INVESTMENT OPPORTUNITIES
Indian Renewable Energy Sector

A Presentation by:

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New Delhi (India)

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Agenda

- Energy Scenario in India

- Role of IREDA
  - Background
  - Offerings
  - Achievements

- India: Investment Destination
  - Why India
  - RE sector Attractiveness
  - FDI in Power Sector
Indian Power Sector at a Glance

Total Installed Capacity: 1,67,077 MW

- Thermal: 89,778 MW
- Hydro: 37,367 MW
- Gas: 17,385 MW
- Renewable: 16,786 MW
- Nuclear: 4560 MW

As on 31 11 2010

Source: CEA
Challenges

- Over half of population lack access to modern forms of Energy
- One-third of power generated lost before getting utilized (30% AT& C Losses)
- Peak Deficit of 12% & Energy Deficit of 11%
- Number of villages/hamlets inaccessible to Grid
Reform Measures

- Unbundling of utilities
- Generation & Transmission opened to Private Players
- Focused approach for Rural Areas - RGGVY
- Mega Schemes: R-APDRP & UMPP
- Creation of National Grid
- Initiated Power Trading & Open Access
- Thrust to Renewable Energy
Evolution of IREDA

INCEPTION
Incorporated under the Companies Act on 11\textsuperscript{th} March, 1987 to promote, develop and extend financial assistance for Renewable Energy and Energy Efficiency/Conservation Projects.

OBJECTIVE
Extend financial support to Renewable Energy, Energy Efficiency & Conservation projects

MOTTO
Energy For Ever
Operational Areas

Sectors being financed:
- Wind
- Small & Medium Hydro
- Biomass Power & Cogeneration
- Solar
- Waste to Energy
- EE & Conservation
- Bio Fuels/ Alternate Fuels

- Project & Equipment Financing Schemes
  - Loan upto 70% of Project cost
  - Repayment upto 13 years
- Financing Through Intermediaries
Highlights

- Dedicated FI for RE Financing – Unique in the World
- Largest share in RE Project Financing in India
- Recognized internationally – High Brand Equity
- Multilaterals/ Bilaterals prefer working with IREDA
- Catalyzed Market Development
- Profit earning & dividend paying
- ISO 9001:2008 Certified Company
Successes

- Developed RE through innovative financing.
- Encouraged entry of private sector in RE.
- Catalyzed market development leading to commercialization of RE.
- Helped in creating manufacturing, design & engineering, O&M capabilities.
- Assisted in framing of conducive RE policies.
- Highest share in RE Financing.
Cumulative Performance

- No of Projects Sanctioned: 1960 Projects
- Total Loan Sanctions: 2425 mill Euro
- Loan Disbursements: 1245 mill Euro
- Commissioned Capacity: 2154 MW
- Conventional Fuel Replacement: 1.4 M MTCR/Yr

As on January, 2011
International Partners

- Govt of Netherlands, 1991 : 18 Million Dutch Guilders
- World Bank (1st LoC), 1993 : $145 Million
- DANIDA, 1993 : $15 Million
- Asian Development Bank, 1997 : $100 Million
- KfW, Germany (1st LoC), 1999 : €61.35 Million
- World Bank (2nd LoC), 2001 : $110 Million
- KfW, Germany (2nd LoC), 2008 : €50 Million
- NORDIC Investment Bank, 2008 : $50 Million
- KfW, Germany (3rd LoC), 2010 : €19.9 Million

Lines of Credit in Pipeline

- AfD 1st LoC : €70 Million
- AfD 2nd LoC : €200 Million
- KfW, Germany (4th LoC) : €200 Million
- JICA, Japan : JPY 30 Billion
India: A land of Opportunities
Why India

- Macroeconomic Stability
- Developed Capital Markets
- Foreign “Fortune 500” companies making larger footprints in India
- Skilled Working Age Population
- High Energy Demand projection
- Integrated Energy Policy being implemented
Incredible INDIA

- 4\textsuperscript{th} Largest Global Economy
- Fastest Growing Free Market Democracy
- IT & Engineering Superpower
- Rich Mineral Base
- Vibrant Capital Market
- Impressive Infrastructure
  - 2\textsuperscript{nd} largest Rail network
  - 5\textsuperscript{th} largest power market
  - 334 airports, 12 major & 87 minor ports
  - 400 Million telephone connections
Green Energy Opportunities

- India is the fifth largest country in the world in terms of wind energy installed capacity
- Over 15,000 MW of renewable based capacity has already been installed
- 100% FDI allowed in RE sector. No prior approval is required
- India has a strong manufacturing and R&D orientation and is emerging as a hub of wind, solar, biomass related manufacturing and exports
- Foreign Investment Implementation Authority as a One-stop service for facilitating FDI

**India ranked 4th in all Renewable Energy Attractiveness Indices**

*Ernst & Young*
## Potential & Achievements of RE in India

<table>
<thead>
<tr>
<th>Sector</th>
<th>Approx. Potential (MW)</th>
<th>Potential Harnessed (MW)</th>
<th>% Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td>45195</td>
<td>12010</td>
<td>26%</td>
</tr>
<tr>
<td>Small Hydro (upto 25MW)</td>
<td>15000</td>
<td>2767</td>
<td>18%</td>
</tr>
<tr>
<td>Bagasse Cogeneration</td>
<td>5000</td>
<td>1411</td>
<td>28%</td>
</tr>
<tr>
<td>Biomass</td>
<td>16881</td>
<td>901</td>
<td>5%</td>
</tr>
<tr>
<td>Waste to Energy</td>
<td>2700</td>
<td>72</td>
<td>2.6%</td>
</tr>
<tr>
<td>Solar Power</td>
<td>4-7 kWh/Sq.M/Day)</td>
<td>6.00</td>
<td></td>
</tr>
<tr>
<td>Biomass / Cogen (Non Bagasse), Gasifier, Energy recovery from waste etc</td>
<td>-</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>84776</strong></td>
<td><strong>17591</strong></td>
<td><strong>21%</strong></td>
</tr>
</tbody>
</table>
## RE Investments in India

<table>
<thead>
<tr>
<th>Sector</th>
<th>Capacity (MW)</th>
<th>Assumptions US$ Mln/ MW</th>
<th>Investments (US$ Bln)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td>20,000</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Solar PV</td>
<td>15,000</td>
<td>3.5</td>
<td>52.5</td>
</tr>
<tr>
<td>Solar Thermal</td>
<td>5,000</td>
<td>2.5</td>
<td>12.5</td>
</tr>
<tr>
<td>Small Hydro</td>
<td>8,000</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Biomass</td>
<td>7,000</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>55,000</strong></td>
<td><strong>--</strong></td>
<td><strong>100</strong>*</td>
</tr>
<tr>
<td>Existing Base</td>
<td>15,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **TOTAL by 2020**    | **70,000****

(*) For new RE capacity envisaged by 2020  (***) 25% of total capacity
RE Policy Enablers

- Dedicated Ministry – MNRE
- Dedicated FI – IREDA
- Comprehensive Resource Assessment
  - Wind Atlas/ Solar Radiation Mapping
- Enabling Legislations
  - NAPCC/ RPO
  - Preferential Tariffs/ GBI/ RE Certificate
  - Guaranteed off-take
- RE classified under Infrastructure
Incentives to RE Projects

- Excise duty exemptions
- Income Tax Holiday
- Accelerated Depreciation
- Remunerative Returns on Equity
- Preferential Tariffs/ GBI/ REC
- Interest/ Capital subsidies
- Energy buy-back under long term PPA
- Captive, 3rd Party Sale & Trading
Jawaharlal Nehru Solar Mission

National Action Plan on Climate Change:
- Solar Mission envisaged to give boost to solar power – launched on 11 January 2010
- Large-scale solar power generation an identified thrust area

Solar Mission Aim:
- Rapid and large-scale diffusion of solar power generation technologies
- Building local manufacturing, R&D and human resource capability
- Reduction of cost to move towards grid parity.

Proposed targets (2022):
- 20,000 MW grid-power installed capacity
- 2,000 MW off-grid power
- 20 mln. sq.m thermal collectors
National Solar Mission: Policy Enablers

- Solar specific RPO
  - 3% by 2022, aided by RE Certificate
  - Mandatory, with penalty provision

- Generation Based Incentive
  - Ph-I: Solar tariff @ Rs18.44 /unit

- Fiscal Incentives
  - 10-year tax holiday for utility plants
  - Custom & excise duties exemption

- Comprehensive Resource Assessment

- R&D in PPP mode
Pathway to 20GW Goal

- Solar specific Renewable Purchase Obligation (RPO)
- Concessional Finance / subsidy for decentralized, off grid systems
- Attractive feed in tariff for utility scale and rooftop solar power plants
- Tariff based bidding for large solar thermal plants
- Emphasis on Industry led research projects
GBI Policy Framework for Wind Power Projects

- Level playing field for FDI companies and domestic Companies created by implementing Generation Based Incentive (GBI) in parallel with existing fiscal incentive of accelerated depreciation

- Stage set for large wind developers to invest in India.

- Attractive feed in tariff
Thank you!