Maximizing Finance for Renewable Energy Development: World Bank Group’s Roles

2nd Summit on Renewable Energy
Astana, Kazakhstan
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Country Manager
World Bank Group
Infrastructure financing challenges

Infrastructure Financing Needs Globally over next 10 years

Infrastructure Financing Needs Globally Per Annum

All MDBs (incl. WBG) Combined Current Global Assets

World's Ten Largest Pension Funds total assets

World's Ten Largest Commercial Insurance Companies total assets

World's Ten Largest Sovereign Wealth Funds total assets

- 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000

US$ Billions
MFD framework for revenue-generating activities

1. **Will Project/SOE generate additional revenues to repay the investments made?**
   - Yes
   - **Are Project/SOE revenues sufficient to include a premium for private sector returns?**
     - Yes
     - Consider Private/Commercial Financing
     - No
     - **Is there a rationale and potential to introduce or adjust user charges to Project/SOE, such that revenues generated are sufficient for cost-recovery?**
       - Yes
       - Consider Public Financing
       - No
       - **Will Project/SOE revenues collected be sustainable for the sector?**
         - Yes
         - Consider Blended Financing (Part commercial and part concessional)
         - No
         - **Could revenues be sustainable for the sector with partial public sector concessional funds?**
           - Yes
           - Consider Public Financing
           - No
Project processes and tools

MFD

Sector-level analysis

National-level analysis

Project-level analysis

Infrastructure Policy and Planning → Enabling Environment → Project Prioritization and Screening → Transaction Support → Project Financing, Implementation and Supervision

Analysis of public expenditure

- Public Investment Management support
- Country Readiness Diagnostic (INFRASAPS)
- PPIAF

Sector reform, market structure, pricing

- Advice on laws and regulations
- Advice on institutional frameworks and procurement
- Standardization of contracts
- Country Readiness Diagnostic
- PPIAF

Project assessments

- Infrastructure Prioritization Tool
- IFC PPP Advisory
- Country Readiness Diagnostic
- PFRAM (Fiscal Risk Assessment)
- PPP Assessment tool (under development)
- PPIAF
- InfraVentures

Project structuring and procurement support

- Global Infrastructure Facility
- IDA private sector window
- IFC PPP Advisory
- PFRAM (Fiscal Risk Assessment)

WBG Instruments for Transaction Structuring

- IFC PPP Advisory
- PFRAM (Fiscal Risk Assessment)
- Credit enhancements: Guarantees, Insurance Products, First Loss/Blended Finance
- WB Loans and related products
- IFC Loans, Equity and Syndications

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WBG financial instruments

**Financing Modalities**

- Direct Loan
- Lines of Credits
- Competitive Subsidies
- Output Based Aid (OBA)
- First or Second Loss Guarantees
- Risk Sharing Products
- Dedicated Debt or Equity/Quasi-Equity Funds
- Matching Grants
- ...and many more tailored ones

CAPACITY BUILDING
Advisory and knowledge services
De-risking: Scaling Solar (Zambia Case)

- Projects were developed and tender was prepared and executed to conclusion in 9 months; round 2 for 200MW already announced
- USc 6/kWh non-indexed is equivalent to an average in current dollars over contract lifetime of USc 4.7/kWh

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<thead>
<tr>
<th>Sites:</th>
<th>West Lunga</th>
<th>Mosi-oa Tunya</th>
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<tbody>
<tr>
<td>Neoen/ First Solar</td>
<td>Usc 6.02/kWh</td>
<td></td>
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<tr>
<td>ENEL Green Power</td>
<td></td>
<td>USc 7.84/kWh</td>
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- All bidders who submitted an offer requested the IDA payment guarantee; no IDA loan guarantee was needed
De-risking: Geothermal Resource Risk

- **Surface Reconnaissance ($1-2 mil)**
- **Exploration Drilling ($20-30 mil)**
- **Production Drilling (~$20-120 mil)**
- **SAGS + Power Plant (~$20-200 mil)**
- **Operation + Maintenance**

### Cumulative Costs of Development

- **I** Surface Reconnaissance ($1-2 mil)
- **II** Exploration Drilling ($20-30 mil)
- **III** Production Drilling (~$20-120 mil)
- **IV** SAGS + Power Plant (~$20-200 mil)
- **V** Operation + Maintenance

### Project Risk Development Phases

- **Type of Risk**
  - Identification of Resource
  - High Resource Risk
  - Lower Resource Risk
  - Financing Risk
  - Operational Risk

- **Cost US$ 196m total**

Source: Energy Sector Management Assistance Program (ESMAP)

March 2015 Global Geothermal Development Plan

About $1 billion

5-8 times leverage
Reducing Financing Cost: Solar Rooftops in India

- $500 million World Bank (IBRD)
- $125 million Clean Technology Fund
- $25 million Global Environmental Fund
- 1,000MW (Government target is 40,000GW)
- State Bank of India is the borrower and implementing agency
- Multiple delivery models

Picture credit: Renewable Energy Magazine
Greening Grid: Solar Parks in India

- World Bank to support over 3,000MW of utility scale solar power
- Provision of critical infrastructure

Charanka solar park (224MW) for comparison
Reducing Financing Cost: Morocco Noor CSP Complex

- 2,000 MW target
- 500 MW plus storage under development
- WB financing only $400 million
- About $3 billion financing
- Tariff evolution:

![Tariff Evolution Chart](image)

Source: CNN
De-risking: Maldives Accelerating Sustainable Private Investment in RE (ASPIRE)

- Up to 35-50MW of PV
- WB provides off-take and liquidity guarantee
- Potential subsidy for smaller islands and batteries

Source: World Bank
Greening Grid: Smart grids in Ukraine, Vietnam and Turkey

Source: World Bank
Energy is abundant in Central Asia

Source: UNDP (2012), CIA
Kazakhstan is well-placed to build on its enabling environment for RE

RISE Scores on Renewable Energy

Source: http://rise.esmap.org/
World Bank Group will support RE scale-up

- **Diversification of Energy-mix**
  - Renewable energy development (geothermal)
  - Distributed renewable energy
  - Regional cooperation (below)

- **Demand-side Energy Efficiency**
  - Energy efficiency for public facilities

- **Institutional Reform and Development**
  - Power system planning
  - Power market development

- **Regional Cooperation**
  - Central Asia Regional Economic Cooperation Program (CAREC)
  - Central Asia Energy and Water Development Program (CAEWDP)
  - Regional interconnection (CASA-1000)
THANK YOU!

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