Many Sparks but Little Light: The Rhetoric and Practice of Electricity Sector Reforms in India

Prayas (Energy Group), Pune

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Many Sparks but Little Light:
The Rhetoric and Practice of Electricity Sector Reforms in India

Prayas (Energy Group)
Dedicated to

Girish Sant

(1966 – 2012)

Founding coordinator of Prayas (Energy Group) who continues to inspire our work
• Twenty Five Years of Reforms
  – A lot has happened..
Generation-fuel mix 1990 and 2016

<table>
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<tr>
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<th>1990</th>
<th>2016</th>
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<tbody>
<tr>
<td></td>
<td>245 BU</td>
<td>1173 BU</td>
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</tbody>
</table>

- **1990**
  - Coal: 70%
  - Gas & Diesel: 0%
  - Hydro: 25%
  - Nuclear: 2%

- **2016**
  - Coal: 76%
  - Gas & Diesel: 11%
  - Hydro: 4%
  - Nuclear: 6%
  - Renewable: 3%
Generation-ownership mix 1990 and 2016

- **1990**
  - 245 BU
  - State: 5%
  - Central: 68%
  - Other: 27%

- **2016**
  - 1173 BU
  - State: 35%
  - Central: 35%
  - Private: 29%
RE generation capacity (MW) from 2002–16

Source: Ministry of New and Renewable Energy
• Twenty Five Years of Reforms
  – A lot more needs to happen...
~ 30% Rural HHs still do not have access...
Electricity – going beyond access

- Poor quality of supply even for HHs that are electrified

- Poor voltage

- Access does not translate to better lives (labour saving, entertainment, productive uses)
Motivation for the book

• Review the experience of reforms in last 25 years
  – What has worked and what has not, and why?
  – Look at reforms in multiple sub-sectors and their inter-linkages, which are often neglected

• Draw attention to lessons
  – To improve the design and implementation of further reforms
  – So that the sector overcomes its challenges in an equitable, sustainable and timely manner.

• Neither feasible nor desirable to present a ‘blue-print’ or ‘plan’ for reforms
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1. The long and winding road of electricity sector reforms in India
2. Too good to be true: The story of thermal generation
3. Reforms in hydropower: Missing the woods for the trees
4. Renewable Energy: The imperative for the future
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Electricity distribution: On square one, even with reforms after reforms

The Indian coal sector: A black past and a grey future

Natural gas: Running on empty

What’s past is prologue
Examples of major reforms reviewed

• IPP process and competitive bidding era

• Hydro power policy 1998 and 50,000 MW initiative

• Solar and Wind sectors

• Private sector participation in distribution, consumer choice experiments, DISCOM bailouts

• Coal allocation – linkages and captive blocks

• NELP, Gas pricing
IPP generation contribution to total generation in 2002

![Bar chart showing the contribution of IPPs to total generation in 2002.](chart.png)
Capacity Addition in last three 5 year plans
Figure 6.1: Relative achievement of coal production and thermal capacity addition
Significant Stranded Assets

• Most capacity addition is base load, thermal
• Stranded capacity
  – - 20 GW Gas,
  – > 20 GW coal
• More than 20 GW projects seeking tariff revision on accounting of fuel issues
• Stressed Assets Claimed to be over 3 lac crore Rs.
Distribution Privatisation and Franchisee

- Odisha – Public – Private – Public – Private?
- Delhi – Regulatory Assets > 15,000 Cr.
- Franchisee
  - Limited success – e.g. Bhiwandi
  - Several failed attempts – Aurangabad, Nagpur, Agra, Kanpur, Sagar, Ujjain
  - New franchisees – Rajasthan, Odisha
## Scale and Significance of Bailout Schemes

<table>
<thead>
<tr>
<th>Period</th>
<th>Name of scheme</th>
<th>Scheme magnitude</th>
<th>Comparable to</th>
</tr>
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<tbody>
<tr>
<td>2001</td>
<td>2001 scheme for repayment of SEB Dues</td>
<td>₹ 41,473 crores</td>
<td>Central and state planned expenditure on social services in 2001–02</td>
</tr>
<tr>
<td>2015</td>
<td>Ujwal Discom Assurance Yojana (UDAY)</td>
<td>About ₹ 2.01 lakh crores as on July 2016</td>
<td>Comparable to India’s defence spending for 2015–16</td>
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Twenty Five Years of Reforms
– Many challenges... some old, some new

• Financial viability of the sector and affordable tariff

• Fundamentally changed context of global climate debate and its implications for India

• Grid integration of renewable energy (RE)

• Rapid changes in costs and technology
  – Renewable Energy (centralised and de-centralised)
  – End use efficiency, Electric vehicles
  – Electricity storage

• Movement towards retail competition
  – Carriage and content
  – Open access, RE captive
Why did the reforms not deliver as expected?

• Poorly conceived objectives
  – Increase investment, generation capacity
  – Universal access became major objective after a decade of ushering in of reforms in 1991

• Weak plans and design flaws
  – Inadequate attention to interlinkages to other sectors
  – Ambiguous framing of New Coal Distribution Policy

• Weak institutions
  – PNGRB – never meant to perform effectively
  – Coal sector regulator – still on paper
Why did the reforms not deliver as expected?

- Insufficient competition
  - Oil and Gas sector
  - In spite of unbundling vertical integration persists
    - Power procurement from affiliate / group companies

- Entrenched vested interests
  - Allocation of captive coal blocks and linkages
  - Granting of pipeline contracts just before enactment of PNGRB
Solar Rooftop Viability in Maharashtra

Note: Consumer Variable Charge is the sum total of energy charge, wheeling charge and electricity duty.

~55% of MSEDCL Sales in 2016-17 can cost effectively shift to Rooftop Solar PV at a price of ₹ 6/kWh.

Indicative Rooftop Solar PV price of ₹ 6/kWh.
Emerging scenario

• Non-discom supply options will be more economical and technically feasible for ‘paying consumers’
  – Demand uncertainty for Discoms
  – Power purchase planning will become more complex
  – Increasingly limited scope for cross-subsidy based tariff design

Role of DISCOM is changing:

• Current scenario
  – Responsible for wires and supply
  – Universal supply obligation
  – Dominant grid user
  – State demand ≅ discom demand

• Future scenario
  – Provider of wires
  – Supplier of last resort
  – Grid balancing
  – Meeting energy needs of small LT, rural and agri. consumers
What can one learn from the experience so far?

• Need clear prioritisation of social and environmental objectives (Access, quality of supply, environmental norms)
  – Explicitly stated, comprehensively planned and effectively monitored

• Agile and comprehensive planning
  – Interlinkages with sub-sectors, global context, rapid changes in technology and costs

• Transparent, accountable and effective institutions
  – Data, resource maps, regulatory structure in oil & gas and coal, autonomy and capacity of SLDCs
What can one learn from the experience so far?

• Participative policy formulation and regulation
  – Fuel sector, monitoring, generation capacity planning

• Enhancing competition
  – Unequal risk-reward regime in open access, adhering to competitive bid processes and contracts

• Improving efficiency of sector actors
  – Effective use of technology to monitor energy flows, strengthening planning capacity of DISCOMs
Thank you.

E-book available (in e-pub format) can be downloaded from PrayAs website at:

http://tinyurl.com/ManySparksButLittleLight