAE

|  |   |   |
|--|---|---|
| <b>UAE economic indicators</b><br><br> | <b>GDP</b>  | <ul style="list-style-type: none"> <li>• GDP (PPP) – US\$643.2 billion (World Bank, 2015)</li> <li>• GDP growth – 3.2% (World Bank, 2015)</li> </ul>  |
|  | <b>Population</b>                                     | <ul style="list-style-type: none"> <li>• Total population – 9.5 million (IMF, 2015)</li> </ul>  |
|  | <b>Major industries</b>                               | <ul style="list-style-type: none"> <li>• Crude oil</li> <li>• Natural gas</li> </ul>  |
|  | <b>Energy investment &amp; financing institutions</b> | <ul style="list-style-type: none"> <li>• Abu Dhabi Investment Authority (ADIA)</li> <li>• Abu Dhabi Fund for Development (ADFD)</li> <li>• Mubadala Development Company</li> <li>• Investment Corporation of Dubai (ICD)</li> <li>• Dubai Investment Development Agency (Dubai FDI)</li> <li>• Dubai Exports</li> <li>• Chamber of Commerce &amp; Industry</li> </ul> |

The UAE's current energy mix is primarily composed of natural gas (71%) and crude oil (28%)

### Overview of energy industry

- The UAE's current energy mix is primarily composed of natural gas (71%) and crude oil (28%).
- Almost 100% of the UAE's power is generated by gas-fired power plants.
- As a result, the UAE is at an environmental as well as an economic disadvantage, especially in the face of high energy consumption growth rates.
- The UAE is working to diversify its energy mix to reduce its ecological footprint and to become a long-term player in the global energy industry and market.
- The UAE has abundant resources for solar energy, and adequate resources for wind energy and waste-to-energy facilities.
- The total installed capacity of renewable energy in the UAE is currently at 123 MW, more than any other country in the GCC.
- Since 2006, UAE investments in local renewable energy developments have amounted to over US\$1.2 billion, more than any other country in the GCC.

### Current energy mix

Although young in age, the UAE has already categorized itself as a center for business, economic, and industrial activity in the Middle East. The country's urbanization and infrastructure developments are unparalleled in the region. (World Bank, 2015).

The large increase in population and economic growth brought along with it an astonishing surge in energy consumption in the UAE, and recent statistics have shown the extent to which this consumption has become uneconomical, including:

- The UAE was the world's 7<sup>th</sup> largest consumer of energy per capita in 2013 (World Bank, 2014).
- Energy use in the UAE has grown by an average of 4% annually in recent years (IRENA, 2016).

It is no secret that much of the UAE's rapid socio-economic growth is due to the wealth it produces from its abundant reserves of hydrocarbons.

With an energy supply wholly made up of hydrocarbons, the increase in energy consumption yields both economic and environmental threats. Reducing energy consumption by a substantial amount is unrealistic in UAE considering the growth rate of its population, economy, and industry. Instead, the UAE's government and energy organizations are working towards the goal of diversifying the country's energy sources by tapping into its renewable resources.

## The regulatory and industry framework: key initiatives

### Institutional framework of the energy regulations

The UAE's energy regulatory authorities are set up to enforce technical, non-technical, and safety standards on entities involved in power generation, as well as to regulate the sector's commercial activities and to protect the rights of the consumers. More recently, these authorities have been expanding their roles and responsibilities to include policy planning and development concerned with upholding the UAE's strategy towards a diversified energy mix. Some authorities are even wholly dedicated to improving the nation's energy efficiency, such as the Dubai Supreme Council of Energy, which defines its responsibilities as:

- Operational planning of the energy sector.
- Developing a cohesive approach that involves employing efficient energy practices while still securing an energy supply.
- Ensuring that the energy sector moves toward a more environmentally friendly foundation.
- Rationalizing the use of energy.
- Planning and enabling the execution of the strategic initiatives and managing demand by supplying options that play into the diversification of energy sources.

### Renewable energy policies and regulations

In a first-of-its-kind occurrence in the GCC, the UAE's energy regulatory sector has introduced policies that outline the standards and requirements for connecting solar modules to the national grid, indicating the progress the country has made in terms of self-producing residential and commercial contributions to renewable energy.

### Recent reforms in the regulatory energy sector

- As UAE's energy sector works towards achieving a more sustainable and clean

energy mix, changes to the regulatory landscape of the sector are bound to happen. Perhaps the most prominent reform to occur so far is the growing alteration of fuel and electricity prices. With an ample supply of hydrocarbons, fuel and electricity in the UAE and the GCC as a whole have historically had some of the lowest prices in the world. While this still remains the case in the majority of the GCC, the UAE, which spends 5.6% of its GDP subsidizing oil, gas, and electricity, is straying further and further away from such subsidies (IMF, 2014). In the face of volatile oil prices, transport fuel prices have seen the most transformation out of all the energy sectors in the UAE. In August of 2015, the UAE government became the forefront of subsidy reform in the GCC as it completely deregulated transport fuel prices to represent the 'real price of energy'.

- Another major reform in the regulatory landscape of the energy sector in the UAE is the increasing participation of privately operated companies in power and water production. In fact, much of the current installed capacity of electricity and water in Abu Dhabi was developed by privately operated companies that are partially owned by foreign investors, while ADWEA maintains 60% ownership and is the only buyer of power and water in the emirate. The 200 MW first phase of the MBRAM solar park in Dubai was also contracted under an Independent Power Producer framework by DEWA, a first for the emirate's monopolized energy supply (IRENA GCC Market Analysis, 2016).

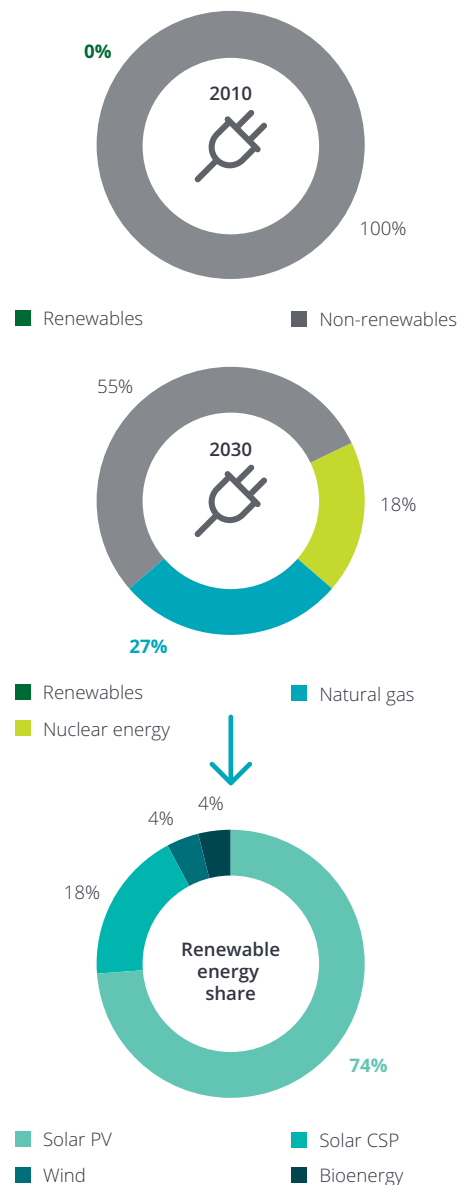
## Finance and investment

### The 2030 energy strategy

- Masdar and IRENA teamed up to envisage the "2030 REmap" for the UAE, a framework that sketches the roadmap to developing domestic renewable energy to meet the set power mix targets. The UAE's 2030 REmap states

that because of economic attractiveness and rising interest in clean energy, renewables will account for 27% of the country's generated power by 2030. The 2030 REmap highlights the role that financial funding and investments play in renewable energy growth.

### The UAE's electricity generation by source



Source: IRENA REmap Map (2016)



### UAE investments in renewable energy

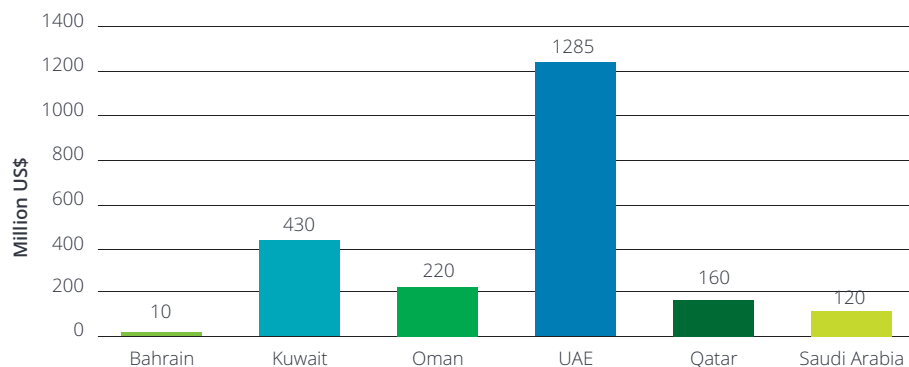
- Since 2006, the UAE accumulated more than US\$1.2 billion in renewable energy project investments, making it the GCC's biggest investor in that sector.
- The demand for investments in renewable energy in the UAE mainly come from public utilities and government-owned energy companies such as DEWA, Masdar, and TAQA. The biggest players in providing these investments are governmental investment funds, such as the Abu Dhabi Investments Authority, and national banks.
- The UAE has not shed away from investments in overseas renewable energy projects, either. Masdar, in particular, has invested in some of the biggest renewable energy projects in the world. Masdar now owns 20% stake in the London Array, the world's largest offshore wind farm, and 35% stake in the Dudgeon Offshore Wind farm, also located in England (IRENA, 2016).
- Additionally, ADFD and IRENA work together to fund and promote the implementation of renewable energy in developing countries. Since 2012, ADFD has allocated more than US\$300 million in loans to 15 overseas renewable energy projects recommended by IRENA (IRENA, 2016).

### Potential for Islamic Finance

The role of Islamic Finance in renewable energy, meanwhile, has not been as strong. Islamic Finance and renewable energy are both fairly new sectors in their own respect, so their minimal interplay does not come as a surprise. However, initiatives aiming to amplify the role of Sukuk in renewable energy developments have been snowballing, with the UAE being at the forefront of such activity in the GCC.

The first of such initiatives in the UAE occurred in 2012, when the Climate Bond Initiative (CBI) partnered with the Abu Dhabi-based Clean Energy Business Council (CEBC) and the Dubai-based Gulf Bond and Sukuk Association (GBSA) to

### GCC investments in renewable energy between 2006 and 2015



Source: IRENA Market Analysis (2016)

establish the Green Sukuk Working Group to pave the way for the growth of the green Sukuk (environment-focused Islamic bonds) market in the GCC (Bloomberg, 2015). In fact, according to Sean Kidney, CEO of Climate Bonds Initiative (CBI), DEWA is in talks about issuing a green Sukuk in clean energy in the next few years (Gulf News, 2015). Furthermore, in 2014, the Dubai Supreme Council of Energy (DSCE) and the World Bank signed an advisory services agreement to 'develop a green investment strategy incorporating Sukuk' (World Bank Treasury, 2014).

### Challenges and opportunities in renewable energy investments


With every challenge, there is an opportunity that can be tackled:

| Challenge  | Opportunity   |
|--|---|
| <ul style="list-style-type: none"> <li>• Challenges in competitive energy prices where renewable energy price reductions that were expected to occur in 2020, occurred in 2014 and policymakers and market's stakeholders are not aware of solar PV and onshore wind are cost-competitive with fossil fuels</li> </ul> | <ul style="list-style-type: none"> <li>• Increase awareness on national energy costs by the key players-UAE's Ministry of Energy and UAE Federal Green Growth Strategy</li> </ul>                         |
| <ul style="list-style-type: none"> <li>• Concerns in intermittent renewable energy where solar and wind cannot provide 24-hour power supply</li> </ul>   | <ul style="list-style-type: none"> <li>• Use solar energy during summer to meet peak demand and further develop other non-intermittent renewable energy like bioenergy and geothermal energy</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Subsidies on fossil fuels create an artificial cost advantage that becomes more attractive to investors</li> </ul>  | <ul style="list-style-type: none"> <li>• Phase out fossil fuel subsidies to save US\$1 billion dollars annually, reduce greenhouse gas emissions and encourage investors in funding renewables</li> </ul> |



# Country case 3: Bahrain

## Overview of the energy industry in Bahrain

|  |   |  |
|--|---|--|
| <b>Bahrain economic indicators</b><br><br> | <b>GDP</b>  | <ul style="list-style-type: none"> <li>• GDP – US\$32.22 billion (World Bank, 2015)</li> <li>• GDP growth – 2.9% (World Bank, 2015)</li> <li>• Oil GDP (share of total nominal GDP) 24.0% (IMF, 2014)</li> </ul> |
|  | <b>Population</b>                                     | <ul style="list-style-type: none"> <li>• Total population – 1.38 million (World bank, 2015)</li> </ul>   |
|  | <b>Major industries</b>                               | <ul style="list-style-type: none"> <li>• Petroleum processing and refining, aluminum smelting, Islamic and offshore banking, insurance, ship repairing and tourism (IMF)</li> </ul>                              |
|  | <b>Energy investment &amp; financing institutions</b> | <ul style="list-style-type: none"> <li>• First Energy Bank</li> <li>• APICORP</li> </ul>   |

The government of Bahrain has set an official target for 5% of electricity generation from renewable energy by 2020

### Overview of energy industry

- Oil and gas, traditionally the leading industry, generated over one-quarter of economic output until the oil price slump of 2014-15 drove its contribution down to about 13% (EIU, 2016).
- The Bahrain oil and gas sector dominates the Bahraini Energy sector and has been used as primary energy source which accounted for 19.7% of the Kingdom's GDP in 2015.
- Like all other GCC states, Bahrain largely relies on gas for power generation.
- The rationale for diversification in the Bahrain energy sources are mainly due to, growing population, rising demand for energy and resource constraints.
- On the other hand, volatile oil prices, pressure on the government budget, lack of awareness and scarcity of skilled workforce limit industry growth.
- Bahrain's per capita energy consumption, which is among the highest in the world and is expected to reach 4,803 MW in 2020.

- Future domestic energy demand is on the rise spurred by a recent economic development boom, making it a challenge to fulfill future needs in a way that reduces Bahrain's reliance on an ever diminishing commodity.
- The country is looking to renewable energy to increase the production of electricity and reduce pollution emitted from power plants operating with natural gas and diesel fuel and, to this end, recently announced plans to expand the country's power generation capacity by using a mix of solar and wind energy.
- The wind and solar energy installed capacity is 0.700 MWe and 5.200 MWe respectively in 2015. Within renewable energy, contribution of solar energy is highest followed by wind energy.
- The government of Bahrain has set an official target for 5% of electricity generation from renewable energy by 2020, with more focus on capacity addition of solar power.
- According to the World Renewable Energy Conference (WREC 17) held in Bahrain on December 2016, the Minister of Electricity and Water Affairs stated that new solar technology would be installed in Bahraini homes by the middle of next year, allowing people to generate their own power, which could result in savings of up to US\$270 million a year.

### The regulatory and industry framework: key initiatives

- The energy industry in Bahrain is overseen by two governmental authorities, the Electricity and Water Authority (EWA) and the National Oil and Gas Authority (NOGA).
- The Bahrain Electricity and Water Authority (EWA) is the state-owned

- electricity market owner that provides electricity and water services to all sectors in the Kingdom of Bahrain.
- The National Oil and Gas Authority (NOGA) is the government's body for regulation, policy and control of the oil and gas sector in Bahrain (Nogaholding).
  - The Energy Conservation Committee within the NOGA is responsible to promote incentive policies to benefit from renewable energy sources and increase the participation of these sources in various sectors.
  - The National Oil and Gas Authority (NOGA) has set national strategy for energy sustainability based on 14 energy goals, with the prime aim to increase the production, reserves and revenues, also to conserve and rationalize energy within the country in addition to find alternatives for oil and gas.
  - Both EWA and NOGA are involved in policymaking and planning in Bahrain energy sectors. Bahrain does not have a designated authority to promote renewable energy. The Electricity and Water Authority handles all issues relating to power and water, including renewable energy. (IRENA, Pan-Arab New renewable energy strategy 2030, Page 80).
  - Nogaholding is the Oil and Gas Holding Company and is the investment and business development arm of NOGA and it plays a key role in the implementation of NOGA strategies. The company established to handle the state energy sector's investment portfolio.

### Key initiatives

Bahrain Sustainable Energy Unit:

- One recent important initiative to support greater efficiency and sustainability in the economy has been the creation of the Sustainable Energy Unit, established in conjunction with the United Nations Development Program. The Sustainable Energy Unit is

- responsible for developing strategies, policies, and regulation for greater energy efficiency, and will support investment projects in renewable and energy conservation. (EDB Sep 2016)
- The Sustainable Energy Unit primarily aims to promote investment in renewable power production and the manufacturing of solar panels.
  - The unit is responsible for establishing strategies and policies and legislations, and stimulating initiatives and investment projects that promote energy efficiency and widening the share of the production of energy from renewable sources.
  - Currently, the unit is working to determine the tariff for the purchase of solar energy for homeowners who wish to benefit from it. These plans contain detailed strategies that will lead to savings in energy consumption and to diversify the energy sources. (BNA news, Sep 2016).
  - The unit primarily develops initiatives and projects for the development of renewable energy sources, and also strategies to achieve rationalization of electricity and water.

### Finance and investment

- Bahrain encourages investment and cooperation in renewable energy especially solar energy as part of its developmental plans and programs.
- The energy sector still represents the biggest contributor to the Kingdom's GDP.
- The country recently received a delegation from the Netherlands-based energy firm Solenco. The delegation showcased the company's various projects and activities in renewable energy projects, expressing its desire to establish a subsidiary in Bahrain (BNA, Sep 2016).

Bahrain encourages investment and cooperation in renewable energy especially solar energy as part of its developmental plans and programs.

### Potential for Islamic Finance

- Bahrain enjoys some of the highest solar radiation levels and the government is looking to increase the production of electricity and reduce pollution emitted from power plants operating with natural gas and diesel fuel. Given the huge capital cost requirements and long-term nature of energy projects, there is immense potential and opportunity for Islamic project finance to develop. With the emergence of the market for Sukuk, it seems that it is possible that renewable energy projects could be financed by Islamic financing, with the participation of both the Islamic banks and conventional banks. Therefore, Islamic project financing will become an essential part of financing these projects in recent years.
- During 2009, First Energy Bank successfully completed approximately 9% stake acquisition in the Al Dur Independent Water and Power Project (IWPP). This co-investment with GDF SUEZ META and Gulf Investment Corporation is part of FEB's strategy of building up a book of top quality energy related infrastructure assets.
- The Al Dur project, which is the largest of its kind in Bahrain, successfully commenced operation during the first quarter of 2012. The project is valued at a total of US\$2.2 billion. Its production capacity is 1,234MW of power and 48 million gallons of water per day.
- The tenor is 25 years. Funding was from debt and equity in a ratio of 75:25. The US\$1700 million financing for the project had multiple financing sources, including export credit agencies, commercial financing and Islamic financing. The Islamic financing of US\$300 million comprised Istisna-Ijarah Mawsufah Fi Al Dhimmah and Wakala- Ijarah Mawsufah Fi Al Dhimmah.

### Challenges and opportunities in renewable energy investments



- Bahrain will require a dedicated institution to lead the development of renewable energy projects (RCREEE, 2015).

## During 2009, First Energy Bank successfully completed approximately 9% stake acquisition in the Al Dur Independent Water and Power Project (IWPP)

- Power sector in Bahrain is liberalized. In 2004, the first independent power producer license was awarded to the Bahrain-based, Al Ezzel IPP. Today, 80% of the Kingdom's electricity is produced by IPPs.
- However, currently, no Independent Power Producers (IPP) producing Renewable energy exist in Bahrain. But the reliance on IPPs is set to increase in GCC power markets generally, due to increased deficits and low budgets faced by GCC governments.
- There is no technology-specific targets for renewable energy in Bahrain (IRENA, 2014)
- In term of financial incentives, there is no dedicated governmental body for renewable energy fund within the country.
- Requires a clear strategy on awareness about environmental issue.

# Country case 4: Malaysia

## Overview of the energy industry in Malaysia

|   |   |   |
|---|---|---|
| <b>Malaysia economic indicators</b><br><br><br><br> | <b>GDP</b>  | <ul style="list-style-type: none"> <li>• GDP – US\$296.22 billion (World Bank, 2015)</li> <li>• GDP growth – 4.95% (World Bank, 2015)</li> <li>• Petroleum GDP – 20% (PEMANDU)</li> </ul>   |
|   | <b>Population</b>                                     | <ul style="list-style-type: none"> <li>• Total population – 30.33 million (World Bank, 2015)</li> </ul>   |
|   | <b>Major industries</b>                               | <ul style="list-style-type: none"> <li>• Electrical and electronic products</li> <li>• Petroleum products</li> <li>• Liquefied natural gas (LNG)</li> <li>• Chemicals and chemical products</li> <li>• Palm oil</li> <li>• Crude petroleum</li> </ul> |
|   | <b>Energy investment &amp; financing institutions</b> | <ul style="list-style-type: none"> <li>• Agro bank (Palm oil)</li> <li>• Alliance Bank (Palm oil)</li> <li>• Green Technology Financing Scheme (All Financial Institutions)</li> </ul>  |

Malaysia is a leading manufacturer of solar panels and equipment; it was ranked third globally in 2015, behind China and Taiwan

### Overview of energy industry

The energy sector is a major contributor to the Malaysian economy, with mineral fuels, consisting of refined petroleum, LNG and crude oil, accounting for 12.2% of total export earnings in 2015. However, this figure was down from 20.8% in 2014, reflecting the decline in global commodity prices (EIU, 2016).

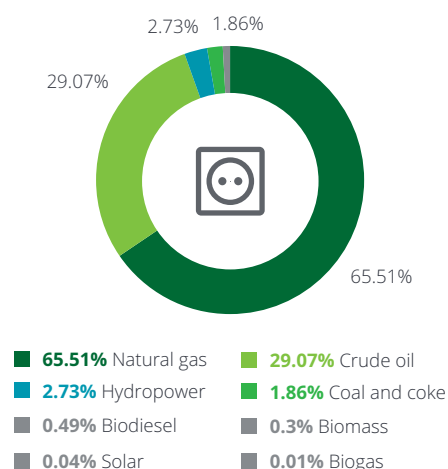
- In Malaysia the oil share of total nominal GDP represented 24% in 2014.
- Malaysia would appear to be an obvious location in which to pursue solar power as a renewable energy option.

Energy consumption has increased steadily as a result of healthy economic growth, to stand at an estimated 95,115 kilotons oil equivalent (ktoe) in 2016. Rising incomes and solid economic growth will continue to drive energy demand in 2017-21.

### Current energy mix

The primary production of energy by fuel type is as follows:

#### Primary energy production



Source: Malaysia Energy Statistics Handbook 2015

### Renewable energy in Malaysia

- **Wind:** There are no wind farms in Malaysia and there are no plans to harness this form of renewable energy on a large scale.
- **Solar:** Total energy output from PV installations is insignificant in terms of its current contribution to Malaysia's energy mix. The introduction of a feed-in tariff in 2011 is unlikely to result in a marked change in 2017-21, although some solar farms and rooftop panels will add to solar-electricity production. In May 2016 a local company, Edra Power, announced that it would build a 50-MW solar farm in Kedah. Once completed, it will be Malaysia's largest solar facility.
- Despite the low utilization of solar power domestically, Malaysia is a leading manufacturer of solar panels and equipment; it was ranked third globally in 2015, behind China and Taiwan.

## The regulatory and industry framework: key initiatives

Malaysia is establishing a renewable energy strategy. In 2006, the National Bio-fuel policy was formulated to encourage the use of bio-diesel for the transport sector.

In 2009, the National Green Technology Policy and Action Plan was formulated to increase the usage of renewable energy and emphasize its benefits. In 2011, the Renewable Energy Act (Act 725) was established to implement special tariff system known as Feed-in Tariffs (FIT) that catalyzes the generation of renewable energy.

During the same year, the Sustainable Energy Development Authority (SEDA) Act (Act 726) was established to provide SEDA Malaysia's functions such as a one-stop center for projects related to sustainable energy and to help facilitate the renewable energy industry.

In 2015, the Malaysia Green Technology Master plan was approved to enhance its commitment for carbon intensity reduction to 45% by 2030 at the COP 21 in Paris, France, subject to conditions regarding financing assistance and transfer of technology.

### Key initiatives

- **2009:** Establishment of the National Renewable Energy Policy and Action Plan
- **2011:** Establishment of the Renewable Energy Act and SEDA Malaysia
- **2015:** Malaysia enhanced its commitment for carbon intensity reduction to 45% by 2030 at the COP 21 in Paris, France, subject to conditions regarding financing assistance and transfer of technology

### Finance and investment

- In 2015, a total of 128 projects in renewable energy with total investments of RM1.37 billion were approved

incentives where RM1.35 billion were from domestic sources (98.3%) and RM23.3 million were from foreign sources (1.7%). The sources of energy generation include 84 solar power energy projects, 33 biogas projects, 4 mini hydro projects and 7 biomass projects.

- Investment opportunities will grow as the price of energy steadily increases with the Malaysian Government's policy moving away from providing energy subsidies (Malaysian Investment Development Authority, 2016).

Investment opportunities will grow as the price of energy steadily increases with the Malaysian Government's policy moving away from providing energy subsidies

### Potential for Islamic Finance



- The government of Malaysia encourages Sharia'-compliant financing.
- In 2016, a five-year tax deduction was given on issuance costs of SRI Sukuk approved by, or authorized by, the Securities Commission of Malaysia. Tanaman Semula Kelapa Sawit-i (SAWIT-i) – Agrobank is a financing facility for smallholders who are involved in small-scale oil palm plantations. The implementation of the product is based on Tawarruq transactions.
- The Green Technology Financing Scheme offers a 60% guarantee of the financing amount and a rebate of 2% on the interest charged by those financial institutions which provide easier access to financing from private and commercial financial institutions. The scheme will be available until 31st December 2017 or

upon reaching a total financing approval amount RM3.5 billion whichever is earlier.

- MySuria initiative will help generate secondary income for 1,620 homes, with FIT capacity of 6.48 MW. The total amount of funding for the nation is at RM81 million with 50% coming from public funding and another 50% from the private sector. The house owners stand to earn an average amount of up to RM600 per month through this initiative, meaning that they will have additional sustainable income from MySuria for the next 21 years.

# Country case 5: Pakistan

## Overview of the energy industry in Pakistan

|   |   |   |
|---|---|---|
| <b>Pakistan economic indicators</b>   | <b>GDP</b>  | <ul style="list-style-type: none"> <li>• GDP – US\$269.97 billion (World Bank, 2015)</li> <li>• GDP growth – 5.54% annual (World Bank, 2015)</li> <li>• Oil revenue of 0.72% of GDP (Global Economy.com website, 2014)</li> </ul>   |
|   | <b>Population</b>                                     | <ul style="list-style-type: none"> <li>• Total population – 188.92 million (World Bank, 2015)</li> </ul>  |
|   | <b>Major industries</b>                               | <ul style="list-style-type: none"> <li>• Major industry contributors to GDP are services, construction, agriculture and mining. Agricultural sector accounted for 19.8%, services sector 55.8% and industry 24.5% of the GDP (2015)</li> <li>• The textiles and cement industries are the biggest industrial consumers of electrical energy (IFC report, 2014)</li> </ul> |
|   | <b>Energy investment &amp; financing institutions</b> | <ul style="list-style-type: none"> <li>• 6 commercial banks and 1 Islamic bank involved in energy projects' financing. Major investments in coal-based projects. Several Hydel projects are in progress under WAPDA</li> </ul>  |

Private sector companies are encouraged to provide services to the customers to set up solar energy plants

### Overview of energy industry

Pakistan's current energy mix consists of mainly thermal (dominated by coal, petroleum and LPG based generation) and Hydro power production, with very limited nuclear, wind and solar power generation.

### The regulatory and industry framework: key initiatives

- National Electric Power Regulatory Authority (NEPRA) develops and pursues a Regulatory Framework that can ensure the provision of safe, reliable, efficient and affordable electric power to the Pakistani consumers.
- NEPRA approves investment and power acquisition programs of the utility companies. It also determines tariffs for the generation, transmission and distribution of electric power.
- The Private Power Infrastructure Board, established in 1994, promotes the participation of private sectors in the power sector.

- The Pakistan Government's Ministry of Water & Power, with its Water and Power Development Authority (WAPDA) has the main government body looking after power since independence in 1947. However, today WAPDA only deals with hydroelectric power projects.
- The Alternative Energy Development Board encourages the development of renewable energy in Pakistan. Its aim is to introduce Alternative & Renewable Energies (AREs) at an accelerated rate.
- Some of its measures include amendment of a Grid Code for Solar power projects, developing standard project documents, working with NEPRA to offer an Upfront Tariff for renewable energy projects in line with other countries, Duty & Tax exemptions on renewable energy equipment etc. and local conferences and exhibitions conducted to address issues of consumer shyness and acceptability of renewable energy technologies.
- The Energy Department of the Government of Sindh (GOSED) generates, supply and distributes renewable, hydro and thermal energy.
- The Central Power Purchasing Agency facilitates the sustainable Power market and aim at procurement of each unit of electricity from different sources to the end consumers.

### Finance and investment

AEDB facilitates some private sector incentives from the Pakistan government for renewable energy projects in solar and wind projects. Private sector companies are encouraged to provide services to the customers to set up solar energy plants.

Industrial and commercial sector enterprises can use solar energy to meet energy needs.

The domestic sector is also encouraged by AEDB to use solar energy applications to meet their energy needs. Solar water heating systems can be installed to:

- Meet water heating requirements of the households
- Supplement existing heating systems by pre-heating water

Consumers can also install solar PV systems on their roof to meet a significant share of their electricity needs.

The Renewable and Alternative Energy Association of Pakistan organized an International Exhibition Conference on August 30, 2015 in Islamabad to showcase renewable energy (mainly solar) consumer products and ongoing projects, including several industry and domestic solar solutions, wind and energy efficiency and to raise awareness.

### Potential for Islamic Finance

There were no fixed income Sukuk issuances relating to renewable energy projects in Pakistan. Meezan Bank Pakistan (MBP) is the only Islamic bank in Pakistan with 6 other conventional banks (HBL, UBL, Bank AlHabib, Bank Alfalah, and NBL) that finance energy projects.

- At present, there is no Islamic structure from State Bank of Pakistan (SBP) for giving Islamic financing to renewable energy projects, and this gives a competitive edge to the conventional banks.
- Meezan bank has used Diminishing Musharakah and Ijarah-based financing structures for renewable energy projects.
- Meezan Bank serves as Sharia' adviser for the Tapal Wind Energy Project, 40MW, PKR 6,400 million in 2015.
- Pakistan's Federal Board of Revenue allows the exemption of certain taxes and duties for foreign companies (or governments) in sale of Sukuk, to make them a desirable transaction for foreign investors.

- There have been no fixed income Sukuk issuances in Pakistan in the energy sector. The following are issues related to the financing structure of such Sukuk:
  - Difficulties in mobilizing financing given the high up-front costs and perceived commercial risks.
  - Most corporates do not perceive renewable energy investment as a profitable venture.
  - Bio fuel projects are very limited, and typically are on Balance Sheet-financing, not Project Finance.

The domestic sector is also encouraged by AEDB to use solar energy applications to meet their energy needs

### Case scenario: Pakistan

- MBP has 6 mandated Power Transactions under process: (1) Project Finance Facilities (PFF) of PKR 144 billion for WAPDA DASU-1 (Hydro) project (2) PFF of PKR 18.5 billion for Master Green Energy (wind) project (3) PFF to private renewable energy power companies (4) PFF to PKR 10,560 million to Artistic Energy (wind) Pvt. Ltd. (5) PFF to PKR 10.5 billion each to UniEnergy Pvt. Limited (6) Noor Energy (hydro) Pvt. Ltd and Zulaikha Energy (wind) Pvt. Ltd.
- MBP's executed transactions on renewable energy Project include (1) Tapal Wind Energy (PKR 6,775 million, 2015) (2) Foundation Wind Energy II (PKR 6 billion, 2011, 2012 & 2013) (3) WAPDA's Neelum Jhelum (hydro) project (PKR 100 billion, 2016) (4) Fatima Energy Ltd. (PKR 20.65 billion, 2014) (5) Master Wind Energy Ltd. (PKR 5,456 million, 2015 and PKR 5,456 million, 2014) (6) Engro Power Gen. Thar Ltd. (PKR 22 billion, 2015).

### Islamic Finance structures suitable for investments in renewable energy in Pakistan

- Diminishing Musharakah financing
- Ijarah-based financing
- Sukuk structures for renewable energy financing need to be developed by SBP.
- In 2015, Meezan Bank provided a rated listed Retail Sukuk for long term financing of PKR22 billion (US\$210 million) to Karachi Electric Ltd.
- MBP also provided Islamic financing facility via a series of short term Sukuk to Lalpir Power Ltd. (PKR5.5 billion, 2013 & 2014), KAPCO Ltd. (PKR6 billion, 2011, 2012 & 2013) and Hub Power Co. Ltd. (PKR13,729 million, 2011, 2012 & 2013).

### Target projects: (Solar/Wind/Biofuel/Hydro power plants)

- Solar projects in Punjab and Sind
- Wind projects in coastal Sind
- Many Hydel ongoing projects with WAPDA



### Financial and business issues

- Need an SBP approved Sukuk structure of energy financing
- Renewable energy investors demand high ROI to compensate for high risk
- Renewable energy solar and wind projects have huge Capex costs (capital intensive), and much of the parts and infrastructure need to be imported.



# Country case 6: Kazakhstan

## Overview of the energy industry in Kazakhstan

|   |   |  |
|---|---|--|
| <b>Kazakhstan economic indicators</b><br><br><br><br> | <b>GDP</b>  | <ul style="list-style-type: none"> <li>• GDP – US\$184.38 billion (World Bank, 2015)</li> <li>• GDP growth -1.2% (World Bank, 2015)</li> </ul>   |
|   | <b>Population</b>                                     | <ul style="list-style-type: none"> <li>• Total population – 17.54 million (2015)</li> </ul>  |
|   | <b>Major industries</b>                               | <ul style="list-style-type: none"> <li>• Petroleum processing and refining, aluminum smelting</li> <li>• Finance and offshore banking, insurance, ship repairing and tourism</li> </ul>  |
|   | <b>Energy investment &amp; financing institutions</b> | <ul style="list-style-type: none"> <li>• European Bank for Reconstruction and Development (EBRD)</li> <li>• Kazakhstan Renewable Energy Financing Facility (KREFF)</li> <li>• Kazakhstan Electricity Grid Operating Company (KEGOC) Finance center for support of renewable energy sources</li> <li>• Samruk Green Energy &amp; Samruk Energy</li> <li>• Finance Center for Support of Renewable Energy Sources</li> </ul> |

In the next two years, Kazakhstan could become a major renewable energy market in Central Asia and the Commonwealth of Independent States as a whole

### Overview of energy industry

Kazakhstan is rich in reserves of fossil fuel. It owns about 0.5% of the world's mineral energy resources; equivalent to 90 billion tons of oil. The mineral energy resources are comprised of coal (70%), oil (22%) and gas (8%). The fuel energy sector contributes to about 17% of GDP and renewable energy, mainly hydropower, contributes to about 1%.

### The regulatory and industry framework: key initiatives

- The Ministry of Energy of the Republic of Kazakhstan
- Existing energy regulations and policies, new reforms and their applicability to Islamic Finance
- The law of the Republic of Kazakhstan dated July 4, 2009 "On the Support of Renewable Energy"
- The Environmental Code of the Republic of Kazakhstan dated January 9, 2007

- A number of Orders and Rules: Order 28.11.2014 N161 "Rules to support individual consumers to purchase renewable energy sources". The support is only available if the equipment are purchased from AstanaSolar or NurmatNoble
- The Ministry of Energy develops a list of organizations which use renewable energy sources

### Finance and investment

If the government ensures the stability of its rules, in the next two years, Kazakhstan could become a major renewable energy market in Central Asia and the Commonwealth of Independent States as a whole. Investors in this market consider the value and stability of renewable energy's feed-in tariffs during their decision-making. Despite the high level of risks, international players are willing to invest in areas where the electricity costs are clear. Today, the Tenge, 'green' tariff in Kazakhstan, decreased by an average of one-third because of the devaluation of the national currency. It has resulted in a decrease in the number of investors in the solar and wind energy projects. The Ministry of Energy initiated the indexing of 'green' tariffs to the approved August 2014 level. The government intends to simplify the implementation process of renewable energy projects to create a more attractive investment opportunity. The ministry is also developing a comprehensive plan for more effective renewable energy projects for the period up to 2030. The projects will, mainly, be in solar, wind energy, small hydro and biomass energy segments.

At the beginning of every project and during its implementation, the developer is obligated to prepare a list of specialized instruments, which require coordination and approval. As well, he is entitled to



appoint an experienced legal partner for legal support. Considering the large viable solar energy projects in the region, an important aspect of improving the energy efficiency is the use of thermal collectors.

### Potential for Islamic Finance

Islamic Finance is gradually developing in Kazakhstan. The government approved a Road Map to coordinate activities of public entities involved in the development of Islamic Finance by 2020. In October 2016, President Nazarbayev called on the Islamic Development Bank to provide capacity building and economic diversity in Islamic Finance in the country's economy. The government also seeks investment in renewable energy to unlock the country's solar and wind potential. Kazakhstan could adopt a new investment model to develop an environmentally sustainable sector based on Sharia-compliant called green Sukuk. Green Sukuk are Islamic bonds for financing climate action projects. With this model, the investor's capital has minimal risk.

In 2013, the Islamic Corporation for Development and National Agency for Technological Development (NATD) signed a Memorandum of Understanding to become shareholders of Central Asia Renewable Energy Fund LP. The fund will be invested in renewable and alternative energy source projects for the period of eight to ten years. More than two-thirds of the fund is from private local and foreign investments and at least one-third is from NATD.

### Challenges and opportunities in renewable energy investments

- The legislation has been updated regularly in the past three to four years; however, the rules in relation to investment are still unclear.
- The government and the Ministry of Energy will move the auctioning scheme

(OAE, Gulf Countries, etc.). It will require new legislative framework.

- The Ministry of Energy is developing a national renewable energy facilities development plan.
- The financial stability of LLP "Accounting-Financial Center of supporting renewable energy" is a major issue.
- There is a strong resistance from mining & metallurgical industries, oil & gas, and other sectors.
- Major projects like Burnoe Solar 50 MW, Erementau Wind Park 45 MW and Astana Solar were pre-bankrupt due to 2.2-2.5% higher CAPEX during construction.

## The fund will be invested in renewable and alternative energy source projects for the period of eight to ten years



There is great potential of renewable energy in Kazakhstan, especially in solar and wind projects. The current goal is to reach 3% of total electricity output by the year 2020, 10% by 2030 and 40% by 2050. These goals are feasible if:

- There is joint work between the government and investors.
- The government needs to implement the green economy acts, including envisaged indexation of existing tariffs by the level of devaluation as soon as possible without further procrastination.

The association of Renewable Energy of Kazakhstan represents the industry players' interest and key stakeholders.

# Country case 7: UK

## Overview of the energy industry in the UK

|  |   |  |
|--|---|--|
| <b>UK economic indicators</b>   | <b>GDP</b>  | <ul style="list-style-type: none"> <li>• GDP – US\$2,859.4 billion (World Bank, 2015)</li> <li>• GDP growth – 2.2% (World Bank, 2015)</li> </ul>   |
|  | <b>Population</b>                                     | <ul style="list-style-type: none"> <li>• Total population – 65 million (World Bank, 2015)</li> </ul>   |
|  | <b>Major industries</b>                               | <ul style="list-style-type: none"> <li>• Financial and business services</li> <li>• Transport and distribution</li> <li>• Construction</li> <li>• Tourism</li> </ul>   |
|  | <b>Energy investment &amp; financing institutions</b> | <ul style="list-style-type: none"> <li>• In 2012 the UK Government started the Green Investment Bank initiative with the initial capitalization of £3.8 billion. The main target of the Green Investment Bank is to support the UK's transition to green economy in specific sectors, with primary focus on offshore wind, energy efficiency, waste and bioenergy.</li> <li>• The statistics for 2014 stated that UK's share in renewable energy investment in the EU was 30% (Delivering UK Energy Investment: Low Carbon Energy, 2015).</li> <li>• As estimated by the UK government, by 2020 £5 billion of investment is expected from private sector (Delivering UK Energy Investment: Networks, 2015).</li> <li>• Blue Water Energy provides business-building capital and strategic support to growing and established enterprises in the international energy sector; investing in companies such as Siccar Point Energy, Drilling Systems Ltd and px Group ("Investments   Blue Water Energy", 2016).</li> <li>• UK members of IIGCC are also operating as Institutional Investors Climate Change Groups.</li> </ul> |

Blue Water Energy provides business-building capital and strategic support to growing and established enterprises in the international energy sector

## Overview of energy industry

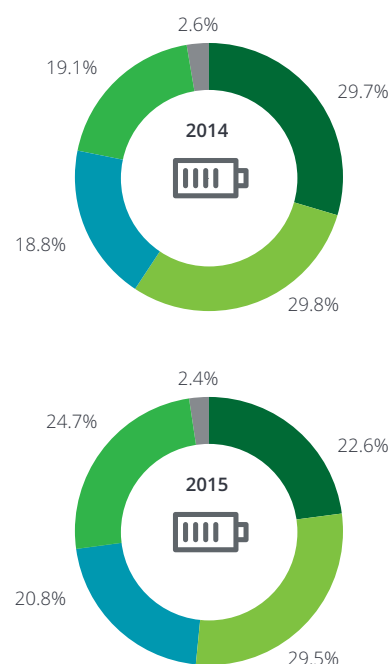
### Current energy mix

The UK retains significant supplies of coal, oil and natural gas. However, production is not sufficient to meet domestic demand. As the country relies increasingly on imports, its exposure to the risk of volatility in global energy prices will increase (EIU, 2016).

Electricity generation from solar panels is minor, although by 2021 solar capacity will reach 10% of total capacity—up from about 7% in 2015.

Wind generation has risen quickly in recent years and is by far the UK's largest and most important source of renewable energy. Capacity stood at 15.5 gigawatts energy (gwe) in 2015, or about 16% of total electricity-generating capacity.

### Energy share to the economy



■ Coal
 ■ Gas
 ■ Renewables
 ■ Nuclear
 ■ Oil and other

- The contribution to the UK economy by the energy industries peaked in 1982 at 10.4%. Despite its significant fall in 1986, oil and gas extraction has been the major energy contributor to the UK economy (with its value dependent both on production and the price of oil and gas) (UK Energy In Brief 2016, 2016).
- The energy industries' contribution to the UK economy in 2015 was 2.5% of total GDP. In 2014, UK was registered at 13.0% of total investment and at 37.1% of industrial investment. However in 2015, investment in the energy industry fell 11% on the previous year to £21.4 billion (at current prices), of which 45% was in oil and gas extraction, 45% in electricity, 8% in gas, with the remaining in coal extraction, and coke & refined petroleum products industries (UK Energy In Brief 2016, 2016).

#### **The regulatory and industry framework: Key initiatives**

The regulations of gas and electricity in the UK are authorized by the Office of Gas and Electricity Markets.

- Brexit will have an impact on UK's energy sector since the EU policies and regulations on energy and climate will no longer be applicable. Despite the political changes, the government remains committed to the 2008 Climate Change Act and meeting the 2050 carbon reduction target (Froggatt, Tomlinson, & Raines, 2016).
- An important energy framework to take into consideration includes, but is not limited to Renewable Transport Fuels Obligation, Renewables Obligation, Climate Change Levy, Carbon Reduction Commitment Energy Efficiency Scheme

and Carbon Emission Reduction Target (Legislation in the UK energy industry, 2010).

- A new initiative started by the UK government is the Electricity Market Reform (EMR), which will attract £110 billion of investment needed to replace and upgrade the UK's electricity infrastructure. ("2010 to 2015

investments in renewables sector ("European renewable energy incentive guide - United Kingdom", 2016).

#### **Finance and investment**

A record £15.2 billion was invested in UK clean energy in 2015, according to figures released by Bloomberg New Energy Finance.

## A new initiative started by the UK government is the Electricity Market Reform (EMR), which will attract £110 billion of investment needed

government policy: UK energy security - GOV.UK", 2015)

- The required investment can be retrieved from cooperation with Islamic Finance institutions as UK has been ranked number one Western center in terms of its overall Islamic Finance offering. (The UK: Leading Western Center for Islamic Finance, 2015)

#### **Key initiatives**

The two main initiatives that support UK's renewables deployment are the following:

- Renewable Energy Directive- (Directive 2009/28/EC) 15% of UK's final energy consumption will be from renewable sources by 2020. The target will be achieved through transferring 30% of electricity and 12% of heating from renewables.
- The UK will close a quarter of current generating plants and build a new generation capacity with prioritized

#### **Investment potential of renewable energy in the UK**

Investment in Scotland provides access to potential capital contracts worth tens of billions and huge export revenue. By the statistics for 2014, 49% of Scotland's electricity demand was met by renewable sources ("Renewables", 2016).

#### **Potential for Islamic Finance**

- The UK government has introduced legislative measures in order to establish a level playing field for Islamic and conventional instruments and to enable UK companies to issue a range of Islamic financial products.
- Even though there is no reported evidence of Islamic Finance contributing significantly in emerging green energy investment, it – mainly through Sukuk – has had an increasing role in investing in broader energy projects.

### **Challenges and opportunities in renewable energy investments**

- There are 6 categories of financing challenges for energy transmission infrastructure projects: permitting issues (delays caused by permitting processes), financing needs (challenges in attracting investors), regulatory issues (insufficient stability of regimes), financing conditions (high costs of capital and difficulties in acquiring it), operator capabilities (lack of competence in raising funds) and specific types of projects (challenges in getting supplies and connections for some projects) (Berger, 2011).
- In 2014, the record investments in solar and wind accounted for 92% of overall investment in renewable power and fuels. Investment in Europe advanced less than 1% to US\$57.5 billion. There were seven billion-dollar-plus financing of offshore wind projects, boosting the investment totals for the Netherlands,

the UK and Germany ("Global Trends in Renewable Energy Investment 2015," 2015). Hence, the renewable market investment does contain its share of risk; however, it is very promising for potential investors.



### **Islamic Finance structures suitable for investments in renewable energy in UK**

- Current trends suggest that the role of Islamic Finance in funding infrastructure development will continue to grow in the years ahead and the Sukuk is the most rapidly growing financial sector (The UK: Leading Western Centre for Islamic Finance, 2015).
- Investors and practitioners largely see Sukuk as a socially responsible investment asset class as it offers a different risk-and-return profile for investors and issuers alike.

Current trends suggest that the role of Islamic Finance in funding infrastructure development will continue to grow

# Country case 8: Turkey

## Overview of the energy industry in Turkey

|   |   |  |
|---|---|--|
| <b>Turkey economic indicators</b><br><br><br><br> | <b>GDP</b>  | <ul style="list-style-type: none"> <li>• GDP – US\$717.88 billion (World Bank, 2015)</li> <li>• GDP growth – 4.0% (World Bank, 2015)</li> </ul>  |
|   | <b>Population</b>                                     | <ul style="list-style-type: none"> <li>• Total population – 78.67 million (World Bank, 2015)</li> </ul>  |
|   | <b>Major industries</b>                               | <ul style="list-style-type: none"> <li>• Energy and natural resources</li> <li>• Real estate development</li> <li>• Automotive</li> <li>• Telecommunication</li> <li>• Retail</li> <li>• Healthcare and education</li> <li>• Security and defence technologies</li> <li>• Financial services</li> </ul>  |
|   | <b>Energy investment &amp; financing institutions</b> | <ul style="list-style-type: none"> <li>• In 2015, the amount of M&amp;A activities is estimated as US\$16.4 billion through 245 transactions, US\$3.1 billion of this investment is made by financial investors that correspond to 19% of total M&amp;A activity amount.</li> <li>• Of these 245 transactions, 37 have taken place in Energy sector with an amount totalling US\$4.2 billion (Deloitte, Annual Turkish M&amp;A Review, 2015).</li> </ul> |

is around 113.5 billion TRY. The gross sales amount of the sector is recorded as 81.3 billion TRY.

- On a general level, the sectorial financial statements provided by the CBRT, included 9341 firms with an asset size of around 1.37 trillion TRY as of 2015. The gross sales amount was 1.19 trillion TRY in 2015.
- Using the figures above, the share of electricity, gas, steam and conditioning production and distribution sectors in the overall economy can be estimated at around 8.2% with respect to the total asset size. In terms of gross sales, the proportion is around 6.8%.

### The share of renewable energy

- The overall share of renewable energy resources in the total energy resources capacity is around 25%. This ratio can provide a proxy to estimate the share of the renewable energy in the overall economy using the numbers and ratios introduced in the paragraph above.

### Energy demand and supply

- In 2015, the total annual primary energy demand was around 125 Mtoe, which corresponds to a CAGR around 2% since 2007.
- The annual primary energy demand is expected to increase to 218 Mtoe by 2023 corresponding to around 7% CAGR.
- At present, 25% of total energy demand is met through domestic resources while the remaining part is met through various imports. The distribution of the resources to meet the primary energy demand is as follows:

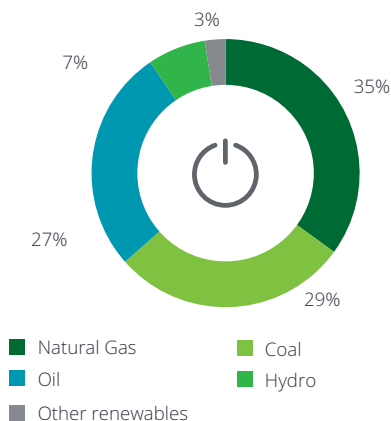
The annual primary energy demand is expected to increase to 218 Mtoe by 2023 corresponding to around 7% CAGR

### Overview of energy industry

#### Energy sector contribution to the GDP

- It is not easy to figure out the share of the energy sector within the GDP of Turkey given the logic of expenditure and income methods to calculate GDP. There is, however, a way to have an insight using the sectorial financial statements regularly published by the Central Bank of the Republic of Turkey (CBRT). As of the end of 2015, there are 307 firms operating in electricity, gas, steam and conditioning production and distribution sectors. The total asset size of the sector

### The shares of resources to meet energy demand in Turkey (2015)



Source: Ministry of energy

- The annual electricity demand in Turkey increased remarkably from around 130 TWh levels in 2000s to a level more than 260 TWh as of 2015 corresponding to a CAGR around 4.7%.
- The electricity demand rose 2% in 2015 in comparison to 2014.
- The Ministry of Energy and Natural Resources expect the final electricity demand to reach 416 TWh in 2023.
- The energy market is regulated by means of the laws governing various sectors of the industry: The Council of Ministers, High planning Council, and/or the Ministry of Energy and Natural Resources.

### The regulatory and industry framework: key initiatives

- The regulatory infrastructure for the energy market in Turkey consists of a range of legal arrangements and institutions. Laws exist on electricity, natural gas, petroleum, LPG, renewable energy, nuclear power plants and geothermal energy markets. These laws are applied through the support of by-laws and communiques that are guided

by the decisions of the Council of Ministers and High Planning Council and Ministry of Energy. In addition, the Energy Market Regulatory Authority (EMRA) has the mandate to make secondary regulations for the supervision of energy markets. The regulations of EMRA are accessible through its website.

- Some of the related institutions for Energy markets are listed as follows:
  - Ministry of Energy: It determines the general policies on energy issues together with the Council of Ministers.

- EMRA (EPDK): It has the mandate of regulating and supervising energy markets; issuing licenses for institutions within the sector; drafting, amending, enforcing and auditing performance standards; distributing and giving customer service codes; pricing principles and ensuring the development and implementation of infrastructures.

### Key developments on renewable energy regulations and policies in Turkey

|             |   |
|-------------|---|
| <b>2005</b> | Law No: 5346 on the Usage of Renewable energy resources to produce electricity  |
| <b>2007</b> | Law No: 5686 on Geothermal Resources and Natural Mineral Waters   |
| <b>2009</b> | Strategy document on electricity energy market and supply security, The goal of increasing the proportion of renewable resource in electricity production to 30% by 2023  |
| <b>2010</b> | Amendment in the Law on Renewable Energy  |
| <b>2011</b> | Mechanism to Support Renewable Energy<br>Bylaw on unlicensed Electricity production   |
| <b>2012</b> | Bylaw on the contest related to the license applications for establishing production facilities based on solar energy<br>Communique on Wind and Solar Measurement in Electricity Market   |
| <b>2013</b> | Bylaw on technical evaluation of the license applications for establishing production facilities based on solar energy<br>Bylaw on the Documentation and Support of the Renewable energy Resources<br>Law No: 6446 Electricity Market Law<br>Bylaw on Licensing in Electricity Market<br>Bylaw on the Unlicensed Electricity Production in electricity Market |
| <b>2014</b> | Communique on Wind and Solar Measurement Practices for Pre-license Applications in Wind and Solar Energy Markets  |
| <b>2015</b> | Bylaw on technical evaluation of the license applications for establishing production facilities based on wind energy   |

**Finance and investment****Turkey investments in renewable energy**

- One of the most important aspects with respect to energy investments is the investment incentive program provided by Turkish government.
- Accordingly, Turkey has been divided into six regions based on the priority of the investment.
- According to the investment incentive program, all investment types, except ones that are excluded from investment incentives program, will be supported by the General Investment Incentives Program.
- Petroleum Refinery investments are defined as large scale investments and will benefit from the incentive programs if the minimum amount of investment is one billion TYR. According to clause II of the Incentive Law in addendum 4, natural gas or oil filling, and storage facilities and pipeline transportation investments will be supported. The Incentive will only cover the fixed facility expenses.

**Potential for Islamic Finance**

- A huge amount of initial investment required for the realization of the goals of Turkey in terms of renewable energy.
- A recent increase in the usage of Sukuk as a capital market tool to finance infrastructure projects.
- Incentives provided by the Turkish government for the Sukuk issuances.
- A recent strong demand for Sukuk in global financial markets that cause most Sukuk issuances with strong underlying assets to be oversubscribed. There is a lack of available projects under pipeline in case of Sukuk issuances.

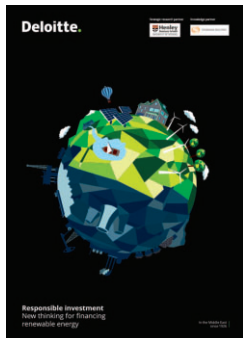
One of the most important aspects with respect to energy investment is the investment incentive program provided by the Government

# Appendix B: Abbreviations

|  |  |
|--|--|
| <b>ADB</b> Asian Development Bank  | <b>K.A.CARE</b> King Abdullah City for Atomic and Renewable Energy |
| <b>ADWEA</b> Abu Dhabi Water and Electricity Authority                   | <b>LLP</b> Limited Liability Partnership                           |
| <b>AEDB</b> Alternative Energy Development Board                         | <b>LNG</b> Liquefied Natural Gas                                   |
| <b>AIIB</b> Asian Infrastructure Investment Bank                         | <b>LPG</b> Liquefied Petroleum Gas                                 |
| <b>AREs</b> Alternative & Renewable Energies                             | <b>MBP</b> Meezan Bank Pakistan                                    |
| <b>BREXIT</b> British Exit   | <b>MDBs</b> Multilateral Development Banks                         |
| <b>CAGR</b> Compound Annual Growth Rate                                  | <b>MEIMR</b> Ministry of Energy, Industry and Mineral Resources    |
| <b>CBI</b> Climate Bond Initiative                                       | <b>MENA</b> Middle East and North Africa                           |
| <b>CEBC</b> Clean Energy Business Council                                | <b>Mtoe</b> million tons of oil equivalent                         |
| <b>CBRT</b> Central Bank of the Republic of Turkey                       | <b>MW</b> Megawatt   |
| <b>CO<sub>2</sub></b> Carbon Dioxide                                     | <b>NATD</b> National Agency for Technological Development          |
| <b>CPPA</b> Central power purchasing Authority                           | <b>NEPRA</b> National Electric Power Regulatory Authority          |
| <b>DEWA</b> Dubai Electricity and Water Authority                        | <b>NREAP</b> National Renewable Energy Action Plans                |
| <b>DSCE</b> Dubai Supreme Council of Energy                              | <b>NOGA</b> National Oil and Gas Authority                         |
| <b>ECA</b> Enhanced Capital Allowances                                   | <b>OECD</b> Organization for Economic Cooperation and Development  |
| <b>ECRA</b> Electricity and Cogeneration Authority                       | <b>PFF</b> Project Finance Facilities                              |
| <b>EMR</b> Electricity Market Reform                                     | <b>PPA</b> Power Purchase Agreement                                |
| <b>EMRA/EPDK</b> Energy Market Regulatory Authority                      | <b>PPP</b> Public-Private Partnership                              |
| <b>EU</b> European Union   | <b>PV</b> Photovoltaic   |
| <b>EWA</b> Electricity and Water Authority                               | <b>R&amp;D</b> Research and Development                            |
| <b>FEB</b> First Energy Bank   | <b>RDA</b> Research and Development Allowances                     |
| <b>FIT</b> Feed-in Tariffs   | <b>SBP</b> State Bank of Pakistan                                  |
| <b>GWE</b> Gigawatts energy  | <b>SDGs</b> Sustainable Development Goals                          |
| <b>GBSA</b> Gulf Bond and Sukuk Association                              | <b>SEC</b> Saudi Electricity Company                               |
| <b>GCC</b> Gulf Cooperation Council                                      | <b>SEDA</b> Sustainable Energy Development Authority               |
| <b>GDP</b> Gross Domestic Product  | <b>SRI</b> Socially Responsible Investment                         |
| <b>GOSD</b> Energy Department of the Government of Sindh                 | <b>TL</b> Turkish Lira   |
| <b>ICD</b> Islamic Corporation for the Development of the Private Sector | <b>TWh</b> Terawatt hours  |
| <b>IDB</b> Islamic Development Bank                                      | <b>UAE</b> United Arab Emirates                                    |
| <b>IEA</b> International Energy Agency                                   | <b>US\$</b> United States Dollar                                   |
| <b>IFC</b> International Finance Corporation                             | <b>WAPDA</b> Water and Power Development Authority                 |
| <b>IPP</b> Independent Power Projects                                    | <b>WREC</b> World Renewable Energy Conference                      |
| <b>IRENA</b> International Renewable Energy Agency                       |  |
| <b>JICA</b> Japan International Cooperation Agency                       |  |

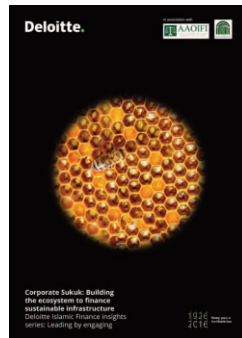


# Appendix C: Thought leadership reports



## Responsible Investment: New thinking for financing renewable energy

The Renewable Energy report presents an analysis of the main drivers and factors for building the business case of a new thinking to finance sustainable development in the energy and renewable energy sectors.



## Corporate Sukuk: Building the ecosystem to finance sustainable infrastructure

This whitepaper attempt to address some of the key regulatory and practice issues that Corporate Sukuk the new asset class may encounter. This whitepaper also seeks to discuss some of the key practice developments toward building an efficient corporate Sukuk market that is able to drive growth and help finance infrastructure in several markets around the world, and take its share of these huge infrastructure financing requirements.



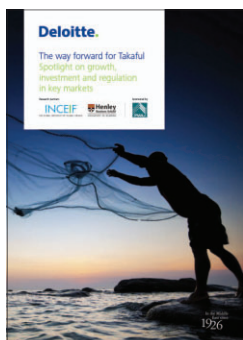
## The catalysts for change: Strategic priorities in governance and regulation in Islamic Finance practice

The purpose of this whitepaper is to shed light on the practice areas debated in our executive program and other related industry thought leadership programs. In particular, the emphasis is on the pain points of the industry. What progress has been made in developing good practices in areas such as governance, regulatory compliance, risk, sustainable business models, financial reporting, transparency and leadership?



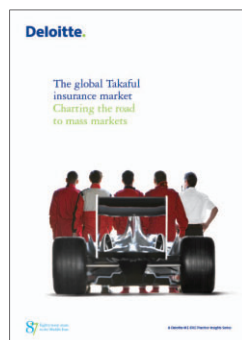
## Corporate Sukuk in Europe: Alternative financing for investment projects

This report provides a portrait of the development in Islamic capital market instruments and highlights potential growth markets for the Sukuk in European markets and sectors that could benefit from these arguably socially responsible investment asset classes.



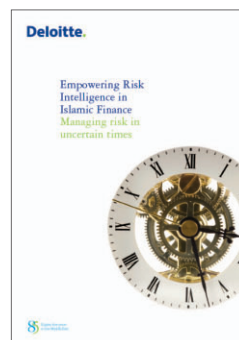
## The way forward for Takaful: Spotlight on growth, investment and regulation in key markets

This report builds on our last study on the global Takaful insurance market, and looks more deeply into the core Takaful markets in the Middle East and South Asia. The report examines in brief the economic and regulatory environment in six selected countries, three from each region.



## Global Takaful Insurance Market: Charting the road to mass markets

This report looks at the emerging regulatory and practice challenges that will impact the Takaful industry. It seeks to assess the business structures and strategies, market development and growth trends globally. Throughout the report, we explore key emerging practical and strategy issues pertinent to the industry and suggest the ways in which Takaful operators can adapt and respond to these challenges.



## Empowering Risk Intelligence in Islamic Finance: Managing risk in uncertain times

The Deloitte Risk Intelligence in Islamic Finance report focuses on the governance and structural aspects of an effective risk management framework in Islamic Finance. The report discusses key categories of risk management in Islamic Finance and emphasizes on the essence of the fiduciary relationship between the stakeholders of institutions offering Islamic financial services (IIFS).



## Islamic Finance Leaders Report: Benchmarking Practices

Based on an in depth analysis of the survey results, Deloitte ME IFKC has identified "red flags" where a sizable number of IFIs are not following industry best practices. It also highlights gaps in key areas of performance, people, processes, and products and pinpoint areas where improvement is desirable.

# Key contacts



**Joe El Fadl**  
Partner  
Regional FSI Leader  
Tel +961 1 364 700  
jelfadl@deloitte.com



**Khaled Hilmi**  
Lead Partner  
FSI Consulting  
Tel +971 4 376 8888  
khilmi@deloitte.com



**Ali El Azhary**  
Partner  
Audit  
Tel +966 2 657 2725  
al-elazhary@deloitte.com



**Nauman Ahmed**  
Partner  
ME Tax Leader  
Tel +966 1 3 887 3739  
nahmed@deloitte.com



**Akbar Ahmed**  
Partner  
Audit & Advisory  
Tel +971 4 376 8888  
aahmed@deloitte.com



**Abid Shakeel**  
Partner  
Financial Services  
Strategy Leader  
Tel +973 17 214490  
ashakeel@deloitte.com



**Umer Ahmad**  
Head of Project &  
Infrastructure Finance,  
Corporate Finance  
Advisory  
Tel +971 50 55 74 786  
uahmad@deloitte.com



**Salam Awawdeh**  
Partner  
Energy & Resources  
Leader  
Tel +971 43768888  
sawawdeh@deloitte.com



**Dr. Hatim El Tahir**  
Deloitte IFKC ME Leader  
Tel +973 17 214490  
heltahir@deloitte.com



**James Babb**  
Partner  
Clients and Industries  
Leader  
Tel +971 4 376 8888  
jbabb@deloitte.com





This publication has been written in general terms and therefore cannot be relied on to cover specific situations; application of the principles set out will depend upon the particular circumstances involved and we recommend that you obtain professional advice before acting or refraining from acting on any of the contents of this publication. Deloitte & Touche (M.E.) would be pleased to advise readers on how to apply the principles set out in this publication to their specific circumstances. Deloitte & Touche (M.E.) accepts no duty of care or liability for any loss occasioned to any person acting or refraining from action as a result of any material in this publication.

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("DTTL"), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as "Deloitte Global") does not provide services to clients. Please see [www.deloitte.com/about](http://www.deloitte.com/about) for a more detailed description of DTTL and its member firms.

Deloitte provides audit, consulting, financial advisory, risk management, tax and related services to public and private clients spanning multiple industries. Deloitte serves four out of five Fortune Global 500® companies through a globally connected network of member firms in more than 150 countries bringing world-class capabilities, insights, and high-quality service to address clients' most complex business challenges. To learn more about how Deloitte's approximately 225,000 professionals make an impact that matters, please connect with us on Facebook, LinkedIn, or Twitter.

Deloitte & Touche (M.E.) is a member firm of Deloitte Touche Tohmatsu Limited (DTTL) and is a leading professional services firm established in the Middle East region with uninterrupted presence since 1926.

Deloitte provides audit, tax, consulting, and financial advisory services through 26 offices in 15 countries with more than 3,300 partners, directors and staff. It is a Tier 1 Tax advisor in the GCC region since 2010 (according to the International Tax Review World Tax Rankings). It has also received numerous awards in the last few years which include best employer in the Middle East, best consulting firm, the Middle East Training & Development Excellence Award by the Institute of Chartered Accountants in England and Wales (ICAEW), as well as the best CSR integrated organization.