Chapter 57

Islamic Republic of Pakistan

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Figure 1: Map of Pakistan

1.1 Summary Economic Indicators

All financial information in U.S. Dollars (USD) as of 2015:

- Population: 193,203,476
- Population growth: 2.075 - annual percentage - 2015

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4 Id.
• Political system: Federal Parliamentary Democracy; military rule has extended for over half the period of the country’s existence
• Legal system: common law, in particular English law inherited from pre-partition British India in 1947; Sharia or Islamic law also applies; Indian law is closely related to Pakistan law and is often cited as precedent by the Pakistan courts
• Language: Urdu/English for business and all government dealings
• Date of independence/achievement of statehood: August 14, 1947
• Total GDP: $271.05 billion (bn)
• GDP per capita: $1142.7
• GDP growth (2016): 5.5%
• GDP world ranking 2016 – World Bank: 41
• Debt ratio: Gross Public Debt as a percentage of GDP (June 2017): 67.2%
• External debt (public sector and private sector): $85.05 bn
• Domestic debt (public sector and private sector): $143.6 bn
• Special debt relief or other programs with International Monetary Fund (IMF)/World Bank:
  • In 2013, under the Extended Fund Facility, the IMF approved $6.68 bn to help Pakistan stabilize its economy.
  As of February 2016, the World Bank Pakistan portfolio has 26 investment lending projects under implementation with a total net commitment of $4.99 bn. To date, the World Bank has committed over $5.6 bn in Pakistan, including $1.2 bn during the 2015 fiscal year. IFC’s advisory services program in Paki-
stan is one of its largest in the region, with 17 active projects and a funding commitment of over $20 mn.”

- Economy: Agriculture/Industry/Services
- Inflation: 3.75%
- Total Investment (% of GDP): 16.83%
- Currency: Rupee
- Exchange rate: $1 = PNR 110.617
- Ratings:
  - Fitch: B
    Negative – Fitch Ratings downgraded Pakistan’s credit rating from B with a Stable outlook to B with a Negative outlook. According to Fitch, Pakistan’s ‘B’ rating reflects a high public debt-to-GDP ratio, weak governance standards as measured by World Bank indicators, domestic political and security risks and a fragile external position, which are balanced by relatively strong growth.
  - Moody’s: B3
    Stable – A strengthening of external liquidity position and implementation of reform under the IMF program lead to an upgrade of Moody’s Pakistan rating from Caal to B3. Pakistan’s B3 issuer rating reflects a credit profile that balances robust growth potential and a relatively large economy, against low income levels, infrastructure constraints and very low global competitiveness.

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18 Credit ratings for countries provide insight into the level of risk associated with investing in a particular country, through the evaluation of a country’s economic and political environment. It provides insight on how likely a borrower is able to repay its debts.
In recent years, the credit has been supported by an improved track record of reforms started under an IMF program, and a stronger outlook for infrastructure investment driven by the China-Pakistan Economic Corridor (CPEC) project. However, the government’s high debt burden, very narrow revenue base, fragile external payments position and high political risk constrain the credit profile.

- S&P: B

Highly speculative – The S&P has said that the ratings on Pakistan remain constrained by a narrow tax base and domestic and external security risks, which continue to be high. These factors weaken the government’s effectiveness and weigh on the business climate, it added. The interest expense consumes nearly a third of government revenue, partly a function of its narrow tax base. Pakistan’s ratio of tax revenue to GDP remains one of the lowest among sovereigns.

1.2 History and Background

Pakistan and India came into existence in August 1947 following the partition of British India. In 1971, the east wing of Pakistan separated and became Bangladesh following a separatist movement and war with India.

Pakistan and India have fought three wars since 1947, including the 1971 war. Most of these have been over disputed Kashmir with the exception of the 1971 war.

1.3 Economy

Information on Pakistan’s economy and related information is contained in the Summary Economic Indicators above and Annex I, which includes additional macro-economic information from the World Bank.

1.4 Foreign investment

Several prominent foreign investors are represented in Pakistan, including in the energy sector as we shall see below. Annex II identifies each foreign investor by sector in Pakistan.

1.5 Security

Conflict in the tribal areas in the north and extremist violence and terrorism throughout the country have impacted all aspects of life in Pakistan. The situation has improved in recent years but much more needs to be done.22

While Pakistan has suffered significant loss of civilian lives to terrorism, the government and the armed forces have taken radical steps to combat and eliminate terrorism. But, the outcome is very much a work-in-progress as the threat continues and Pakistan remains vulnerable as are many countries in the world.

Renewable energy projects should be located in secure parts of the country and the GOP must provide complete security for investors.

1.6 Pakistan and the Paris Agreement

Pakistan’s Climate Change Threats and Aims for Climate Compatible Development

According to Germanwatch’s Long-Term Climate Risk Index, Pakistan is deemed the 7th most vulnerable country to climate change, losing USD 3.8 bn and 0.6 percent to the GDP.23 A new regulatory authority will be established to overcome the challenge of climate change, which will also regulate the issues relating to the environment.

Some climate change threats include:

i. A substantial increase in the frequency and intensity of extreme weather events, coupled with erratic monsoon rains causing frequent and intense floods and droughts.

ii. A projected recession of the Hindukush-Karakoram-Himalaya (HKH) glaciers due to global warming and carbon soot deposits from transboundary pollution sources, threatening water inflows into the Indus River System.

iii. Due to an increase in the frequency and intensity of floods, there is increased siltation of major dams.

iv. Rising temperatures that result in enhanced heat and water-stressed conditions, lead to reduced agricultural productivity.

v. The increase of saline water in the Indus Delta is negatively affecting coastal agriculture, mangroves, and the breeding grounds of fish.24

22 Analysis by The Ansar Law Firm.
24 Id. at 12.
Figure 2: Work Program for Climate Compatible Development in Pakistan

<table>
<thead>
<tr>
<th>Common Elements</th>
<th>Mitigation</th>
<th>Adaptation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic of climate change work</td>
<td>GHG inventory and sectoral baselines</td>
<td>Strengthen meteorological systems</td>
</tr>
<tr>
<td>Identify research needs and strengthen research capacity</td>
<td>Low-carbon scenario assessment</td>
<td>Vulnerability assessments</td>
</tr>
<tr>
<td>Technology road maps</td>
<td>Design of specific REDD+ proposals</td>
<td>Demonstration project — adaptation</td>
</tr>
<tr>
<td>Communication and awareness raising</td>
<td>MRV system</td>
<td>Monitoring and evaluation system</td>
</tr>
</tbody>
</table>

GHG = greenhouse gas, MRV = monitoring, reporting, and verification, NAMA = national appropriate mitigation action, REDD = Reducing Emissions from Deforestation and Forest Degradation.

Note: Priority actions in green.


One way to mitigate climate change impact is to plant more trees. While the global standard is 20 percent forest cover, the total land mass with forest cover in Pakistan is 5 percent, representing 4.19 Million hectare (Mha).

Pakistan is the fourth country after Indonesia, Vietnam and Bangladesh that has developed a comprehensive approach towards climate change financing. The Climate Change Financing Framework is an outcome of Pakistan’s efforts supported

25 Id. at 5.
by the United Nations Development Programme (UNDP). The process began with a Climate Public Expenditure Institutional Report (CPEIR), which provided useful insight to establish a baseline for climate change expenditure. According to the recent CPEIR study for Pakistan (2015), the total federal climate-related expenditure (development + current budget) was estimated to be around 6.52 percent during the last 4 years.

**Figure 3:** Sector Allocation of Expenditures to Climate-Relevant Tasks in the Public Sector Development Program of 2013–2014

Reduction Greenhouse Gases
Pakistan aims to reduce up to 20 percent of its 2030 projected greenhouse gases (1,603 million tons of carbon dioxide equivalent (MtCO2e)) subject to availability of international grants to meet the cumulative abatement costs amounting to

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29 Id.

approximately USD 40 bn.\textsuperscript{31} Pakistan’s adaptation needs are forecasted to be between USD 7 and 14 bn per year.\textsuperscript{32}

According to the national GHG inventory of Pakistan for the year 2011–2012, its total GHG emissions were at 369 mn tons of carbon dioxide equivalent (MtCO\textsubscript{2}e) with 45.9 percent share of energy, 44.8 percent share of agriculture and livestock sector, 3.9 percent share of industrial processes, and 2.6 percent share of land use change for forestry sectors. The energy and agriculture livestock sectors alone account for 90.7 percent of the total emissions pool and have thus far remained the biggest emitters of GHGs since 1994.\textsuperscript{33}

On 30 June 2015, the government initiated a project, “Carbon Neutral Pakistan,” with technical assistance from the People’s Republic of China to set up a local carbon market to cut GHG emissions and attract foreign investment. The total estimated cost of the project is $3.85 mn which is reflected in the 2016 public sector development program (PSDP). This project will help industrial and other sectors to sell and buy carbon credits locally, and make internal adjustment of carbon emissions and credits. The carbon markets are also expected to initiate a competition for greener technology in the country.\textsuperscript{34}

**Figure 4:** Sector Share Comparison of Greenhouse Gas Inventories for Pakistan, 2008 and 2012

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\textsuperscript{31} See Climate Change Profile of Pakistan 2017, \textit{supra}, note 23 at 6.

\textsuperscript{32} UNFCCC, Pakistan’s Intended Nationally Determined Contribution (PAK-INDC), 2016, http://www4.unfccc.int/Submissions/INDC/Published\%20Documents/Pakistan/1/Pak-INDC.pdf (last visited Feb. 7, 2018) [Pakistan’s Intended Nationally Determined Contribution].

\textsuperscript{33} See Climate Change Profile of Pakistan 2017, \textit{supra}, note 23.

\textsuperscript{34} \textit{Id.} at 9.
**Figure 4:** Sector Share Comparison of Greenhouse Gas Inventories for Pakistan, 2008 and 2012 (Continued)

![Diagram showing sector shares of greenhouse gas emissions for Pakistan in 2008 and 2012.]

- **LUCF 2.6%**
- **Waste 2.8%**
- **Energy 45.9%**
- **Agriculture 44.8%**
- **Industrial Processes 3.9%**

**Total Emissions:** 369.0 mt CO$_2$ equivalent

CO$_2$ = carbon dioxide, GHG = greenhouse gas, LUCF = land use change for forestry, mt = metric ton.

**Table 1:** Projected Greenhouse Gas Emissions by Sector in 2020 and 2050 under Business as Usual Scenarios (in MtCO$_2$e)

<table>
<thead>
<tr>
<th>Sector</th>
<th>1994</th>
<th>2008</th>
<th>2012</th>
<th>2020</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>86</td>
<td>157</td>
<td>169</td>
<td>358</td>
<td>2,685</td>
</tr>
<tr>
<td>Agriculture</td>
<td>72</td>
<td>120</td>
<td>165</td>
<td>245</td>
<td>1,395</td>
</tr>
<tr>
<td>Industrial processes</td>
<td>13</td>
<td>18</td>
<td>14</td>
<td>26</td>
<td>67</td>
</tr>
<tr>
<td>Land use change and forestry</td>
<td>7</td>
<td>9</td>
<td>10</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>Wastes</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>Total national emissions</td>
<td>182</td>
<td>309</td>
<td>369</td>
<td>650</td>
<td>4,200</td>
</tr>
</tbody>
</table>

GHG = greenhouse gas, MtCO$_2$e = million ton of carbon dioxide equivalent.

**Compliance Within Pakistan's Government and Recent Achievements:**
In January 2015, the government of Pakistan upgraded its climate change division to a ministry (the Ministry of Climate Change).
Specific activities and responsibilities relating to climate change concerns are coordinated by the Ministry of Climate Change at the national level with corresponding support from the provincial and governments. The Ministry of Climate Change handles and supports both the Clean Development Mechanism (CDM) and Reducing Emissions from Deforestation and Forest Degradation (REDD+) initiatives in the country.\(^\text{35}\)

The Ministry is responsible for supervising and controlling several attached departments and implementation agencies, such as the Global Change Impact Studies Centre (GCISC), National Disaster Management Authority (NDMA), Pakistan Environmental Protection Agency (Pak-EPA) and Zoological Survey Department of Pakistan (ZSD).\(^\text{36}\)

The Ministry has had difficulty establishing itself in past years due to political interference. Despite scepticism about the Ministry of Climate Change, there have been some optimistic recent developments:

- In December of 2016, an advisor to the Prime Minister on Foreign Affairs said cooperation with China on the CPEC project at “provincial and national level is underway to achieve sustainable development.”\(^\text{37}\)
- In November of 2016, Pakistan and the US agreed on the Green Energy Initiative, which was meant to add 3,500 MW of energy to the national grid.\(^\text{38}\)
- In March of 2016, the Green Pakistan Program was approved\(^\text{39}\) to be implemented until 2021.
  - Rs. 3.7 bn (approximately $37,000,000) is to be distributed among the federating units under the Green Pakistan Project (GPP) to enhance forest cover in the country. The Ministry of Climate Change has increased the forest cover target from the existing 5 percent to 12 percent.\(^\text{40}\)

\(^{35}\) See Climate Change Profile of Pakistan 2017, supra, note 23.
\(^{36}\) Id.

The Ministry has planted as many as 15.31 mn saplings across the country up to December 2017 under the Green Pakistan Programme. Sharing the steps taken by government to achieve the target, he said that about 707 mn saplings had been planted in a period of five years from 2011 to 2016 in the four provinces, Azad Jammu and Kashmir, Gilgit-Baltistan and the Federally-Administered Tribal Areas. He said that around 14.78 mn saplings of different species were available in various nurseries for plantation under the programme.\footnote{See Ministry sets Target, \textit{supra}, note 40.}

Pakistan has formulated new Forest and Wildlife Policies besides setting up the Global Change Impact Study Centre, the research arm of the ministry.\footnote{See Climate Change and Pakistan, \textit{supra}, note 23.}

The ministry has also been organising international conferences on climate change in Pakistan and its representatives including the minister have also been attending similar conference at the global level.\footnote{UNDP, \textit{Home – UNDP in Pakistan}, http://www.pk.undp.org/ (last visited Feb. 7, 2018).}

Green Pakistan is the initiative taken at the federal level under which 100 mn trees would be planted around the country in the next five years.\footnote{Green Climate Fund, \textit{About the Fund: Who we are?}, http://www.greenclimate.fund/who-we-are/about-the-fund (last visited Feb. 7, 2018).}

The minister for climate has revealed that a botanical garden was also going to be set up in Islamabad on an area of 570 acres and will cost USD 233 mn.\footnote{The GCF was adopted as a financial mechanism of the UN Framework Convention on Climate Change (UNFCCC) at the end of 2011. It aims to make an ambitious contribution to attaining the mitigation and adaptation goals of the international community.}

\begin{itemize}
\item With funding from the GCF (see below) and support from the UNDP, the Ministry of Climate Change and provincial governments plan to establish early-warning systems and implement small-scale infrastructure projects in 12 vulnerable districts of Khyber Pakhunkhwa and Gilgit Baltistan.
\item The project is designed to increase technical skills and knowledge of officials to integrate climate change and disaster management for development planning as well as to provide funding for community-based disaster risk management and the promotion of climate-resilient land and water management techniques.\footnote{Green Climate Fund, \textit{About the Fund: Who we are?}, http://www.greenclimate.fund/who-we-are/about-the-fund (last visited Feb. 7, 2018).}
\item The GCF was adopted as a financial mechanism of the UN Framework Convention on Climate Change (UNFCCC) at the end of 2011. It aims to make an ambitious contribution to attaining the mitigation and adaptation goals of the international community.\footnote{UNDP, \textit{Home – UNDP in Pakistan}, http://www.pk.undp.org/ (last visited Feb. 7, 2018).}
\end{itemize}
• In 2011, the Ministry of Water and Power developed the Alternative and Renewable Energy (ARE) Policy 2011, which provides a road map for realizing the full potential of ARE in Pakistan:46
  o The ARE Policy 2011 sets out some enhanced financial mechanisms and also addresses areas like rural energy services and biofuels. It aims to set the requisite infrastructure in place so it can be fully mainstreamed and integrated within energy planning, economic and social development.
  o To earn financing for the ARE initiatives, the focus of the ARE Policy is getting carbon credits by using CDM.
• The Ministry of Water and Power formulated the National Power Policy in 2013. The key objective of this National Power Policy is to attract local and foreign investments for the expansion of the country’s power generation capacity, particularly in the production of cheap electricity:47
  o The National Power Policy assessed that 7,000 megawatts (MW) of electricity needs to be added to the system to control load-shedding in Pakistan.
  o In the context of tackling load-shedding, net metering, as an incentive scheme for distributed solar power plants, will play a major role.
  o The National Electric Regulatory Authority (NEPRA) announced the official Distributed Generation and Net Metering Regulations on September 1, 2015. As per these regulations, any customer of the electric grid (three phase connections) can avail grid connection and can enter into a net metering agreement for onsite small-scale renewable energy installations.48
  o All over the world, the energy sector is at the forefront in combating climate change due to its highest share in GHG emissions. In Pakistan, this sector contributes more than 50 percent of emissions, but, unfortunately, the policy does not consider how initiation of cheap coal power can change the country’s present low emission status. Likewise, it fails to include any initiatives that would drive energy efficiency and promote clean energy by putting in place the carbon pollution standards for high emission subsectors.

46 See Climate Change Profile of Pakistan 2017, supra, note 23.
47 Id.
The Paris Agreement:
In early November 2016, Pakistan ratified the Paris Agreement on Climate Change, becoming the 104th country to do so. Before the ratification of the Paris Agreement, several mitigation initiatives and projects to cut carbon emissions were in effect, including promotion of affordable renewable technologies, measures towards energy efficiency, implementation of mass transport systems and expansion of hydropower.

The country has a history of implementation problems, and is generally known to prioritize adaptation over mitigation, mostly because of its status as a low-level emitter facing major threats from climate change.

The UNFCCC defines adaptation as actions taken to help communities and ecosystems cope with changing climate conditions. The Intergovernmental Panel on Climate Change (IPCC) describes adaptation as adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, that moderates harm or exploits beneficial opportunities.

Table 2: Climate Change Risks and Suggested Adaptation Technologies in the Energy Sector of Pakistan

<table>
<thead>
<tr>
<th>Climate Change Risks</th>
<th>Suggested Adaptation Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction in water availability for hydropower generation.</td>
<td>Diversify the energy mix and make further investments in renewable and small hydropower projects.</td>
</tr>
<tr>
<td>Extreme climate events damaging oil, gas, and power infrastructure.</td>
<td>Improve weather forecasting and warning systems; carry out retrofitting of critical energy infrastructure.</td>
</tr>
<tr>
<td>Hotter temperatures increase energy demand.</td>
<td>Invest in additional energy capacity, preferably in renewable energy sources.</td>
</tr>
<tr>
<td>Warmer air and hotter water temperature may affect efficiency of thermal plants.</td>
<td></td>
</tr>
</tbody>
</table>

Source: Climate Techwiki. http://www.climatetechwiki.org/

Table 3: Climate Change Risks and Suggested Adaptation Technologies in the Water Sector of Pakistan

<table>
<thead>
<tr>
<th>Climate Change Risks</th>
<th>Suggested Adaptation Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing water shortages due to changing climatic patterns, particularly precipitation and warmer temperatures causing higher evaporation, in addition to increasing demand from the rising population and additional industrial usage.</td>
<td>Promote efficient irrigation techniques such as sprinkle and drip irrigation system; recycle wastewater in urban areas; promote rainwater harvesting; and promote desalination techniques particularly in coastal and hyperarid areas with saline underground water.</td>
</tr>
<tr>
<td>Higher water losses in conventional irrigation system.</td>
<td></td>
</tr>
<tr>
<td>Reduction in water storage capacities due to sedimentation.</td>
<td>Initiate efforts on integrated watershed management; reforestation of catchment areas; and construction of additional water storage areas.</td>
</tr>
<tr>
<td>Increased frequency of extreme climatic events of floods, droughts, storms, etc. due to the changing climate.</td>
<td>Improve multi hazard early warning system.</td>
</tr>
<tr>
<td>Lack of understanding how climate change is affecting water availability in our country.</td>
<td>Carry out awareness-raising campaigns, both for the public as well as for policy makers to create better understanding of the water issues and the need to conserve this precious resource.</td>
</tr>
<tr>
<td>Increased frequency of flash floods generating huge damage by hill torrents, particularly in hilly areas.</td>
<td>Construction of slow action dams and small storage containers in hilly areas</td>
</tr>
<tr>
<td>Increased saltwater intrusion particularly in the Indus delta due to reduced freshwater supplies to the area.</td>
<td>Improve water management to ensure required freshwater supplies to the delta area to maintain a healthy ecosystem in the area.</td>
</tr>
</tbody>
</table>


Climate change mitigation refers to efforts to reduce to prevent emission of greenhouse gases. Mitigation can mean using new technologies and renewable energies, making older equipment more energy efficient, or changing management practices or consumer behaviour.53

Pakistan prepared its National Climate Change Policy (NCCP) in 2012. The NCCP is the guiding policy document for the country on climate change. It covers broad issues that Pakistan faces due to changing climate by adopting an approach targeted to sectors, and suggests policy measures for water, agriculture and livestock, forestry and biodiversity. Though little has been done to implement this policy, Pakistan’s Framework for Implementation of Climate Change Policy

developed by the Climate Change Division of the government (before the launch of the Ministry of Climate Change) has outlined the strategies and recommended priority adaptive actions in each sector to combat the impacts of climate change. The implementation time frame ranks action strategies into priority action (within 2 years), short term (5 years), medium term (10 years), and long term (20 years), with identification of the relevant organizations and ministries to play a role in each.

This is a positive step as the assessment will form the basis of a National Adaptation Program of Action (NAPA), at the level of the federal government, and provincial and local adaptation plans.

Since the ratification of the Paris Agreement, Pakistan’s government has been working with international bodies to secure funding for additional projects, with aims to boost renewable energy from 5–25 percent of the country’s energy mix by 2030. To cap emissions, Pakistan has undertaken projects such as requiring lower sulphur diesel fuels beginning in 2017.

Additionally, the recently approved Pakistan Climate Change Act 2016 will help create an overarching Climate Change Council (with representation of the provincial governments at the chief minister level). It will also establish a high-powered Pakistan Climate Change Authority and a Pakistan Climate Change Fund that mobilize resources from both domestic and international sources to provide funding to support mitigation and adaptation initiatives in the country.

Under Pakistan’s Intended Nationally Determined Contributions (INDCs) some climate change actions currently being undertaken by the provincial governments include:

- Establishment of Directorates of Climate Change and Multilateral Environment Agreements (MEAs)

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55 See *Climate Change Profile of Pakistan 2017*, supra, note 23.


57 In anticipation of the adoption of the Paris Agreement, countries publicly outlined post-2020 climate actions they intended to take under the new international agreement, known as their Intended Nationally Determined Contributions (INDCs). The climate actions communicated in these INDCs determines to a great extent whether the world achieves the long-term goals of the Paris Agreement: to hold the increase in global average temperature to well below 2°C, to pursue efforts to limit the increase to 1.5°C, and to achieve zero emissions in the second half of this century.
• Formulation of climate change policies or frameworks for implementing climate change policies
• Constitution of climate change policy implementation committees
• Construction of 1,000 MW Quaid-e-Azam solar park in Punjab
• Improvement of urban public transport systems, especially Bus Rapid Transport at Lahore, Rawalpindi-Islamabad and Multan, and urban rail transport (Orange Line) at Lahore
• Green Pakistan Programme of tree plantation across Pakistan
• Large-scale tree plantation programs in Khyber Pakhtunkhwa
• Conservation of national parks and protected areas
• Natural resource management
• Clean development mechanisms
• Green Charter for cities (already signed for Islamabad)

Potential Market Mechanisms/Nonmarket Regulations:
A carbon tax has been suggested and enacted several times in Pakistan’s recent history. In 2015, the then finance minister suggested implementing a carbon tax to apply on all fuel prices to rein in emissions.58

In 2009, Pakistan imposed a carbon tax and raised fuel prices by 12 percent, noting that the price increase was mostly to reflect the recovery of oil prices in the global market.59 At one point, with assistance from China, Pakistan attempted to set up a carbon market through the “Carbon Neutral Pakistan” initiative.

Recent government funding for innovation in renewable energy:
Pakistan is currently setting up one of the world’s largest solar parks.

The country has enacted the National Energy Efficiency and Conservation Act 2016 to promote effective conservation and efficient use of energy.60 The National Climate Action Plan (2011), calls for funding and development of technological innovations to aid in urban planning and transportation.61

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China has provided significant financing to Pakistan’s renewable energy sector (about $500 mn by 2016). The Asian Development Bank (ADB) is a long-term donor to Pakistan. Most recently it has approved a $325 mn loan to help enhance Pakistan’s energy security by helping install clean energy sources in Khyber Pakhtunkhwa Province and Punjab. By the end of 2015, ADB’s cumulative grants, loans, and technical assistance for Pakistan amounted to $27.9 bn for 708 projects. The energy sector is the largest sector, with $7.7 bn (28 percent) for 121 projects.

1.7 National Climate Action Plan

Pakistan submitted a national climate action plan in 2011 ahead of the Paris Agreement in 2015. Pakistan has sought to decrease its carbon emissions (which are already among the lowest in the world per capita), to meet an increasingly large fraction of its future energy needs through renewable sources.

Also, Pakistan has to increasingly use its coal resources to meet its energy needs. As such, clean coal technologies are expected to be part of the energy mix for the medium-term in the future.

In Pakistan’s National Climate Action Plan, there are calls to:

• Promote energy efficient farm mechanization for increasing yield and labor savings;
• Improve farm practices by adopting modern techniques;
• Promote biotechnology in terms of more carbon responsive crops, improved breeds and production of livestock; and
• Establish Climate Change units in agriculture research organizations to prepare for projected impacts of climate change on agriculture.

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63 ADB has provided Pakistan with more than $27 bn in loans and over $531 million in grants since 1966.


65 See Climate Change Profile of Pakistan 2017, supra, note 23 at 61.

66 See National Climate Change Policy, supra, note 61.
According to the National Climate Action Plan, Pakistan’s government wants to:

- Give preferential status to development and promotion of hydropower generation;
- Promote development of renewable energy resources and technologies;
- Promote futuristic building design with solar panels for energy self-sufficiency;
- Plan the necessary expansion of nuclear power for Pakistan’s energy security;
- Install plants to generate power from municipal waste;
- Examine the gradual introduction of “Green Fiscal Reforms” in different sectors of the economy to achieve carbon emission reductions objectives;
- Improve energy efficiency in building by standardizing building and construction codes; and
- Promote and gradually make it mandatory to specify energy efficiency/fuel consumption rates of energy.

1.8 Pakistan’s Intended Nationally Determined Contribution

In the submitted INDC, Pakistan wishes to take into consideration major development projects under CPEC. Approximately 6 percent of Pakistan’s federal budget during 2010–2014 comprised climate change-related expenditures, predominantly in energy and transport.\textsuperscript{67}

According to the Minister for Climate Change, Pakistan intends to reduce carbon emissions by 20 percent, though the country’s success depends upon the availability of funds from the GCF.

According to the Minister Pakistan requires $42 bn to meet its targets.\textsuperscript{68} The government made the following statement with respect to a 20 percent reduction of its GHG emissions:

- Since it has considered the existing potential for mitigation in the country, Pakistan intends to reduce up to 20 percent of its 2030 projected GHG emissions subject to availability of international grants to meet the total abatement cost for the indicated 20 percent reduction amounting to about US$ 40 bn at current prices. Pakistan’s adaptation needs range between US$7 to US$14 bn/annum during this period.\textsuperscript{69}

\textsuperscript{67} See Climate Change Profile of Pakistan 2017, supra, note 23.


\textsuperscript{69} See Pakistan’s Intended Nationally Determined Contribution, supra, note 32.
Provincial government efforts to cut carbon emissions:
Balochistan:
• Balochistan Partnerships for Sustainable Development (BPSD)’s objective is to “promoting sound environmental governance at the district level through visioning, planning and implementation of relevant priority interventions in the province.”
• This six-year programme (2007–2013) covered Quetta, Pishin, Mastung, Lasbela, Gwadar and Qila Saifullah, six districts of Balochistan.
• BPSD areas of intervention include environmental governance, water resource management, watersheds and rangelands improvement, and coastal ecosystem improvement and rehabilitation.
• Beside field initiatives, BPSD also focuses on building partnerships and alliances, and capacity enhancement for institutions and professionals.

Islamabad Capital Territory:
In August 2016, efforts began to monitor carbon emissions in Islamabad (through a partnership between the Pakistan Environmental Protection Agency (Pak-EPA) and the Islamabad Traffic Police.

Khyber Pakhtunkhwa:
• Aims to become carbon neutral by 2018
• Known for its Billion Tree Tsunami Campaign
• Under the Green Growth Initiative, this region plans to spend $17 bn in the forestry, energy, and agricultural sectors
• Projects include hydropower dam building, tree-planting, helping people switch from kerosene
• Part of the Bonn Challenge—“the largest carbon sequestration initiative currently being undertaken in the world.”
Punjab and Sindh:
- The Five-year Pakistan Sustainable Transport Project, operated in Punjab and Sindh, aims to develop energy efficient transport systems to shrink the transportation sector’s carbon footprint by 30–40 percent.\textsuperscript{75}
- In 2014, Federal budget documents show that around $150 mn has been allocated for several major renewable energy projects. They include the 1,000 MW Quaid-e-Azam Solar Park, a 5 MW solar power plant in the Moola area of the southwestern district of Khuzdar in Balochistan province, and multi-megawatt wind power projects in Jhimpir and Gharo towns in southern Sindh province.”\textsuperscript{76} See Section 3.1.

Azad Kashmir:
- Tribunals were created to hear cases of violations of environmental laws in the region.\textsuperscript{77}

\textit{Government efforts to boost clean energy and increase low-carbon investment:}
In 2016, Pakistan signed a $30 mn agreement with the United States to generate 3,000 MW of power from renewable energy to benefit 30 mn people.
- Germany also has plans to help Pakistan find investors to tap its clean energy potential, and to transfer clean technology at “globally competitive rates.”\textsuperscript{78}
- Iran’s leading energy firm also has agreed to set up a 50-megawatt wind power project in Jhimpir, in southern Pakistan.

\textit{Agenda regarding methane emissions:}
In Pakistan, methane is generally produced by the agricultural sector. Pakistan’s government wishes to:
- Promote development of biogas and manure digester for methane reduction and energy production through CDM support;

\textsuperscript{78} Thomson Reuters Foundation, Can Pakistan become a renewable energy giant?, September 27, 2016, http://news.trust.org/item/20160927093203-n5b4o (last visited Feb. 8, 2018).
• Develop and adopt new breeds of cattle that are more productive in terms of milk and meat with lower methane production from enteric fermentation;
• Encourage farmers to use appropriate feed mixes and additives to reduce methane production from enteric fermentation and digestion in cattle; and
• Manage water in rice paddies to control releases of methane from agricultural soil and introduce low water delta rice varieties.

Commitment to reduce consumption of hydrofluorocarbons:
Pakistan made a commitment to reduce consumption of hydrofluorocarbons\(^79\) in October 2016, as one of nearly 200 nations to agree to phase out HFC greenhouse gases.

It was part of the third small group of countries (also included India and some Gulf states) that plan to start the phasing out process in 2028 (to allow for efforts to boost their economies).

Government steps to finance climate change adaptation measures:
Pakistan is a relatively new player in the international climate finance arena with a young institutional setup, and, hence, has limited experience in receiving or disbursing international climate finance resources. As of 2012, it had only $15 mn in disbursements of multilateral finance explicitly for climate change.\(^80\)

Technical support and funding is made available by the UNFCCC, the GCF, the Adaptation Fund, the Least Developed Countries Fund and the Special Climate Change Fund.\(^81\)

There are some international accredited entities such as the International Union for Conservation of Nature (IUCN) and the UNDP, working on adaptation projects in Pakistan. There are no national entities that have so far received accreditation either by the GCF or the Adaptation Fund. Accreditation of organisations both at the national and provincial levels is crucial to enhance the flows of climate finance to the country.


\(^{80}\) See Climate Change Profile of Pakistan 2017, supra, note 23.

\(^{81}\) See Mobilising Finance, supra, note 54.
Pakistan also recently managed to attract a $36 mn grant from the GCF to tackle the issue of flooding in northern regions.\textsuperscript{82}

\textit{Bilateral or other cooperation to adopt and develop clean energy solutions:} Some current partnerships include:

- Pakistan – China: Several CPEC projects focus on renewable energy and energy efficiency. Pakistan has also received technical assistance from China in setting up a carbon market.\textsuperscript{83}
- Pakistan – United States: Pakistan signed a $30 mn renewable energy agreement with the United States. Both countries are working together to encourage private sector investment in new clean energy generation (such as wind, solar, and hydro) through technical assistance, grants for transmission infrastructure, and financing.\textsuperscript{84}
- Pakistan – Iran: In mid-November 2016 at the Conference of the Parties (COP-22) in Morocco, verbal agreement to strengthen bilateral cooperation on climate change between both countries was discussed.\textsuperscript{85}

\textit{Pakistan’s government on Climate Change:}
In general, the Government of Pakistan has acknowledged that climate change is partially the result of energy related CO2 emissions.

Certain commentators have recognized that millions of Pakistani citizens are adversely impacted by a destabilized climate system and catastrophic climate changes in Pakistan. These are caused by a continual increase in GHG emissions, particularly carbon dioxide (CO2) pollution, from the mining and burning of coal.


Also, continuing allowance of toxic vehicles and industrial activity all negatively impact the enjoyment of fundamental human rights.86 Pakistan’s courts have become involved in climate change matters. In September 2015, a judge of the Lahore High Court ordered Pakistan’s federal government to start implementing its climate change plans, ruling on a legal challenge brought by a farmer. Judge Syed Mansoor Ali Shah said there had been “no progress on the ground” despite a National Climate Change Policy since 2012 and an implementation framework on the books.”87 Clearly, much can be done in respect of climate change. See Annex III, our Recommendations to the Government of Pakistan.

2.1 Energy Sector

Background:
Pakistan’s energy sector initially placed much emphasis on hydropower following partition in 1947. That has gradually changed with much greater reliance on thermal power in recent times. See Chart 1 below.

Chart 1: Total Power Generation (MW) by Year and Dominant Form of Energy


Figure 5: Map of Pakistan: major notable thermal, hydro, and renewable energy power stations under construction as of 2016

Pakistan’s Energy Mix:

Table 4: Pakistan’s energy mix is based on installed capacity as follows as of June 30, 2016

<table>
<thead>
<tr>
<th>Power source</th>
<th>Installed Capacity</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal</td>
<td>16,814 MW</td>
<td>66%</td>
</tr>
<tr>
<td>Hydroelectric</td>
<td>7,116 MW</td>
<td>28%</td>
</tr>
<tr>
<td>Nuclear</td>
<td>787 MW</td>
<td>3%</td>
</tr>
<tr>
<td>Wind/Solar/bagasse</td>
<td>852 MW</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>25,374 MW</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

90 Subject to rounding.
The development of renewable energy sources in Pakistan is best understood by reviewing key factors that have influenced the energy sector.

2.2 Water and Power Development Authority

The Pakistan Water and Power Development Authority (WAPDA) was established through an Act of Parliament in 1958. It is an autonomous and statutory body under the administrative control of the Federal Government.91

Prior to unbundling in 1998, WAPDA and the Karachi Electric Supply Company (KESC), that covers only Karachi and certain adjoining areas in Sindh and Balochistan, generated all of the power in the country.

In 1998, the Pakistan Electric Power Company was formed to unbundle WAPDA. WAPDA was unbundled in 2007: the functions of its power wing were redefined as Hydel Power Generation and Operation & Maintenance (O&M) of power houses.

WAPDA’s mandate is now development of water and hydropower resources.

WAPDA plans to construct five multi-dimensional water storage dams during the next several years. These dams will help address the acute water shortage in the country and also produce cheap and clean hydropower.

These projects will also be instrumental in the development of remote and less developed regions of Pakistan where they will be located.

The 2007 unbundling of WAPDA’s power function created the following:
• Nine public sector distribution companies
• Four generation companies, and
• The National Transmission & Distribution Company (NTDC)

See Chart 2 below that illustrates the main parties involved in the power sector in Pakistan:

Chart 2: Power sector of Pakistan
The 1994 and 2002 Power Policies and Independent Power Producers:
Under the 1994 policy, GOP issued letters of support for 34 projects totalling 9,000MW, of which 19 reached financial close. Four were not completed, seven were cancelled in 1998 due to corruption, and two on technical grounds. In total, these stalled projects represented two-thirds of the contracted private capacity.\(^9\)\(^2\)

Investment under the above policies aggregated about $5.3 bn. Of this, 25 percent was financed by foreign equity. An estimated $3 bn was financed with foreign currency debt with an average maturity of 10 years. Roughly 85 percent of the foreign debt or 66 percent of total debt was from official sources.\(^9\)\(^3\)

These policies provide for an independent regulator National Electric Power Regulatory Authority (NEPRA), fiscal incentives, standard documentation for long-term power purchase, fuel supply, and government support agreements and sovereign guarantees. Tariffs are based on a cost-plus approach with indexations.

Impact of rising oil prices:
The policies of 1994 and 2002 are based on the government of Pakistan assuming fuel risk with respect to all IPPs. Once oil prices increased, the cost of generation increased substantially and remained dependent on oil price changes, which made the government vulnerable to increases in the cost of fuel.

Circular debt:
Circular debt has had a particularly severe impact on the power sector for several years.

Circular debt is defined as the amount of cash shortfall within the Central Power Purchase Agency (CPPA) that it cannot pay to power supply companies. The shortfall is the result of the difference between the actual cost of providing electricity in relation to revenues realized by power distribution companies (DISCOs) from sales to customers plus subsidies, and insufficient payments by DISCOs to CPPA out of realized revenue as the DISCOs give priority to their own cash flow needs.

Circular debt can result even if renewable energy projects generate power, since the issue arises if the DISCOs fail to make payments to CPPA from realized revenues. See the following chart:

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NEPRA believes that circular debt remains a major issue facing the power sector.\(^{94}\) High transmission and distribution losses at the DISCOs is a key contributor to circular debt. NEPRA believes if the current level of losses is not reduced at the level of the DISCOs, that could result in a gap of Rs.41 bn or approximately $410 mn.\(^{95}\)

Historically inadequate transmission and distribution capacity has failed to keep pace with the expansion of power. These uncertainties continue to pose a challenge even for the CPEC projects and additional renewable capacity that comes on stream in 2017.\(^{96}\)

### 2.3 Framework under 1994 and 2002 Policies:

The framework used under the 1994 and 2002 policies (documentation, development and approval processes) continues in use for small and large hydro, solar, and wind with few substantive changes under applicable renewable energy policies.

The renewables sector is fast moving: governmental, developer, and financing approaches and initiatives, documentation, and technologies are constantly changing and evolving. We suggest changes to the current approach and address this issue in our recommendations to the Government of Pakistan in Annex III.

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\(^{94}\) See NEPRA State of Industry 2016, *supra*, note 89.

\(^{95}\) Id.

\(^{96}\) Id.
**Energy crisis:**
Since about 2006, Pakistan has faced a severe energy crisis—notwithstanding investments by the IPPs.

The country has faced a deficit of between 4,000 to 6,000 MW as illustrated in the following table:

**Table 5: Surplus/Deficit in Demand and Supply during NTDC’s System Peak Hours (Actual Data)**

<table>
<thead>
<tr>
<th>Financial Year ending 30th June</th>
<th>Generation capability (MW)</th>
<th>Demand during NTDC’s System peak hours (MW)</th>
<th>Deficit (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>13,193</td>
<td>18,521</td>
<td>-5238</td>
</tr>
<tr>
<td>2012</td>
<td>12,320</td>
<td>18,940</td>
<td>-6,620</td>
</tr>
<tr>
<td>2013</td>
<td>14,600</td>
<td>18,827</td>
<td>-4,227</td>
</tr>
<tr>
<td>2014</td>
<td>16,170</td>
<td>20,576</td>
<td>-4,406</td>
</tr>
<tr>
<td>2015</td>
<td>16,500</td>
<td>21,701</td>
<td>-5,201</td>
</tr>
</tbody>
</table>

NEPRA’s analysis suggests that by 2019 Pakistan should have a surplus of power based on demand and supply in NTDC’s system – consider the following:

97 Id., Table 27 at 120.
2.4 China-Pakistan Economic Corridor Project (CPEC)

CPEC involves an agreement between Pakistan and China for $46 bn in investment by China in Pakistan. $33.8 bn is earmarked for various energy projects. Under the agreement, $15.5 bn worth of coal, wind, solar, and hydropower projects are

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98 Id.
expected to add 10,400 MW of energy to the national grid. Cooperation is also expected to take place with respect to nuclear energy. Nuclear and coal projects are expected to help meet the overall baseload requirements of the country and bring down the cost of power to the consumer.  

It is possible that Pakistan achieves a surplus of power before 2019 as a result of investments by Chinese power companies under CPEC. In addition, a number of renewable energy companies are expected to start generating power before 2019. This should also help in achieving a power surplus before 2019.

3.1 Potential for renewable energy in Pakistan

Hydropower:
Pakistan has a potential of approximately 40,000 MW hydropower. The installed hydropower capacity at the end of 2014–2015 was 7,116 MW.  
The share of existing hydropower installed capacity to total installed generation capacity of the country is 28.67 percent, whereas in 1985 this share was 67 percent. Most of the installed capacity is owned by WAPDA in the public sector and only 214 MW installed hydropower capacity is in the private sector. NEPRA expects about 7,500 MW to be included in the investment plan for private sector hydropower projects with most of these being commissioned by December 2025.  

Solar:
Solar has very significant potential in Pakistan.
Global horizontal irradiance (GHI) values for large parts of the country are high. For example, the annual mean value of GHI for the whole of Pakistan is 2071 KWh/m².  

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99 Id. at 5.
100 Id. at 125.
101 Id., Table 37 at 131.
Figure 6: A multi-year average sum (2000–2012) of Global Horizontal Irradiation (GHI) for Pakistan in kWh/m²

Chart 4: Annual sums of GHI (2000–2012) for Pakistan and Provinces based on satellite estimates
NEPRA has identified 300 MW of solar projects that are under construction.\(^\text{103}\) We understand that an additional 300 MW has been commissioned at the Quaid-e-Azam Solar Park by a Chinese company in 2016.\(^\text{104}\) AEDP has identified another 24 solar projects representing over 850 MW that have received letters of intent (see The Development Process below).\(^\text{105}\)

Wind:
Pakistan has an abundance of natural resources that can be used for primary and supplementary renewable electricity generation. For instance, Pakistan’s coastal belt (Gharo-Khati Bandar) has a wind corridor with a width of approximately 60 km, length of 180 km all the way up to Hyderabad and scope for 50,000 MW of wind-generated electricity.\(^\text{106}\) Wind sites can be found in Balochistan’s coastal area, Sindh, and some Northern locations. Pakistan’s grid technically can take up to 30–40 percent of wind energy and more than 5,000 villages across Sindh, Balochistan and the northern region can be electrified through wind energy.\(^\text{107}\) AEDB has identified 950 MW of wind projects for which letters of intent have been issued that are expected to be commissioned by 2019.\(^\text{108}\)

3.2 Development of renewable energy in Pakistan

Beginning in 2003, the government formed the Alternative Energy Development Board (AEDB) to develop renewable energy in Pakistan. In 2006, AEDB launched its policy for renewable energy development in Pakistan that emphasized small hydro (under 50 MW), solar, and wind.\(^\text{109}\) In 2010, the government formally established AEDB by statute.\(^\text{110}\)

\(^{103}\) See NEPRA State of Industry Report 2016, supra, note 89 at 133.

\(^{104}\) Clean Technica, 1.1 GW of New Solar Capacity being developed in Pakistan, June 1, 2016, https://cleantechnica.com/2016/06/01/1-1-gw-solar-capacity-developed-pakistan/ (last visited Feb. 9, 2018).


\(^{106}\) Id. at 128–129.

\(^{107}\) Id. at 128–129.

\(^{108}\) Id. at 135.


Hydro projects in excess of 50 MW are handled by the Private Power and Infrastructure Board (PPIB) which also dealt with the investments by the IPPs in thermal generation, mostly oil- and gas-fired projects under the 1994 and 2002 policies.  

The Development Process:
The development process for all renewable energy sources in Pakistan generally contains the following elements whether involving the AEDB, PPIB, provincial governments such as Punjab or Sindh or others (we’ve illustrated this process by reference to an unsolicited proposal for a grid-connected renewable energy project carried out by an independent power producer):

Chart 5: AEDB Development Process

The above allowance periods may vary by project and identity of the authorizing agency.

For example, the government of Punjab allows the following activities to be completed in 6–9 months as compared with 18 months under the AEDB scheme:

**Chart 6:** Government of Punjab—Key development steps


**Land Acquisition:**

Acquisition of land is a time-consuming process whether of public lands or purchases from private parties. This process needs to be started rapidly with the assistance of AEDB or other governmental parties depending on location of a project.
CPPA:
Central Power Purchasing Agency Guarantee Limited (CPPA) is a nonprofit independent company created by the Government of Pakistan under the Companies Ordinance of 1984. CPPA is responsible for implementing and establishing the “Single Buyer Plus” market mechanism, which enables DISCOs to have bilateral contracts with generators, ultimately leading to competitive market operations.¹¹⁴

NTDC:
The National Transmission and Despatch Company (NTDC) is set-up by statute to take over all properties, rights, and asset obligations and liabilities of 220 kV and 500 kV grid stations and transmission lines. NTDC is required to review and approve evacuation and interconnection studies provided by a developer before a tariff for that developer can be approved and a grid connection agreement signed. See Chart 5 above.

PPPMCL:
The Pakistan Power Park Management Company Limited (PPPMCL), incorporated by the Government of Pakistan, established coal and water infrastructure as part of a power park based out of Gaddani, Balochistan. The mega power park is expected to help eliminate load-shedding in Pakistan and provide affordable electricity to consumers.

NPPMCL:

Standard form documentation:
AEDB has developed standard form documentation for renewable energy projects. These are generally based on forms in use for over twenty years in Pakistan. We believe these documents can be streamlined to make the development process less onerous and less expensive for developers. This is discussed in our recommendations to the Government of Pakistan. See Annex III.

DISCOs:
The public distribution companies have been corporatized and are allocated responsibility for particular cities or areas.

GENCOs:
The GENCOs are four public sector generation companies that when combined own and operate nine thermal power plants and one coal power plant:

- GENCO-I (Jamshoro Power Company)
- GENCO-II (Central Power Generation Company)
- GENCO-III (Northern Power Generation Company)
- GENCO-IV (Lakhra Power Generation Company)

K-Electric:
K-Electric is a private sector generation, transmission, and distribution company responsible for Karachi (a city of approximately 14.9 mn\textsuperscript{116}), and certain adjoining areas in Sindh and Balochistan. Developers seek to develop projects in K-Electric’s territory must negotiate energy purchase agreements with K-Electric.

NEPRA:
Tariffs for all renewable energy projects are determined by NEPRA. These are referred to as upfront tariffs but are effectively Feed-in Tariffs (FIT). Once a FIT has been determined by NEPRA, a developer can apply for it following which financial close must be achieved as determined by NEPRA.

Under the NEPRA Upfront Regulations 2011, NEPRA may approve and grant a tariff in ten days. This represents a significant time-saving for developers. Taken with the reduced periods required by the government of Punjab for completion of a feasibility study, there is every reason to believe that the development process can be managed effectively by developers in Punjab and elsewhere with appropriate reform.

As for certain countries (the UAE) listed below, FITs in Pakistan are falling:

3.3 UAE (Solar PV & CSP)

*PV:* In 2015, Dubai Electric and Water Authority (DEWA) signed a deal at 5.84 cent/kWh over 25 years with no incentives. Sixteen months later, in May 2016, a 50 percent price decrease was recorded when with a record-breaking bid of 2.99 cents/kWh for 800 MW of solar PV.

**Table 7:** Solar Tariff trends in the UAE (2015–2016)

<table>
<thead>
<tr>
<th>Year</th>
<th>Tariff (cents/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>5.84</td>
</tr>
<tr>
<td>May 2016</td>
<td>2.99</td>
</tr>
<tr>
<td>Sept 2016</td>
<td>2.42</td>
</tr>
</tbody>
</table>

*CSP:* DEWA has an ambitious target of a globally competitive CSP of approximately $80 MWh for its first-ever CSP project. DEWA’s target price of around $80/MWh is around half that signed for ACWA Power’s Noor III tower project in Morocco, set at $163/MWh in 2015.

3.4 Pakistan

Pakistan’s wind, hydro and solar tariffs have consistently decreased in the past few years. The tariffs are determined through detailed deliberations by NEPRA, AEDB, Planning Commission, provincial governments, project developers, turbine suppliers, and various other stakeholders.

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Table 8: Upfront Tariff for Wind Power Projects

<table>
<thead>
<tr>
<th>Year</th>
<th>Tariff (with 100% Foreign Debt) (US cents/kWh)</th>
<th>Tariff (with 100% Local Debt) (US cents/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014</td>
<td>2015</td>
</tr>
<tr>
<td>Levelized</td>
<td>13.52</td>
<td>10.45</td>
</tr>
<tr>
<td>1-10 years</td>
<td>15.94</td>
<td>12.29</td>
</tr>
<tr>
<td>11-20 years</td>
<td>7.25</td>
<td>5.66</td>
</tr>
</tbody>
</table>

Hydro (2014–2015):

Table 9: Low Head Hydropower up to 25 MW (2014120–2015121)

<table>
<thead>
<tr>
<th>Year</th>
<th>Tariff (with 100% Foreign Debt) (US cents/kWh)</th>
<th>Tariff (with 100% Local Debt) (US cents/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014</td>
<td>2015</td>
</tr>
<tr>
<td>Levelized</td>
<td>7.5633</td>
<td>--</td>
</tr>
<tr>
<td>1-10 years</td>
<td>9.4980</td>
<td>8.3194</td>
</tr>
<tr>
<td>11-20 years</td>
<td>3.9418</td>
<td>--</td>
</tr>
</tbody>
</table>

Table 10: High Head Hydropower up to 25 MW (2014122–2015123)

<table>
<thead>
<tr>
<th>Year</th>
<th>Tariff (with 100% Foreign Debt) (US cents/kWh)</th>
<th>Tariff (with 100% Local Debt) (US cents/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014</td>
<td>2015</td>
</tr>
<tr>
<td>Levelized</td>
<td>6.9297</td>
<td>--</td>
</tr>
<tr>
<td>1-10 years</td>
<td>8.6918</td>
<td>7.6177</td>
</tr>
<tr>
<td>11-20 years</td>
<td>3.6310</td>
<td>--</td>
</tr>
</tbody>
</table>


For an installed capacity of 100 MW per developer, NEPRA announced Upfront Solar Tariff in January 2015.


122 See NEPRA State of Industry Report 2014, supra, note 120.


<table>
<thead>
<tr>
<th>Capacity (MW)</th>
<th>Levelized Tariff (US Cents/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>North Region</td>
</tr>
<tr>
<td></td>
<td>2015</td>
</tr>
<tr>
<td>&gt;1≤20 MW</td>
<td>15.0279</td>
</tr>
<tr>
<td>&gt;20≤50 MW</td>
<td>14.8953</td>
</tr>
<tr>
<td>&gt;50≤100 MW</td>
<td>14.7588</td>
</tr>
</tbody>
</table>

A developer must apply for a generation license from NEPRA. This is granted following compliance with applicable NEPRA rules and regulations.

**Environmental issues:**
The developer will be required to comply with applicable Pakistan law. If financing is to be provided by offshore lenders, the sponsor will invariably also have to comply with the Equator Guidelines, IFC Performance Standards and World Bank Health and Safety Guidelines (if IFC or the World Bank provide financing).

**Political Risk:**
It is advisable for a sponsor to get political risk and other insurance from the Multilateral Investment Guarantee Agency (MIGA). MIGA insures against the following risks: currency convertibility and transfer restrictions; expropriation; war, civil disturbances, terrorism, or sabotage; breach of contract; and non-honouring of sovereign financial obligations.

**Fiscal Regime and Taxation:**
Pakistan has developed a generous fiscal regime applicable to renewable energy projects. Renewable energy and all power projects are exempted from income tax in Pakistan.

Income from other sources other than generation of electricity, including interest income, is taxable at the corporate tax rate of 32 percent.

The withholding tax on dividends for wind and solar power projects is 7.5 percent.

124 *Id.* at 42.
A company paying interest to offshore lenders will need to withhold tax at the rate of 20 percent. The lenders will need to file a tax return in Pakistan showing income received and an appropriate refund claimed.

3.5 Public-Private Partnerships (PPPs)

The government of Pakistan has had a policy in place since 2010 that sought to encourage the development of PPPs. Some of the provinces, for example, Punjab and Sindh, have also sought to develop PPP frameworks with mixed results.

The power generation sector in Pakistan, under a federal mandate, has developed under PPP arrangements over a number of years with some success.

A PPP law was enacted in March 2017 by the federal government to establish a regulatory framework for PPPs and to promote domestic and foreign investment in infrastructure.

It is hoped that each PPP project is subject to a rigorous Value for Money (VfM) analysis. A VfM analysis is usually conducted in every PPP to ensure that value is provided to the host government that is undertaking the PPP project.

A project yields value for money if it results in a net positive gain to society which is greater than that which could be achieved through any alternative procurement route. Or put differently, VfM is the optimum combination of life-cycle costs (i.e., the entire project cost) and quality (or fitness for purpose) of a good or service to meet the user's requirement, in this case the people of Pakistan.

3.6 Prospects for the Future

We believe prospects for Pakistan’s renewable energy program are good.

Adoption of our recommendations to the government of Pakistan to streamline the development process and documentation can only be beneficial for the country.

3.7 Donor Support

Pakistan has received outstanding assistance and support from the World Bank, the Asian Development Bank, USAID, the International Finance Corporation, in addition to support from other countries including Germany.

Each of these organizations or countries has materially enhanced the prospects of the energy sector in Pakistan.

127 The EPEC PPP Guide – How to prepare, procure, and deliver PPP projects http://www.eib.org/epec/g2g/i-project-identification/12/124/
Disclaimer

The projections, figures and statistical data presented in this Chapter which do not purport to be comprehensive, are based upon publicly available information that is believed to be reliable, but which has not been verified by The Ansar Law Firm.

In particular, but without limitation, no reliance should be placed on, any projections, targets, estimates or forecasts and nothing in this Chapter is or should be relied on as a promise or representation as to the future.

In providing this Chapter, The Ansar Law Firm does not undertake any obligation to provide any additional information or to update this Chapter or to correct any inaccuracies that may become apparent.

The contents of this Chapter is not to be taken as constituting the giving of legal advice by the The Ansar Law Firm to any reader, interested party, or other person, nor to constitute such persons clients of The Ansar Law Firm.

Any such persons should seek independent legal advice with respect to investments in renewable energy facilities in Pakistan.
Annex I: World Bank Overview of Pakistan

Pakistan has made significant progress in regaining macroeconomic stability over the past three years. Pakistan has achieved macroeconomic stability in the past three years: the fiscal deficit has shrunk from 8 percent to below 5 percent, international reserves have tripled to over $18b, and the rate of growth has increased by a full percentage point to 4.7 percent.

Economic indicators in the first half of FY17 suggest that pressures are mounting for both fiscal consolidation and external balances. The current account deficit will more than double in FY19 from 1.1 percent of GDP in FY16. Reserves are forecast to be around $18b by FY19, still well above three months of imports. The fiscal deficit will widen from 4.5 percent of GDP in FY16 to 5.1 percent in FY18, and will decline slightly to 4.9 percent in FY19. Pakistan has also embarked on an ambitious structural reforms program. Implementation record has been mixed. There were early successes in taxation, the financial sector, the business environment (at both the national and provincial levels), and the electricity sector. However, significant reforms undertaken in the electricity sector have stalled since the Government stopped privatization a year ago.

Circular debt cleared earlier has piled up again nearly to its 2013 levels. There have been efforts to reduce the electricity regulator’s independence. Progress in improving development outcomes have been mixed and investment levels remain very low, at around 15 percent of GDP (both public and private). Maintaining macroeconomic stability and further progress in structural reforms will be necessary to accelerate growth and ensure it is inclusive and sustainable.

Growth, though volatile and low in some periods, has been quite pro-poor in Pakistan over the past decade and a half. The headcount poverty rate has fallen consistently over this period, from 34.7 percent in FY01/02 to 9.3 percent in FY13/14 (using the latest survey data and the old poverty line). Using incidence curves that plot the growth rate in consumption at each percentile of the distribution, it is evident that growth has been pro-poor in Pakistan through much of this period. Looking at the bottom 40 percent of the population—a measure of shared prosperity—we see a similar pattern. The Government adopted a revised methodology to measure poverty and a new poverty line in 2016. Under the revised poverty line, the poverty head count has declined from 64.3 percent in FY01/02 to 29.5 percent in FY13/14. Our understanding of what has caused this significant decline in poverty remains incomplete. Important contributors are higher GDP growth in the earlier years, strong growth in remittances, effective social assistance programs as well as rapid and “hidden” urbanization, which has led to a very vibrant informal sector.

Pakistan remains one of the lowest performers in the South Asia Region on human development indicators, especially in education and stunting. The Net Enrollment Rates in education have been increasing in Pakistan but still lag behind other South Asia countries. Infant and under five mortality rates represent a similar story. Gender disparities persist in education, health and all economic sectors. Pakistan has one of the lowest female labor force participation rates in the region. Nutrition also remains a significant cross-cutting challenge, as 44 percent of children under five are stunted. The spending on health, nutrition, and education, now totalling 3 percent of GDP, is significantly lower than most other countries. Increased allocation will only be possible after increasing government revenues. The tax-to-GDP ratio, at 12.4 percent, is one of the lowest in the world and it is still half of what it could be for Pakistan. Continued reforms to broaden the tax base and increase revenues will therefore need to remain a priority. Service delivery is the responsibility of subnational governments, whose capacity varies, but the federal government needs to play an assertive stewardship role as increased financing has to be accompanied by meaningful improvements in quality of services. A strategy to greatly improve development outcomes would therefore need to combine efforts to increase the level of public spending as well as improving its quality, with a focus on provincial level capacity.

Over the past few years, greater decision-making authority has been assigned to provincial governments. The Eighteenth Constitutional Amendment has devolved a number of key functions to the provinces. In total, functions in 17 federal ministries have been devolved, including Agriculture, Education, Environment, and Health. In addition, a greater share of revenues has been passed to the provinces through the National Finance Commission Award (NFC) in order to enable them to perform these functions. As expected, the devolution has posed institutional and capacity challenges at the provincial level, and meeting these challenges will require concerted efforts to enhance sub-national capacity and institutional development, which varies across provinces.
Annex II: Foreign Investors in Pakistan by Sector

Automotive
Atlas Honda – Japan
Hyundai – South Korea
Kia Motors – South Korea
Pak-Suzuki – Japan
Renault – France
Skoda – Czech Republic
Siemens – Germany
Toyota – Japan
Volkswagen – Germany

Automotive, Manufacturing
MAN Diesel & Turbo – Germany
Voith Hydro – Germany

Construction
Asian Precious Metals – United Kingdom
HydroChina Investment Corporation – China

Consumer Products
Friesland Campina – Netherlands
Metro Group – Germany
Philip Morris – United States
Proctor and Gamble – United States
Rohde and Schwarz – Germany
Unilever – United Kingdom/Netherlands

Financial Services
Abraaj Group – Dubai
Acumen Fund – United States
Aga Khan Fund (AKF) for Economic Development – France/East Africa
Australia and New Zealand Banking Group – Australia
Bank Alfalah – Abu Dhabi Group
Citibank – United States
Samba Financial Group – Saudi Arabia

Government Agencies
German Investment and Development Corporation (DEG) – Germany
Export Development Canada – Canada
Japan Export-Import Bank – Japan
Korean Ex-Im Bank – South Korea
United States Agency for International Development (USAID) – United States
Overseas Private Investment Corporation – United States
Proparco – France
Tundra Fonder – Sweden
US EXIM Bank – United States

**Food & Beverage**
Coca Cola – United States
Pepsi – United States
Nestle – Switzerland

**Multilateral Organizations**
Asian Development Bank
International Finance Corporation
World Bank

**Oil and Gas**
Coastal Corporation – United States
El Paso Corporation – United States
Eni – Italy
Kuwait Foreign Petroleum Exploration Company – Kuwait
OMV – Austria
Poly-GCL – China
Shell – Netherlands
Sino-PEC – China

**Pharmaceuticals**
Abbott – United States
Bristol Myers Squibb – United States
GlaxoSmithKline – United Kingdom
Johnson & Johnson – United States
Merck – United States
Novartis – Switzerland
Pfizer – United States
Roche – Switzerland
Sanofi – France
Power
AES Corporation – United States/United Kingdom
Al-Mirqab Capital – Qatar
Burj Power – United Arab Emirates
China International Water & Electric Company – China
China Power Investment Corp – China
Daewoo – South Korea
Dongfang Electric – China
Engie – France
ESB International – Ireland
Farab Energy & Water Project – Iran
General Electric – United States
Globeleq – United Kingdom
Harbin Electric Company – China
Huaneng Shandong – China
International Power – United Kingdom
Mira Power Limited – South Korea
National Power – United Kingdom
Oman Oil – Oman
Pendekar Kabirwala Power Company – Malaysia
Shandong Ruyi Group – China
Shanghai Electric – China
Sinohydro Resources Ltd – China
TBEA Xinjiang Sun Oasis Company Limited – China
Tenaska – United States
Three Gorges Corp – China
Xenel Industries – Saudi Arabia
Zonergy Company Limited – China

Ship-building
China Shipbuilding Industry Corp – China

Steel
Al Tuwairqi – Saudi Arabia
POSCO – South Korea

Technology
China Mobile (ZONG) – China
LG Electronics – South Korea
Microsoft – United States
Samsung – South Korea
FINANCING RENEWABLE ENERGY PROJECTS

**Telecom**
China Mobile Telecommunications – China  
Etisalat – United Arab Emirates  
Haier – China  
Mobilink – Egypt  
Telenor – Norway

**Textile**
Shandong Ruyi Science & Technology Group – China

**Transportation**
Daewoo – South Korea
Annex III: Recommendations to the Government of Pakistan

REGULATORY FRAMEWORK FOR RENEWABLE ENERGY
RECOMMENDATIONS TO THE GOVERNMENT OF PAKISTAN AND RELATED ENTITIES

To:

Federal Minister for Energy
Federal Minister for Finance
Adviser to the Prime Minister on Climate Change
Chief Executive Officer, Alternative Energy Development Board

CC:
Chief Executive Officer, National Electric Power Regulatory Authority
Chief Executive Officer, Department of Energy, Government of Balochistan
Chief Executive Officer, Energy & Power Department, Government of Khyber Pakhtunkhwa
Chief Executive Officer, Punjab Power Development Board
Chief Executive Officer, Energy Department of Sindh
All Federal Secretaries relating to the above

Your Excellencies/Ladies and Gentlemen:

Recommendations—Renewable Energy Framework in Pakistan

Based on our analysis of the regulatory framework for renewable energy in Pakistan, which is part of a larger analysis involving the publication Financing Renewable Energy Projects: A Global Analysis and Review of Related Power Purchase Agreements involving 59 jurisdictions representing a global population of 4.7 billion, our recommendations are as follows:

1. **Development Process**: Streamline the development process for renewable energy projects, for example, as implemented by the government of Punjab — but also explore ways for assisting developers and making the process of implementation of these projects as efficient, transparent, cheap, and competitive as possible. None of our recommendations will in any way prejudice the rights of the implementing agencies at the federal level (Alternative Energy Development Board) or at the provincial level (involving provincial or Azad, Jammu & Kashmir or other governments or entities).

2. **Renewable Energy Policy**: It has been over ten years since the Policy for Renewable Energy was introduced. Renewable energy is a fast-moving, rapidly
changing sector: there have been many developments relating to hydropower, solar and wind that can usefully be incorporated into a new policy. We recommend the government launches a new, investor-friendly policy covering all renewable energy sources as soon as possible.

3. **Climate Change**: Pakistan has a sound and detailed approach to meet the challenges of climate change. Make this a leading priority of the Government to mobilize international and domestic financing to meet Pakistan’s needs. Introduce a nationwide program on climate change and renewable energy to mobilize the population as to this critical area. See below with respect to solar.

4. **Solar**: Introduce a nationwide program for the deployment of solar across the country. Introduce incentives for consumers to develop rooftop solar capacity. Encourage consumers to avail of the advantages of net metering, which has been introduced into Pakistan. Net metering allows residential and commercial customers who generate their own electricity from solar power to feed electricity they do not use back into the grid.

5. **Net Metering**: Finalize relevant technical standards and support the DISCOs in developing suitable net metering standards and billing procedures. Establish dedicated net metering units within the distribution companies to help bundle net metering knowledge and centrally address all capability bottlenecks at the distribution company level. Establish a nationwide helpdesk (preferably at NEPRA) including a toll-free hotline for potential customers of net metering that helps to address issues on the customer level effectively and allows identification of remaining hurdles for net metering on the ground. NEPRA should increase the agreement term in the net metering regulations from 3 to 10 years, including a clause for renewal in the absence of relevant objections. In addition to this, legal barriers for third-party financing should be removed.129

6. **Distributed Generation**: refers to power generation at the point of consumption. Generating power on-site, rather than centrally, eliminates the cost, complexity, interdependencies, and inefficiencies associated with transmission and distribution. The Government should encourage distributed generation in Pakistan particularly in the solar sector.

7. **Solar Home System Program**: With the assistance of the multilateral institutions launch a solar home system program in Pakistan to provide clean, reliable electricity to millions of Pakistanis in off-grid areas. The technology required to launch such a program is not difficult to implement and can be done rapidly with untold benefits.

8. **Renewable Energy Documentation**: The standard form documentation used for renewable energy projects originates from documentation first used in

129 See AEDB/GIZ Roadmap, supra, note 47 at 40.
1994. Much of the current documentation can also be streamlined to reflect current developments in renewable energy. This can be done without compromising the rights of the implementing agencies, whether AEDB or Provincial or other governments. We also recommend this process be completed as soon as possible.

9. **Circular Debt**: eliminate this once and for all.

10. **Domestic Innovation**: There is also potential for the funding and promotion of innovation clusters for renewable energy and climate change related projects.

11. **Cross-provincial projects**: While the federal government already provides funding for many provincial projects, there are opportunities for a greater number of cross-provincial projects and standards to be implemented to reduce carbon emissions. The cross-provincial projects would be particularly beneficial to provinces with few climate change initiatives.

12. **Provincial Responsibilities and Targets**: Pakistan is yet to initiate and agree on the clarification of provincial responsibilities to meet specific targets, procurement of financing and the formulation of reporting mechanisms.

13. **Transmission**: build a sound, strong, well-developed, and resilient nationwide transmission system that will be the backbone of development of the energy sector in Pakistan for years to come. In this respect, emulate the example of Germany which has such a system that has allowed for the sustainable development of its energy sector.

**Implementation Issues**:

- Our recommendations do present challenges. However, the potential benefits for Pakistan are considerable.
- To implement each of our recommendations requires political will.
- Ensure that the private sector is fully involved at each step.
- Pakistan’s considerable experience with IPPs and reform of the power sector should be marshalled and leveraged to achieve these objectives.

Time is of the essence: we believe a good faith estimate to achieve the above is two to four months to achieve Cabinet approval. Move fast and with transparency. The time involved in bringing this process to completion will involve stakeholder consultation.

- Generally, properly managed these objectives can be achieved.
- All the above steps should be taken in tandem with other initiatives of the Federal government including improving Pakistan’s credit rating, enhancing tax collections, and economic and other policies.
# PPA Comments

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Specific comments on the Utility-Scale Solar PPA/Utility-Scale Wind/Multi-Use Hydro PPA</th>
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</thead>
<tbody>
<tr>
<td>General Comments</td>
<td>General Commercial Comments</td>
</tr>
<tr>
<td></td>
<td>In this segment we comment on the Utility-Scale Solar PV PPA (the Solar PPA), the Utility-Scale Wind PPA (the Wind PPA), and the Multi-Use Hydropower PPA (the Hydro PPA) (the Solar PPA, the Wind PPA, and the Hydro PPA are individually referred to as a “PPA,” and collectively as the “PPAs”) from a Pakistan law perspective.</td>
</tr>
<tr>
<td></td>
<td>Since the basic differences between each PPA relate to the obligations with respect to the delivery of energy, we examine these issues separately in Annexes I, II, and III with respect to each PPA.</td>
</tr>
<tr>
<td></td>
<td>The basic form of power purchase agreement in use in Pakistan going back to the mid-1990s and Pakistan’s first IPP program is based on a U.S. form. At this time, Pakistan succeeded in attracting over $5 billion in investment and contracting about 4,500 megawatts of private generation in record time.¹</td>
</tr>
<tr>
<td></td>
<td>The forms of PPAs we consider here should find ready application in Pakistan, subject to appropriate amendments to conform to Pakistan law.</td>
</tr>
</tbody>
</table>

## Financial Arrangements

**What if any changes to each PPA are required in your jurisdiction to ensure it is financeable?**

All three PPAs are financeable in Pakistan, subject to amendments to conform to Pakistan law.

In each case, it is important to get lender input from inception. Lenders will be concerned about the creditworthiness of the offtaker and will review environmental, technical and other data relating to the project. Termination provisions of the PPA will also bear scrutiny from the lenders. In case of each PPA the termination provisions will not impact financeability.

## Enforceability

**What if any changes to each PPA are required in your jurisdiction to ensure it is enforceable?**

All three PPAs are enforceable in Pakistan, subject to amendments to conform to Pakistan law.

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<tr>
<th>Aspect</th>
<th>Specific comments on the Utility-Scale Solar PPA/Utility-Scale Wind/Multi-Use Hydro PPA</th>
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<tbody>
<tr>
<td></td>
<td>Utility-Scale Solar/Wind/Hydro</td>
</tr>
<tr>
<td>Dispute Resolution</td>
<td><strong>What dispute resolution framework would you recommend for your jurisdiction?</strong></td>
</tr>
<tr>
<td></td>
<td>Mediation followed by UNCITRAL arbitration before a sole arbitrator in case of all three PPAs in Islamabad.</td>
</tr>
<tr>
<td>Tax and related incentives</td>
<td><strong>Please describe tax incentives applicable in your jurisdiction to solar photovoltaic and wind energy projects</strong></td>
</tr>
</tbody>
</table>
|        | **Income Taxation**<sup>2</sup>  
All power projects (including renewable energy projects) are exempt from income taxation in Pakistan. Normally, those who do not bear corporate tax liability must pay turnover tax which is generally less than 1 percent of turnover. Even though electricity generators in Pakistan do not pay corporate taxes, they are exempt from turnover taxes.  
**Withholding Taxes**  
Under Section 152 of the 2001 Income Tax Ordinance, each person making a payment to a non-resident is required to withhold tax at the specified rate. Under the tariff for wind and solar power projects, withholding tax on dividends is not permitted as a pass-through item. The withholding tax rate on dividends for wind and solar power projects is 7.5 percent.  
A company would have to withhold tax on interest payments made to foreign lenders at the rate of 20 percent. However, the rate would be reduced to 10 percent for non-residents who are not permanently established in Pakistan.  
No income tax or provincial withholding tax would apply with respect to dividends.  
**Import Duties**  
Under Heading 12 of the Fifth Schedule to the Customs Act 1969, equipment for renewable energy projects is exempt from import duties. Similarly, under Heading 7 of the Sales Tax Act 1990, an exemption is available to the collection of sales tax at the import stage. Under Part IV of the Income Tax Ordinance of 2001, there is another exemption to income tax at the import stage. |

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<tr>
<th>Aspect</th>
<th>Specific comments on the Utility-Scale Solar PPA/Utility-Scale Wind/Multi-Use Hydro PPA</th>
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<tbody>
<tr>
<td></td>
<td>Utility-Scale Solar/Wind/Hydro</td>
</tr>
<tr>
<td>Sales Tax</td>
<td>Sales tax is charged in Pakistan at the rate of 17 percent. While solar projects are not exempt from sales tax, in the case of electricity sales, NEPRA has a provision that allows a company to pass through the sales tax to the off-taker under an energy purchase agreement.</td>
</tr>
<tr>
<td>Zakat</td>
<td>Zakat, which is charged at 2.5 percent on dividends paid to Muslim shareholders, is exempted for all non-Muslim and non-resident shareholders.</td>
</tr>
<tr>
<td>Other Incentives</td>
<td>NEPRA has provisions for equity repatriation and dividends. These can be granted by the State Bank of Pakistan (SBP) and are required prior to financial close under an implementation agreement (the IA). Sponsors can raise local and international financing including corporate bonds. Also, non-residents are allowed to buy shares of power companies without SBP permission.</td>
</tr>
<tr>
<td>Consents and approvals</td>
<td>Are there any material consents and approvals that raise particular difficulties or timing issues in your jurisdiction?</td>
</tr>
<tr>
<td></td>
<td>Most material consents and approvals can be obtained in the ordinary course, including the generation license from the National Electric Power Regulatory Authority (NEPRA), the regulator that oversees the electricity sector in Pakistan. Ensuring the availability of interconnection for a project will be critical. Developers in Pakistan will generally sign the IA with the Government of Pakistan. The IA is the sovereign guarantee payment support mechanism. Its terms include protection of title obtained by the project company, taxation of the project company, taxation of the investor, imports and customs duties, force majeure, restrictions on share transfers, SBP consents to conduct transactions in foreign exchange, SBP commitment to make foreign currency available, if required, NEPRA consent to the power purchaser to off-take the electricity (required under the generation license—see above), and Ministry of Commerce/Federal Board of Revenue import permits.</td>
</tr>
<tr>
<td>Environmental Attributes/Renewable Energy Certificates</td>
<td>Is there a similar regulatory scheme that applies in your jurisdiction? See above.</td>
</tr>
<tr>
<td></td>
<td>Not applicable in Pakistan.</td>
</tr>
</tbody>
</table>
Termination Payment

Termination Payment (Section 2.03): Each PPA provides for the calculation of a Forward Settlement Amount on termination by a non-defaulting party (Section 6.03). This amount is calculated on the basis of the non-defaulting party’s costs and losses netted against its gains. Both losses and gains are defined in broad terms. Please describe any similar or other formula that applies for calculating termination payments in your jurisdiction.

The form of Termination Payment in each PPA would be recognized in Pakistan.

The IA contains compensation payable on termination of a form Energy Purchase Agreement that are entered into by solar developers in Pakistan. The key termination provisions and the related compensation are summarized in the table below. Note that the amount of debt, equity and return on equity payable in any of the termination events reduces throughout the term of the IA and debt includes interest owed to the lenders.3

<table>
<thead>
<tr>
<th>Termination Event</th>
<th>Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Event of Default</td>
<td>Debt equity and 4 years Return on Equity (ROE)</td>
</tr>
<tr>
<td>Change of Law</td>
<td></td>
</tr>
<tr>
<td>Pakistan Political Event (PPE)—Purchaser termination</td>
<td></td>
</tr>
<tr>
<td>PPE greater than 180 days Seller termination</td>
<td>Debt equity and 4 years ROE/2</td>
</tr>
<tr>
<td>Seller Event of Default</td>
<td>Debt—only if Purchase elects to transfers the facility</td>
</tr>
<tr>
<td>Force Majeure Termination</td>
<td>Debt and equity—only if Purchaser elects to transfer the facility</td>
</tr>
</tbody>
</table>

Insurance

Please describe the coverage limits that would apply in your jurisdiction.

The types and amounts of coverage may be applied in Pakistan.

Determination of Fair Market Value

Please describe if an alternative formulation is required. None required.

The formula for Fair Market Value would be recognized in Pakistan.

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3 Id. at 47.
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Specific comments on the Utility-Scale Solar PPA/Utility-Scale Wind/Multi-Use Hydro PPA</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Utility-Scale Solar/Wind/Hydro</td>
</tr>
<tr>
<td>Force Majeure</td>
<td>Please describe if an alternative formulation is required.</td>
</tr>
<tr>
<td></td>
<td>The Force Majeure provision would be recognized in Pakistan. The risk of a force majeure caused by a Pakistan Political Event would be assumed by the Government of Pakistan entities.</td>
</tr>
<tr>
<td>Curtailment</td>
<td>Pakistan practice will recognize the concept of curtailment involving the inability of the generating facility to generate electricity due to system emergencies or seller-induced conditions. Compensated curtailment involving buyer-induced conditions will also be recognized in Pakistan.</td>
</tr>
<tr>
<td>Performance Assurance</td>
<td>Would a similar scheme be used in your jurisdiction?</td>
</tr>
<tr>
<td></td>
<td>Performance assurance is security provided by seller in favour of buyer to secure seller’s obligations under the PPA. This would be recognized in Pakistan.</td>
</tr>
<tr>
<td>Assignment and Financing</td>
<td>Please describe if these provisions need to be supplemented.</td>
</tr>
<tr>
<td></td>
<td>Instead of relying on an assignment of rights to lenders, we’d recommend the use of a direct agreement among the borrower/sponsor and the lenders. Project lenders require the ability to step into the position of the borrower/sponsor in the event of a default under a project contract which might otherwise entitle the project contractor in question to terminate or suspend that contract.</td>
</tr>
<tr>
<td>Other material issues</td>
<td>Please describe other issues that each PPA should address in your jurisdiction.</td>
</tr>
<tr>
<td></td>
<td>None.</td>
</tr>
<tr>
<td>Annex I: Provisions specific to Hydropower PPA</td>
<td>Guaranteed Energy Production (Section 3.07(a)) (GEP): Seller will deliver no less than a guaranteed minimum amount of energy to Buyer measured over a two-year period. If Seller fails to meet this threshold it pays damages to Buyer that are capped in the form of an Aggregate Damage Limitation (Section 3.07(c)). Please comment on this provision: would you use a similar or different formulation in your jurisdiction?</td>
</tr>
<tr>
<td></td>
<td>A similar provision would be recognized in Pakistan.</td>
</tr>
</tbody>
</table>
### Specific comments on the Utility-Scale Solar PPA/Utility-Scale Wind/Multi-Use Hydro PPA

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Utility-Scale Solar/Wind/Hydro</th>
</tr>
</thead>
</table>
| **Annex II: Provisions specific to Utility-scale Solar PV PPA** | **Output Guarantee Amount (Section 3.07(b)):** This provision provides a guarantee to Buyer of output from the Facility and, if a shortfall arises, Seller is required to pay Buyer its replacement costs. Please comment on this provision: would you use a similar or different formulation in your jurisdiction?  
A similar provision would be recognized in Pakistan. |

| **Annex III: Provisions specific to Onshore Wind PPA** | **Mechanical Availability Percentage (Section 3.07(a))(MAP):** This provision provides a guarantee to Buyer that the Generating Facility will be ready to produce energy for an agreed-upon percentage of the time over the course of a Term Year. If the MAP obligation is not met, Seller must pay to Buyer Replacement Power Costs, the costs actually and reasonably incurred by Buyer to purchase or produce a replacement form of renewable energy to cover the shortfall. Please comment on this provision: would you use a similar or different formulation in your jurisdiction?  
A similar provision would be recognized in Pakistan. |
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Specific comments on the Residential Solar PPA/Commercial—Distributed Generation PPA</th>
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</thead>
<tbody>
<tr>
<td>Residential PPA/Commercial—Distributed Generation PPA</td>
<td><strong>General Comments</strong></td>
</tr>
</tbody>
</table>
| **Alternative Energy Development Board:** | The Alternative Energy Development Board (the AEDB), the primary body responsible for renewable energy in Pakistan, expressly contemplates that a private sector service provider may install equipment to set up solar energy plants, operate it for a year and then hand over the equipment to the client. The client bears the capital and operational costs upfront.  

The AEDB also promotes the installation of solar PV systems on roof tops for captive and net metering purposes. In captive systems, the private sector party installs solar PV systems to meet the homeowner’s share of electricity needs. In net metering (see below), customers are encouraged to use equipment that helps the system connect to the distribution grid. The electricity generated through installed solar PV systems is used to meet the homeowner’s electricity needs. Any surplus generated is transmitted to the distribution grid. The consumer is billed for the net electricity consumed from the grid and sent to the grid.  

The basic form of power purchase agreement in use in Pakistan going back to the mid-1990s is based on a U.S. form. At this time, Pakistan succeeded in attracting over $5 billion in investment and contracting about 4,500 megawatts of private generation in record time.¹  

**NEPRA:** The National Electric Power Regulatory Authority (NEPRA), the primary regulator that regulates the electricity sector in Pakistan, is responsible for the issue of licenses for generation, transmission and distribution of electric power.  

NEPRA has issued Net Metering Regulations in 2015 with a view to encourage distributed generation in Pakistan. Although the initial response to the introduction of the net metering regulations has been slow, NEPRA has issued net metering licenses to a number of parties. With added emphasis on this option by AEDB and the government’s increased use of net metering can be expected.  

With respect to the Residential Solar Power Purchase Agreement (the PPA), it can be expected that the Provider is engaged in the business of retailing the sale of electricity to consumers. It should therefore require a generating license from NEPRA. |

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Specific comments on the Residential Solar PPA/Commercial—Distributed Generation PPA</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Residential Solar PPA/Commercial Solar PPA</strong></td>
</tr>
<tr>
<td></td>
<td>The PPA allows a Provider to insure a System installed by an installer and arrange for its repair and maintenance at no additional cost to the homeowner.</td>
</tr>
<tr>
<td></td>
<td>Note that the System is probably likely to be treated as a chattel and not a fixture under Pakistan law. Although there is a degree of annexation of the System to the roof, the fact that the System may be removed and in light of the contractual terms, it is likely that the System will be treated as a chattel.</td>
</tr>
<tr>
<td></td>
<td>The forms of PPA and the Commercial/Distributed Generation PPA (the Commercial PPA), both U.S. forms, are generally compliant with Pakistan law, and should find ready application in Pakistan, subject to appropriate amendments to conform to Pakistan law.</td>
</tr>
<tr>
<td></td>
<td><strong>Consumer Protection Laws in Pakistan</strong></td>
</tr>
<tr>
<td></td>
<td>The PPA will be deemed a consumer contract under the Consumer Protection statutes that have been passed by most of the Provinces in Pakistan. These statutes apply to all goods and services and all sectors whether public, private or any individual person.</td>
</tr>
<tr>
<td></td>
<td>The PPA will require special drafting to accommodate the consumer measures enacted under Pakistan law.</td>
</tr>
<tr>
<td></td>
<td>Generally, a consumer contract must be easily understood by a consumer, provide material information relevant to the contract, and set out the rights and obligations of the parties under the contract particularly with respect to termination rights, financial matters and any penalty or liability obligations on the consumer.</td>
</tr>
<tr>
<td></td>
<td>Consumer courts have been empowered to impose penalties in terms of imprisonment and fines on defaulters for non-compliance with orders passed by these courts.</td>
</tr>
<tr>
<td></td>
<td>The Commercial PPA deals with the supply of goods and services to a commercial third party, i.e., trade sales. Therefore, the consumer protection measures under the PPA will not apply to the extent that parties contract out of those provisions.</td>
</tr>
<tr>
<td></td>
<td>In this segment we also comment on certain provisions of the PPA and the Commercial PPA.</td>
</tr>
<tr>
<td>Aspect</td>
<td>Specific comments on the Residential Solar PPA/Commercial—Distributed Generation PPA</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
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</tr>
<tr>
<td><strong>Financial Arrangements</strong></td>
<td><em>What if any changes to each PPA are required in your jurisdiction to ensure it is financeable?</em></td>
</tr>
<tr>
<td></td>
<td>We believe the PPA will be financeable in Pakistan, subject to appropriate amendments to conform with Pakistan law.</td>
</tr>
<tr>
<td></td>
<td>The Commercial PPA will also be financeable in Pakistan on the same premise. In each case, it is important to get lender input from inception. Lenders will be concerned about the creditworthiness of the offtaker and will review environmental, and technical and other data relating to the project. Termination provisions of the PPA will also bear scrutiny from the lenders. In case of both PPAs, the termination provisions will not impact financeability.</td>
</tr>
<tr>
<td><strong>Enforceability</strong></td>
<td><em>What if any changes to each PPA are required in your jurisdiction to ensure it is enforceable?</em></td>
</tr>
<tr>
<td></td>
<td>None. Both PPAs will be enforceable: parties must ensure that this provision meets their objectives.</td>
</tr>
<tr>
<td><strong>Dispute Resolution</strong></td>
<td><em>What dispute resolution framework would you recommend for your jurisdiction?</em></td>
</tr>
<tr>
<td></td>
<td>Agreement by the parties to settle their disputes amicably followed by mediation and settlement of disputes before the consumer courts. Any settlement procedure should ensure that costs are managed and do not prejudice the homeowner.</td>
</tr>
<tr>
<td></td>
<td>Both PPAs will be governed by Pakistan law.</td>
</tr>
<tr>
<td><strong>Tax and related incentives</strong></td>
<td><em>Please describe tax incentives applicable in your jurisdiction to solar photovoltaic projects</em></td>
</tr>
<tr>
<td><strong>Income Taxation</strong></td>
<td>All power projects (including renewable energy projects) are exempt from income taxation in Pakistan. Normally, those who do not bear corporate tax liability must pay turnover tax which is generally less than 1 percent of turnover. Even though electricity generators in Pakistan do not pay corporate taxes, they are exempt from turnover taxes.</td>
</tr>
<tr>
<td><strong>Withholding Taxes</strong></td>
<td>Under Section 152 of the 2001 Income Tax Ordinance, each person making a payment to a non-resident is required to withhold tax at the specified rate. Under the tariff for wind and solar power projects, withholding tax on dividends is not permitted as a pass-through item. The withholding tax rate on dividends for wind and solar power projects is 7.5 percent.</td>
</tr>
</tbody>
</table>

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### Specific comments on the Residential Solar PPA/Commercial—Distributed Generation PPA

**Residential PPA/Commercial—Distributed Generation PPA**

- A company would have to withhold tax on interest payments made to foreign lenders at the rate of 20 percent. However, the rate would be reduced to 10 percent for non-residents who are not permanently established in Pakistan.

- No income tax or provincial withholding tax would apply with respect to dividends.

**Import Duties**

Under Heading 12 of the Fifth Schedule to the Customs Act 1969, equipment for renewable energy projects is exempt from import duties. Similarly, under Heading 7 of the Sales Tax Act 1990, an exemption is available to the collection of sales tax at the import stage. Under Part IV of the Income Tax Ordinance of 2001, there is another exemption to income tax at the import stage.

**Sales Tax**

Sales tax is charged in Pakistan at the rate of 17 percent. While solar projects are not exempt from sales tax, in the case of electricity sales, NEPRA has a provision that allows a company to pass through the sales tax to the off-taker under an energy purchase agreement.

**Zakat**

Zakat, which is charged at 2.5 percent on dividends paid to Muslim shareholders, is exempted for all non-Muslim and non-resident shareholders.

**Other Incentives**

NEPRA has provisions for equity repatriation and dividends. These can be granted by the State Bank of Pakistan (SBP) and are required prior to financial close under an implementation agreement.

- Sponsors can raise local and international financing including corporate bonds. Also, non-residents are allowed to buy shares of power companies without SBP permission.

<table>
<thead>
<tr>
<th>Consents and approvals</th>
<th>Are there any material consents and approvals that raise particular difficulties or timing issues in your jurisdiction?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Most consents and approvals can be obtained in the ordinary course, including the generation license from NEPRA, as required.</td>
</tr>
<tr>
<td></td>
<td>Ensuring the availability of interconnection for a project will be critical.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Attributes/Renewable Energy Certificates</th>
<th>Is there a similar regulatory scheme that applies in your jurisdiction?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Aspect</td>
<td>Specific comments on the Residential Solar PPA/Commercial—Distributed Generation PPA</td>
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<td>--------------------------------------------</td>
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<tr>
<td>Termination Payment</td>
<td>Please describe the formula for calculating the Termination Payment in your jurisdiction.</td>
</tr>
<tr>
<td>(Section 13(b)(ii) – Commercial PPA)</td>
<td>The Termination Payment formula will be enforceable in Pakistan.</td>
</tr>
<tr>
<td></td>
<td>The parties may negotiate the terms of the termination payment. The amount of the</td>
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<td>termination payment would generally be equivalent to the losses incurred by the</td>
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<td>Seller in connection with the early termination provision of the Commercial PPA by</td>
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<td>the Purchaser. In the context of Section 13(b)(ii), this would be equivalent to the</td>
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<td>Seller’s capital costs, depreciation and tax costs, restoration and/or other directly</td>
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<tr>
<td></td>
<td>related reasonable costs of completing the transaction.</td>
</tr>
<tr>
<td>Insurance (Section 15(b) Commercial PPA)</td>
<td>Please describe the coverage limits that would apply in your jurisdiction.</td>
</tr>
<tr>
<td></td>
<td>The types of coverage required will be recognized in Pakistan. No alternative</td>
</tr>
<tr>
<td></td>
<td>formulation is required.</td>
</tr>
<tr>
<td>Fair Market Value (Section 16.C Commercial PPA)</td>
<td>Please describe if an alternative formulation is required.</td>
</tr>
<tr>
<td></td>
<td>The determination of Fair Market Value will be recognized in Pakistan. It is</td>
</tr>
<tr>
<td></td>
<td>generally a standard method for determining the value of the System.</td>
</tr>
<tr>
<td>Force Majeure (Section 18 Commercial PPA):</td>
<td>Please describe if an alternative formulation is required.</td>
</tr>
<tr>
<td></td>
<td>Generally, Pakistan law will recognize Pakistan Political Events and impose liability</td>
</tr>
<tr>
<td></td>
<td>on the Government of Pakistan entities in respect of such events. Subject to the</td>
</tr>
<tr>
<td></td>
<td>foregoing, no alternative formulation is required.</td>
</tr>
<tr>
<td>Assignment and Financing (Section 19 Commercial PPA)</td>
<td>Please describe if these provisions need to be supplemented.</td>
</tr>
<tr>
<td></td>
<td>Instead of relying on an assignment of rights to lenders, we’d recommend the use of</td>
</tr>
<tr>
<td></td>
<td>a direct agreement among the borrower/spONSor and the lenders. Project lenders require</td>
</tr>
<tr>
<td></td>
<td>the ability to step into the position of the borrower/spONSor in the event of a default</td>
</tr>
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<td></td>
<td>under a project contract which might otherwise entitle the project contractor in fact</td>
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<td></td>
<td>to terminate or suspend that contract.</td>
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<tr>
<td>Aspect</td>
<td>Specific comments on the Residential Solar PPA/Commercial—Distributed Generation PPA</td>
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</tr>
<tr>
<td>Residential PPA/Commercial—Distributed Generation PPA</td>
<td></td>
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<tr>
<td>Other material issues</td>
<td>Please describe other issues that each PPA should address in your jurisdiction.</td>
</tr>
<tr>
<td></td>
<td>Excess electricity delivered by the System under the Commercial PPA should be subject to delivery under an interconnection agreement or a net metering arrangement.</td>
</tr>
</tbody>
</table>