

Power Sector Transformation: Global Perspective

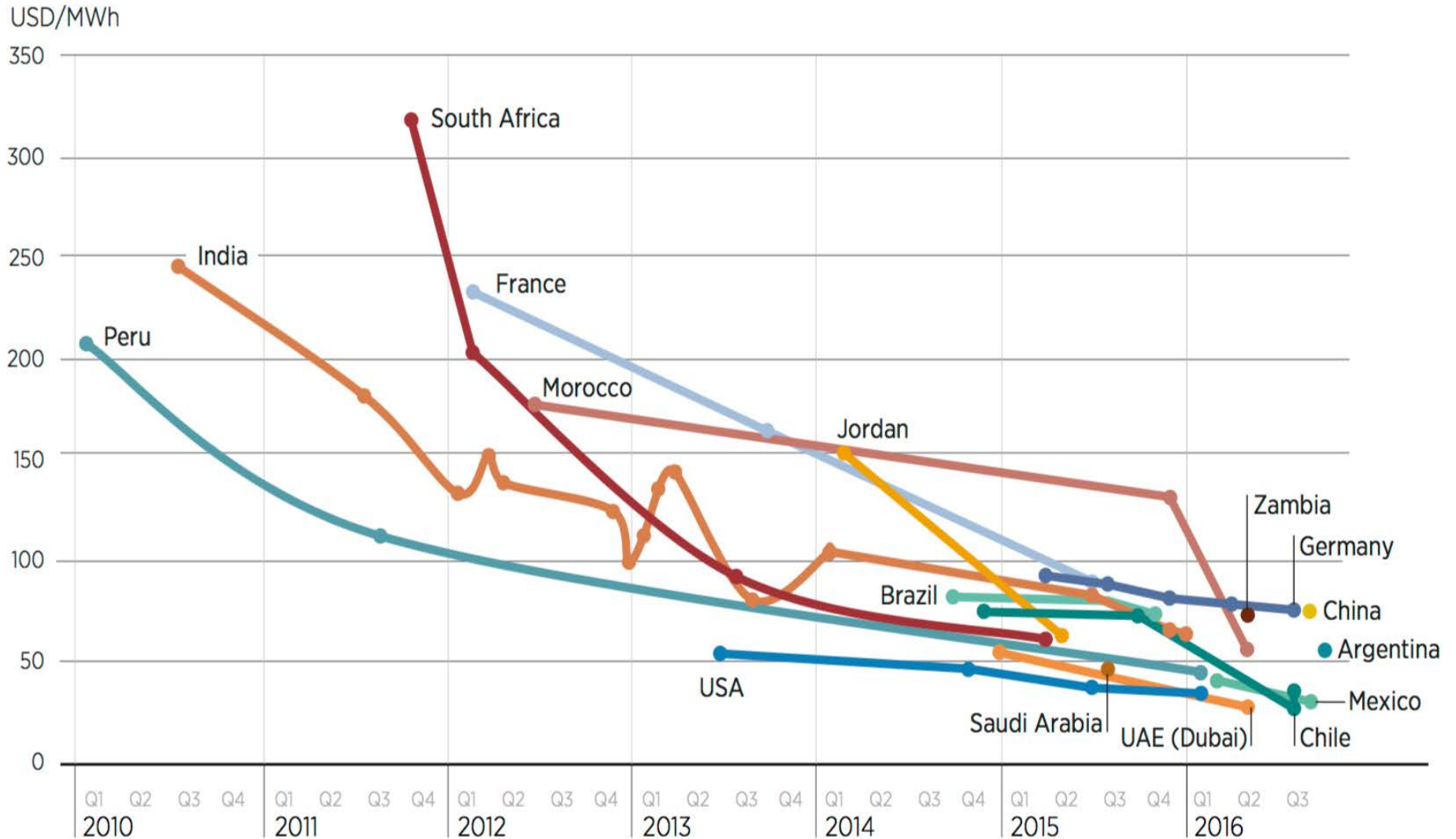
21st Century Power Partnership
An Initiative of the Clean Energy Ministerial

JISEA Annual Meeting
March 23, 2017
Jeffrey Logan

OUTLINE: INTERNATIONAL PST

- Growth of RE
- Procurement
- Integrating vRE
- Electrification
- Finance
- Grids
- Country Snapshots: Mexico, India, China

EVOLUTION OF UTILITY-SCALE PV AUCTION PRICES



Source: IRENA 2017

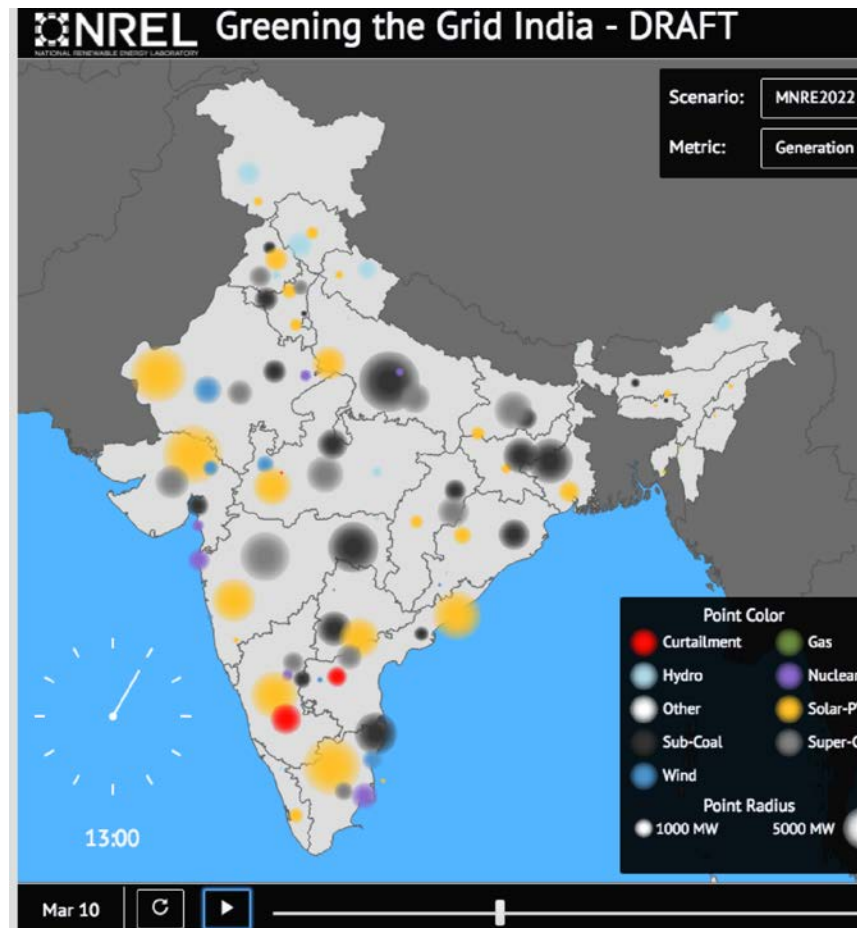
India RE Grid Integration Study

Project Goals:

- Identify impacts of operating India power grid with 175 GW of RE (goal for 2022)
- Inform actions needed to help integrate wind and solar generation

Strong stakeholder engagement:

- Capacity building: Modeling team represents 10+ Indian institutions (system operators and planners)
- Three technical stakeholder review committees representing over 150 Indian experts



Mexico currently introducing competitive wholesale market and deploying large amounts of RE. Poster child for clean electricity restructuring at speed and scale.

Providing technical assistance for the integration of variable renewable energies into the grid to meet its 35% clean energy goal by 2024

- Renewable Energy Grid Integration Studies
- Analysis of Priority RE Zones
- Evaluation of Expansion plans

Providing operational policy and regulatory support for grid integration

- Renewable Energy Forecasting Models
- Use of Storage Technologies
- Demand Control Technologies

Boosting Renewable Energy as Part of China's Energy System Revolution

- Largest market for wind and solar; currently oversupplied; moderate restructuring and reform measures.
- Five-year program with work streams on power system modeling, grid development, power system flexibility, and distributed generation
- China Renewable Energy Outlook (CREO) 2016 released in Sep. 2016
- CREO 2017 drafting underway, with model improvements, updates on China's power sector reform and carbon policies, and regional power markets

Key partners:

NREL

CNREC

DEA

GIZ

AGORA

DENA

Energinet