ISLAMIC REPUBLIC STATE OF AFGHANISTAN

Ministry of Energy and Water

Country Presentation

By

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SAARC Workshop On Application of on-grid Biogas Technology
May 16 – 17, 2016, Kabul
Part 1
About Afghanistan

Part 2
Renewable Energy in Afghanistan

Part 3
Renewable Energy Framework
Part 1
About Afghanistan
Location: located between Central and South Asia

Population: Around 29.7 M

36% of population living in poverty (UNDP)

Agriculture is the largest sector contributing 23% of GDP and employing 78.6% of labor

Over the past three decades, forest cover has decreased by 50%. Today forests cover only 2% of Afghanistan (UNEP 2013)

One of the most vulnerable countries to climate change (UNEP 2014)
ISLAMIC REPUBLIC STATE OF AFGHANISTAN

<table>
<thead>
<tr>
<th></th>
<th>Islamic Republic of Afghanistan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Country</td>
<td>Afghan</td>
</tr>
<tr>
<td>Nationality</td>
<td>Afghan</td>
</tr>
<tr>
<td>Population, total (millions)</td>
<td>29.7</td>
</tr>
<tr>
<td>Surface area, sq. km. (thousands)</td>
<td>652.9</td>
</tr>
<tr>
<td>Fiscal year</td>
<td>Starts 21 Dec-</td>
</tr>
<tr>
<td>GDP, current US$ (billions)</td>
<td>20.30</td>
</tr>
<tr>
<td>Poverty headcount ratio at national poverty lines (% of population) (2013-14)</td>
<td>54.5</td>
</tr>
<tr>
<td>GDP growth (annual %)</td>
<td>3.6</td>
</tr>
<tr>
<td>Share of GDP in Agriculture (% of GDP)</td>
<td>23</td>
</tr>
<tr>
<td>Share of GDP in Industry (% of GDP)</td>
<td>21.1</td>
</tr>
<tr>
<td>Share of GDP in Energy (% of GDP)</td>
<td>0.1</td>
</tr>
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Part 2

Renewable Energy in Afghanistan
# Renewable Energy in Afghanistan

<table>
<thead>
<tr>
<th>No</th>
<th>Type</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hydro Power</td>
<td>• 23,000MW of Energy&lt;br&gt;• Current collective installed capacity of Hydro Power energy is over 270 MW.&lt;br&gt;• 125+ sites have been identified for MHP, with potential of over 600MW of electricity&lt;br&gt;• Micro/Mini hydropower (MHP) prefeasibility studies plants have been done in nine provinces.</td>
</tr>
<tr>
<td>2</td>
<td>Wind Energy</td>
<td>• Commercially exploitable wind resources exist in many parts of the country.&lt;br&gt;• 68000 MW Potential, 5MW/km²&lt;br&gt;• 31,600km² windy land area i.e. 5% of Afg. total land area.&lt;br&gt;• The most windy areas of Afghanistan are; Herat, Farah, Balkh, Naimroz and Takhar Provinces.</td>
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# Renewable Energy in Afghanistan

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</table>
| 3  | Solar Energy    | **Afghanistan has excellent solar energy resources throughout its regions.**  
**300 Sunny day in one year.**  
**3,000 Hours of Sun.**  
**6.5 kWh/m² per day solar radiation average**  
**Over 100,000 (over 650 Villages) solar home systems (SHSs) have been installed in various parts of the country.**  
**Solar street lights have been put in place at different parts of the country.**  
**Solar water pumps at different part of the country used for irrigation and drinking water.** |
## Renewable Energy in Afghanistan

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<tr>
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</table>
| 4  | Bio-Mass             | • More than 85% of Afghanistan’s energy needs are met by traditional biomass, mainly wood and dung, however this has led to severe deforestation.  
• Other sources of Biomass in Afghanistan are; Human/Animal waste, Municipality Waste (Garbage) etc.  
• An estimated 350 small biogas digesters have been installed in different parts of Afghanistan. |
| 5  | Geo-Thermal Energy   | • Prospects of low to medium temperature geothermal resources are widespread all over Afghanistan.  
• 3 big possible regions of geothermal (Heart-Panjshir, Chaman – Moqor and Sarobi – Altimore)  
• Tectonic structure of Afghanistan suggests the presence of vast hot water circulation systems underground - 27 Geysers has bee identified  
• Power plants to be built in Afghanistan could range from 5 to 20MW each                          |
Renewable Energy Planned Projects

1- Helmand Solar Project
2- 100 MW Naglu Solar Project
3- 10 MW Uljeto – Mazare Sharif Wind Project
4- 5 MW Ghor Solar Project
5- 5 MW Daykondi Solar Project
6- 30 MW Kabul Milli Project
7- Nurestan Solar – Wind
8- Biomass Projects for 4 cities (municipal and agricultural residue)
9- 10 MW Parwan Wind Project
10- 125 MHP projects
RENEWABLE ENERGY PLANED PROJECTS

11- 15 MW Urozgan Solar project
12- Gazni (Jaghorri & Malistan) solar Project
14- Sar e Pol (Sangcharak) Solar Project
14- 15 MW Zabul Solar Project
15 - Bamyan Solar Project
16- 3 MW Logar Solar Project
17- 20 MW Helmant Solar Project
18- 15 MW Farah Solar Project
19- 20MW Nimrooz Solar project
20- 10 MW Helman Solar project
RENEWABLE ENERGY PROJECTS WHICH WILL BE IMPLEMENTED BY THE GOVERNMENT AND PRIVATE SECTOR IN UPCOMING YEAR

- 10 MW Kandahar solar project (contract has been signed)
- 15 MW Kandahar solar Project (contract has been signed)
- 15 MW Kandahar solar Project (contract has been signed)
- 40 MW Hisar e Shahi solar project (will start in 2018)
- 15 MW Kabul Solar Rooftop
- 10 MW Khost solar project (will start in 2018)
Renewable energy Projects Which will be Implemented By The Government And Private Sector in upcoming year

- 5.5 MW Daykondi solar project (will start in 2018)
- 5 MW Ghor solar project (will be announced in current year)
- 1 MW Shindand Solar Project
- 2 MW Herat Hybrid Solar –Wind Project (completed)
- 2 MW Bamyan Solar Project (completed)
- 20 MW Naghlu Solar PV (ADB-IFC)
Part 3

Renewable Energy Framework
<table>
<thead>
<tr>
<th>Name of the Document</th>
<th>Dated and Version</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>AREP (Afghanistan Renewable Energy Policy)</td>
<td>2016, Approved</td>
<td></td>
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<tr>
<td>PSMP (Power Sector Master Plan)</td>
<td>2013, Final</td>
<td></td>
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<tr>
<td>RAGA</td>
<td>2015, Draft</td>
<td></td>
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<tr>
<td>Strategy and Guidelines for Implementation of AREP</td>
<td>2015, Draft</td>
<td></td>
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<tr>
<td>Energy Service Law</td>
<td>2015, Approved</td>
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<tr>
<td>Feed-in-Tariff Policy</td>
<td>2015, Final Dari Version</td>
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<tr>
<td>Investment Policy</td>
<td>2015, Final Dari Version</td>
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<tr>
<td>RREP (Road Map for Renewable Energy Projects)</td>
<td>2014, Draft Version</td>
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<tr>
<td>EOI for 100 MW</td>
<td>2016, Final Version</td>
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Thank you