Asian Development Bank
Energy Sector Operations in India

19 May 2015

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ADB Operations Overview

Public Sector Assistance:

- Central and West Asia Department
- East Asia Department
- Pacific Department
- South Asia Department
- Southeast Asia Department

Private Sector Assistance:

- Private Sector Operations Department

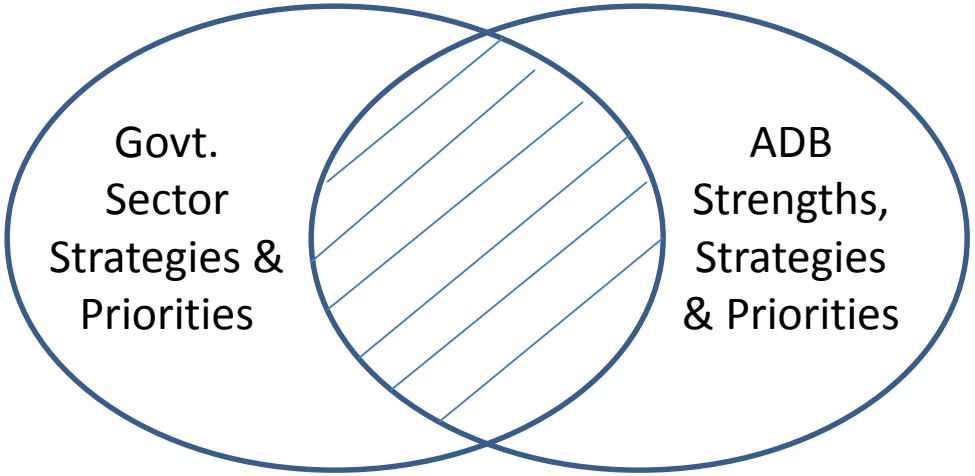
  http://beta.adb.org/site/private-sector-financing/applying-assistance
  http://beta.adb.org/site/private-sector-financing/contacts

ADB Operations Overview

Process for Public Sector Assistance:

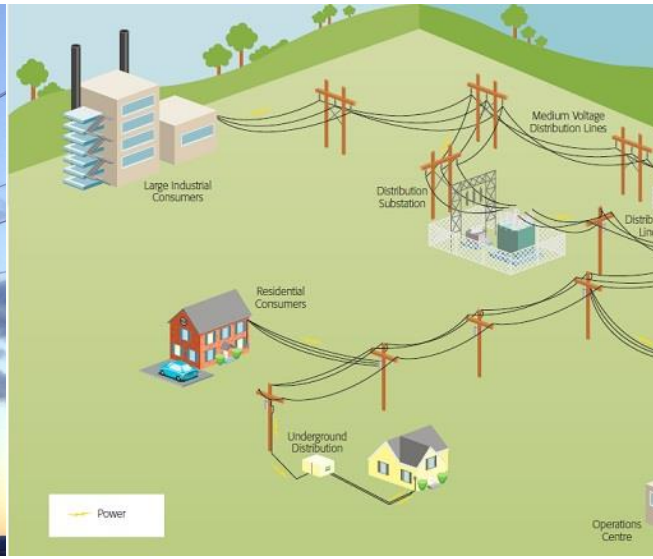
ADB strategy closely coordinated with host country government

Each country strategy unique to that particular country's needs and priorities



Country Programming → Rolling Loan & Technical Assistance Pipeline → Project / Technical Assistance Approval & Implementation

What are India's Power Sector Needs?



Generation

- More capacity
- Secure supplies
- Flexibility
- Lower Emissions
- Solar Power Initiative

Transmission

- Expanded reach
- Reduced bottlenecks
- Reduced losses
- Green energy corridor

Distribution

- Customers connected
- Reduced losses
- Costs recovered
- Modernized network

Picture sources: Siemens, NREL, ecoissues.ca

India's Power Sector Initiatives

Renewable Energy

- New target of 100 GW of solar power by 2022 (from current 3 GW)
    - Includes 40 GW from rooftop solar, 40 GW from solar parks
- New target of 60 GW of wind power by 2022 (from current 22 GW)

Green Energy Corridors

24/7 Power For All

Smart Cities Initiative

ADB Energy Sector Strategy for India

2-Track Approach

1. Continued support to state utilities
   - strengthen transmission and distribution networks
   - provide metering and systems to reduce technical and commercial losses
   - Feeder separation
   - Other initiatives to improve financial health of Discoms.

2. Continued support for low-carbon initiatives, including
   - renewable energy and energy efficiency
   - using new technologies, innovation, and knowledge products.

Total Energy Sector Assistance to India (1986 – 2014)

	No. of Loans	Total Amount ($ million)	Amount %
Conventional Energy	9	1,867	20.3%
Transmission & Distribution	27	4,824	52.4%
Energy Efficiency and Conservation	2	297	3.2%
Energy Sector Development	9	1,195	13.0%
Hydropower	5	774	8.4%
Pipelines	1	150	1.6%
Renewable Energy	1	100	1.1%
Total	**54**	**9,207**	**100.0%**

The Energy Sector is About One Third of Total ADB Assistance

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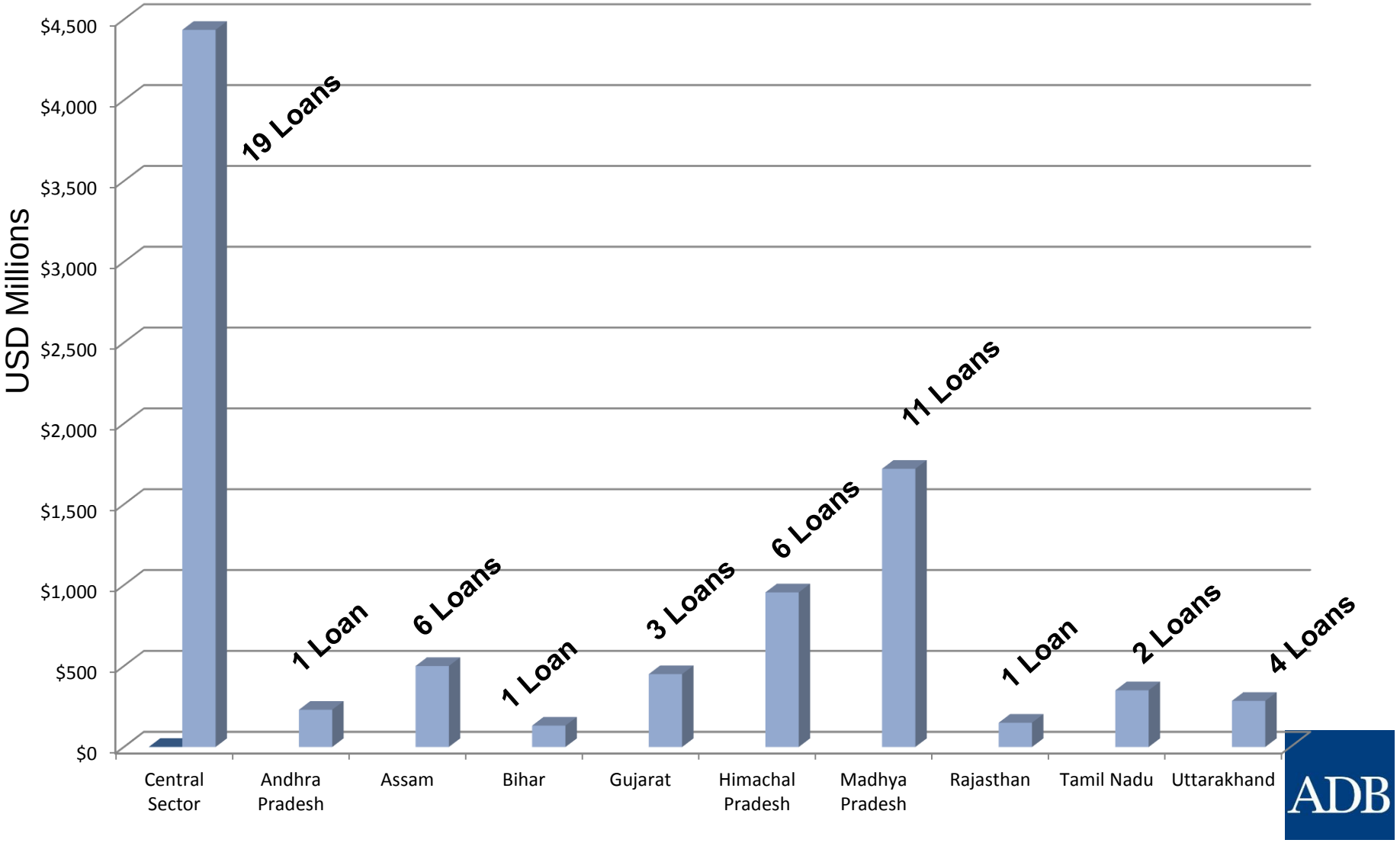
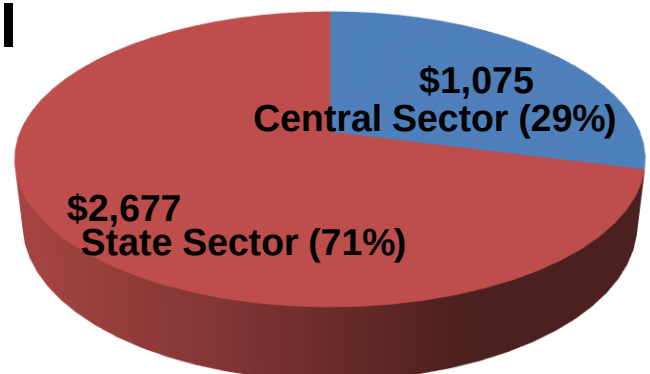
Total Energy Sector Assistance (1986 – 2014)
Breakdown by Central/State Level



Active, Ongoing Energy Sector Portfolio

	No. of Loans	Total Amount ($ million)	Amount %
Central Sector (Power Grid)	4	1,075	28.6%
Assam	5	250	6.7%
Bihar	1	132	3.5%
Gujarat	1	80	2.1%
Himachal Pradesh	6	897	23.9%
Madhya Pradesh	5	971	25.9%
Rajasthan	1	62	1.7%
Uttarakhand	4	285	7.6%
Total	27	3,752	100.0%



T&D and Smart Grid in India

Ongoing Transmission Assistance

- Indirect support of clean energy via transmission investments
  - Gujarat Solar Power Transmission Project
  - Himachal Pradesh Clean Energy Transmission Development Project
  - Rajasthan Renewable Energy Transmission Program
    - Includes cofinancing from the Clean Technology Fund
- Interregional grid connectivity
  - National Power Grid Development Investment Program
  - National Grid Improvement Project
- Intra-state system strengthening
  - System enhancement in Assam, Bihar, Madhya Pradesh, Uttarakhand

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T&D and Smart Grid in India

Future Transmission Assistance

- Green Energy Corridor and Grid Strengthening Project
- Solar Parks Initiative (Green Energy Corridor II)
- Madhya Pradesh grid enhancement
- Andhra Pradesh industrial corridor

Themes

- Renewable energy grid integration
- High capacity transmission/evacuation

T&D and Smart Grid in India

Ongoing Distribution System Assistance

- Projects in Assam, Bihar, Madhya Pradesh
- Distribution system strengthening
  - Substation and Line capacity additions
  - Capacity building
  - Commercial Loss Reduction
    - High Voltage Distribution Systems (HVDS)
    - Aerial bundled cables/conductors (ABC)
    - SCADA systems, smart metering
  - Agricultural feeder separation

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T&D and Smart Grid in India

Upcoming/Proposed Distribution System Assistance

- Climate Change resilience – Odisha Power Sector Enhancement Project
- Gujarat Distribution - Advanced Metering in selected cities
- Andhra Pradesh Industrial Corridor
  - Working with A.P. Industrial Investment Corp. on improving grid reliability in industrial clusters
- Rooftop solar in urban areas
  - Net metering
  - Distribution grid integration issues
- Studies for Pondicherry / Union Territory / Gurgaon / Manesar Distribution with PGCIL under discussion
- 'Virtual' feeder separation

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Other

Demand-Side Energy Efficiency

- Smart street lighting
- LED lighting
- Agricultural pumps

Power Generation

- Ongoing run-of-river hydropower program in Himachal Pradesh
- Potential Solar CSP, PV

Thank you!

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