DA AFGHANISTAN BRESHNA SHERKAT
CEO Presentation
Abdul Razique Samadi, CEO

ENERGY CONSUMPTION AND AVAILABLE ENERGY RESOURCES IN AFGHANISTAN
Presentation Summary

- Overview of Afghan Power Sector
- Energy Consumption at DABS
- DABS Loss Reduction Strategy
- Energy Efficiency Initiatives
- Renewable Resources and Clean Energy
Afghanistan Energy Sector

Afghanistan Energy Infrastructure, generation, transmission and distribution were almost destroyed over the past three decades due to the war and conflict.

The government of Afghanistan corporatized the National electricity service department Da Afghanistan Breshna Mossasa (DABM) into an independent state owned utility. As such, all assets, staff and other Rights and Obligations of (DABM) were transferred to Da Afghanistan Breshna Sherkat (DABS) on May 2008.
Power vs. GDP

- Power Foundational to Stabilization
- Increased Power Fuels Economic Growth

Energy Driving Afghan Economy

![Graph showing GDP and Annual Electrical Production over years from 2006 to 2010.](chart.png)
Power Supplies – meeting burgeoning demand

- Develop/Expand import agreements
- Support private investment in 200 MW Sheberghan gas plant
- Construct run-of-river hydropower on Kabul river & Other Water Resources
- Support trans-boundary dialogue on shared water resource development

Power Transmission & Distribution – moving power to the people

- Strengthen TL backbone from Uzbekistan through Kabul to Kandahar
- Synchronize systems with neighboring countries
- Expand access to homes, businesses, industry and the mining sector

Capacity – building sector governance

- Facilitate the commercial viability of DABS
- Build trans-boundary and investment promotion capacity at MoEW
- Strengthen regulatory capability and oversight
Supply and Demand

- **Demand Growth**: Connections
- **Routing**: Transmission Lines
- **Supplies**: Production and Imports

![Graph showing supply and demand with labels](image)
Major Donor Assistance Projects

• Operations and Commercialization (USAID 2008-today)
• NEPS Construction (ADB/India 2007-2009)
• Tarakhil 100MW TPP (USAID 2006-2009)
• Kandahar Helmand Project (USAID 2010-2013)
• Transmission, Expansion Connectivity (USAID 2011-14)
System Constraints and Expansion

Uzbekistan Imports
100MW to 470MW
$20M ($0.06/KWh)

NEPS 2 Expansion
600MW Capacity
$400-600M
48 Months

SFPS Expansion
Sheberghan Gas Field
Thermal Power Plants
200MW + 48MW
$440M ($0.06/KWh)
24 Months

Transmission and Distribution to Eastern Populations
400MW Capacity
$280M
24-30 Months

Northern Run-of-River Hydropower
Untapped
1,200MW
$2.5 to $3B
48 Months

Kajaki Power and Irrigation Expansion
60-100MW
$400 to $500M
60-84 Months

Near-term Power Availability Opportunities

Sustainable COIN Power Opportunities

System Constraints and Expansion

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Near-term Power Availability Opportunities

Sustainable COIN Power Opportunities
Energy Consumption at DABS

- The availability of power in Afghanistan has improved significantly over the last two years:
  - 105MW thermal power plant at Tarakhil was commissioned 1388
  - North Eastern Power System improving power imports from Uzbekistan was commissioned in 2010 and added an extra 550MW capacity to regional grid
  - Rehabilitation of Hydro Stations serving Kabul: Naghlu, Sarobi, Mahipar

- Power supply to Kabul has improved dramatically

- The challenge is now to improve commercial performance and customer service and reduce non-technical losses.

- Kabul Electricity Service Improvement Program (KESIP) is a USAID initiative to support the commercialization and revenue improvement at DABS
Energy Consumption at DABS

- Energy Consumption for entire Afghanistan in 1389 was 1.8 GWhr
  - This represents a 18% improvement on previous year 1388
  - and a 80 % improvement on consumption compared with 1387

- Total number of DABS customers served throughout Afghanistan in 1389 was 786,302 customers

- The average annual consumption per customer category for the year 1389:

<table>
<thead>
<tr>
<th>Average Consumption in kwh per year</th>
<th>1388</th>
<th>1389</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household</td>
<td>kwh 1,641</td>
<td>kwh 1,843</td>
</tr>
<tr>
<td>Commercials</td>
<td>kwh 2,298</td>
<td>kwh 2,967</td>
</tr>
<tr>
<td>Governmental</td>
<td>kwh 36,211</td>
<td>kwh 32,694</td>
</tr>
<tr>
<td>Holy places</td>
<td>kwh 2,216</td>
<td>kwh 2,604</td>
</tr>
<tr>
<td>NGO's</td>
<td>kwh 8,405</td>
<td>kwh 8,898</td>
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<tr>
<td>Registered factories</td>
<td>kwh 60,897</td>
<td>kwh 123,095</td>
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<tr>
<td>Unregistered factories</td>
<td>kwh 33,365</td>
<td>kwh 31,369</td>
</tr>
</tbody>
</table>
Annual Energy Consumption (MWh)

- Household: 1,112,631 (1388), 1,318,695 (1389)
- Commercials: 129,080 (1388), 171,969 (1389)
- Governmental: 152,629 (1388), 157,522 (1389)
- Holy places: 13,152 (1388), 14,443 (1389)
- NGO’s: 6,119 (1388), 8,578 (1389)
- Registered factories: 14,433 (1388), 20,296 (1389)
- Unregistered factories: 91,337 (1388), 22,321 (1389)
- Total: 1,512,419 (1388), 1,782,839 (1389)
### Energy available for system

#### Internal generation

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Actual</th>
<th>Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1388</td>
<td>1389</td>
<td>1390</td>
</tr>
<tr>
<td></td>
<td>2,313,193</td>
<td>2,737,767</td>
<td>3,002,825</td>
</tr>
<tr>
<td>Hydro</td>
<td>936,520</td>
<td>871,171</td>
<td>927,472</td>
</tr>
<tr>
<td></td>
<td>876,896</td>
<td>772,803</td>
<td>827,525</td>
</tr>
<tr>
<td>Thermal</td>
<td>3,562</td>
<td>41,245</td>
<td>38,950</td>
</tr>
<tr>
<td>Diesel generator</td>
<td>56,061</td>
<td>57,123</td>
<td>60,998</td>
</tr>
</tbody>
</table>

#### Import

<table>
<thead>
<tr>
<th>Country</th>
<th>Actual</th>
<th>Actual</th>
<th>Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Republic of Uzbekistan</td>
<td>657,183</td>
<td>964,242</td>
<td>1,102,800</td>
</tr>
<tr>
<td>Republic of Turkmenistan</td>
<td>323,662</td>
<td>386,306</td>
<td>420,650</td>
</tr>
<tr>
<td>Republic of Tajikistan</td>
<td>74,347</td>
<td>87,234</td>
<td>102,623</td>
</tr>
<tr>
<td>Islamic Republic of Iran</td>
<td>321,481</td>
<td>428,813</td>
<td>449,280</td>
</tr>
</tbody>
</table>

#### Energy Available in mwh

<table>
<thead>
<tr>
<th></th>
<th>1388 Actual</th>
<th>1389 Actual</th>
<th>1390 Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro</td>
<td>937</td>
<td>871</td>
<td>927</td>
</tr>
<tr>
<td>Thermal</td>
<td>1,377</td>
<td>1,867</td>
<td>2,075</td>
</tr>
</tbody>
</table>

- **Internal generation**
- **Import**
### Actual and Forecast Revenues by Customer Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Actual 1388</th>
<th>Actual 1389</th>
<th>Forecast 1390</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues in AFA</td>
<td>3,150,588,669</td>
<td>4,018,302,183</td>
<td>4,263,851,967</td>
</tr>
<tr>
<td>Household</td>
<td>1,206,919,568</td>
<td>1,564,204,457</td>
<td>1,578,756,042</td>
</tr>
<tr>
<td>Commercials</td>
<td>1,489,455,180</td>
<td>1,543,224,409</td>
<td>1,622,733,415</td>
</tr>
<tr>
<td>Governmental</td>
<td>118,505,651</td>
<td>133,810,231</td>
<td>121,514,042</td>
</tr>
<tr>
<td>Holy places</td>
<td>56,597,895</td>
<td>83,809,201</td>
<td>88,023,749</td>
</tr>
<tr>
<td>NGO's</td>
<td>477,779,413</td>
<td>601,351,982</td>
<td>737,833,826</td>
</tr>
<tr>
<td>Registered factories</td>
<td>145,436,305</td>
<td>136,895,482</td>
<td>287,286,960</td>
</tr>
<tr>
<td>Unregistered factories</td>
<td>6,645,282,680</td>
<td>8,081,597,944</td>
<td>8,700,000,000</td>
</tr>
<tr>
<td>Total</td>
<td>6,645,282,680</td>
<td>8,081,597,944</td>
<td>8,700,000,000</td>
</tr>
<tr>
<td>Exchange rate</td>
<td>46.00</td>
<td>46.00</td>
<td>46.00</td>
</tr>
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Revenues in $:
- Household: $144,462,667
- Commercials: $175,686,912
- Governmental: $189,130,435
DABS Loss Reduction and Revenue Improvement Plan

The DABS Loss Reduction Plan:

• Process Enhancement Initiatives to include:
  – Customer enumeration and verification
  – GIS Regularisation
  – Customer Service Improvements
  – Commercial process enhancement

• Investment Initiatives to include:
  – Boundary and Grid Meters
  – Replace analogue meters with digital meters
  – New Customer Information System (CIS) and Customer Relationship Management (CRM) System
  – Upgrade of vehicles, tools and equipment

USAID, KESIP Providing Technical Assistance and Support
Energy Efficiency Initiatives at DABS

- Load Management Initiatives
  - Skills trainings and capacity building
  - Identification of grid defects through data analysis
  - Transmission line maintenance program
  - Decreasing the number of over loaded feeders
  - Decreasing the number of over loaded Transformer stations

- Energy Loss Reduction
  - Installation of grid meters: “Proof of Concept” Pilot being implemented in Kabul
  - Revenue Protection Department conducting Meter Audit of entire Kabul

- Community Awareness Program: media campaign, brochures, leaflets, etc.
Energy Efficiency Plans at DABS

- Automatic Meter Reading (AMR) Meters
  - Pilot planning in process for largest industrial customers in Kabul
- Prepaid Metering
  - Pilot planned for 10,000 customers in Macroryan area of Kabul
- Upgrading of the system (15kv to 20kv)
- Developing computerized tool for optimization of our generation and imported power.
Available Renewable Resources

- Hydro power potential for Afghanistan is in excess of 23,000 MW (large, medium and micro hydro power plants)
- Solar power potential is best in Southern Afghanistan (see map)
- Wind power potential best in the Western Region of Afghanistan (see map)
- USAID has provided support for the establishment of a Clean Energy Program in Afghanistan. Program has developed pilot projects:
  - Solar pilot projects have been implemented at 6 schools in Bamyan and Nuristan, and 2 clinics in Ghazni
  - Solar pilots for water pumping and solar heaters also being developed
  - Mini-hydro rehabilitation project was implemented in Panjshir
  - Wind water pumping projects also planned in Heart and Balkh Provinces
Solar Energy Resources in Afghanistan
Wind Energy Resources in Afghanistan
Afghanistan Vision 2014/2015

Transboundary agreements developed and major hydropower projects on Kunar and Amu Darya rivers initiated.

MCC coal deposit quantified and construction on 400MW Thermal Power Plant underway.

TAPI gas pipeline and extension of 220kV power transmission network to Herat under development.

Power transit and export lines to Pakistan for power from Turkmenistan and Tajikistan, as well as surplus generation.
Tashakor!