

Climate change policy and power sector reform

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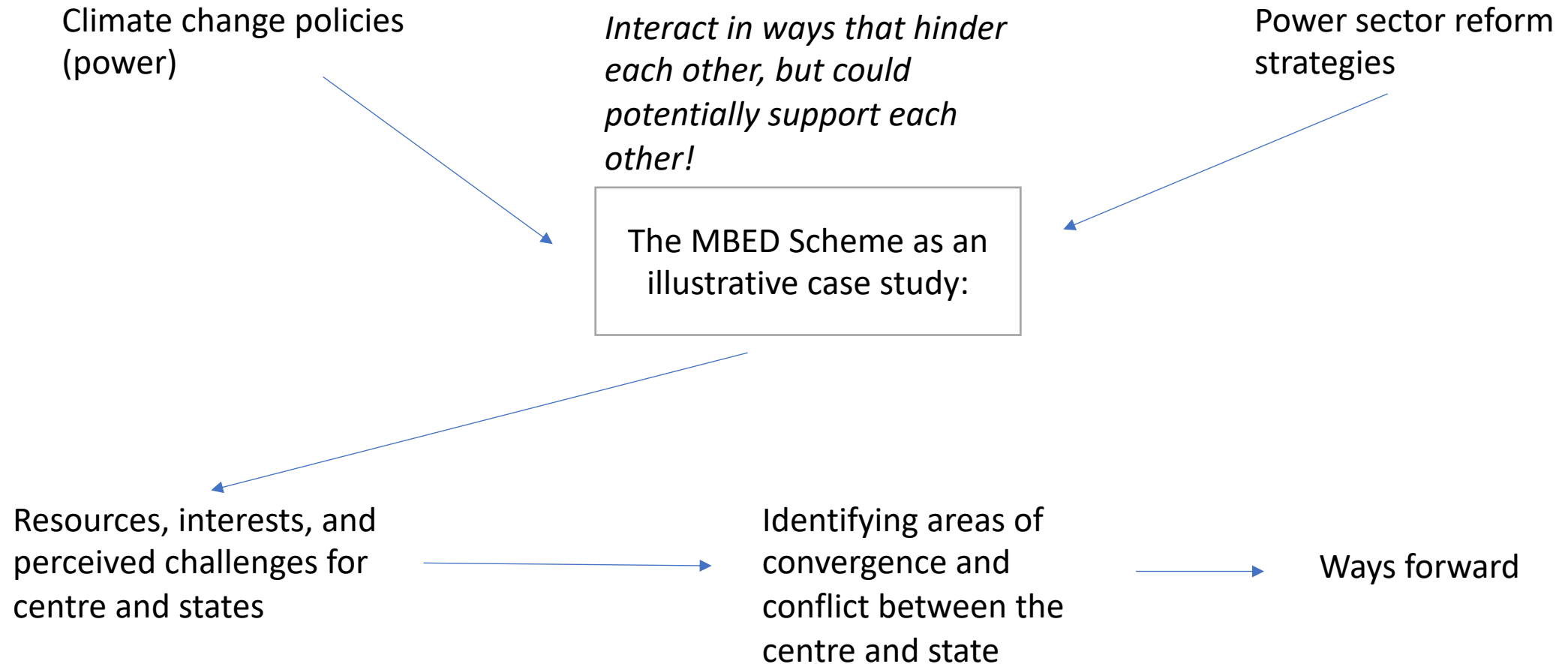
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Outline



Ambitious climate change policies relevant to the power sector

Pre-COP

*450 GW of RE by 2030

*40% RE capacity by 2030

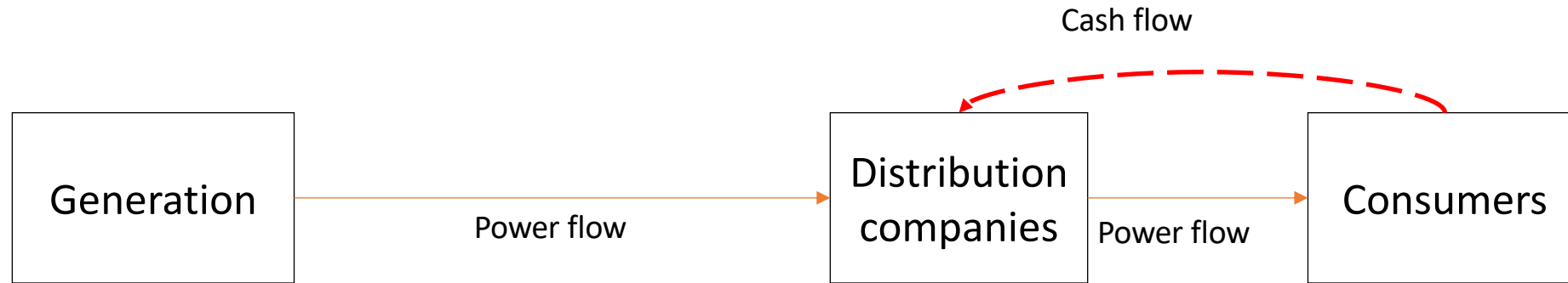
Post-COP

*500 GW of non-fossil capacity by 2030

*50% energy by 2030
(ambiguous)

Note: Union govt. has not specified state-level targets for capacity; while **some** states have their own targets.

...in the backdrop of an ailing power sector



Energy News / Latest Energy News / Power

40 GW of stranded assets

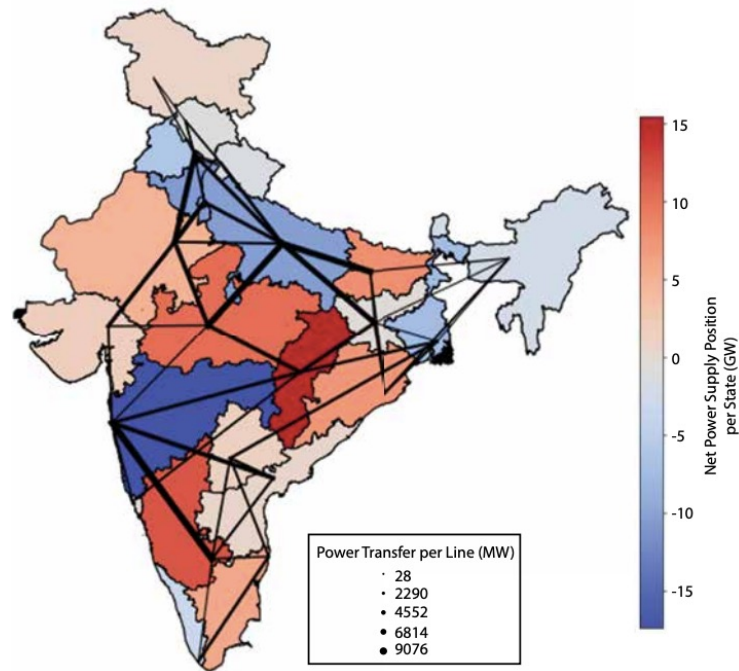
Discom debt to hit all-time high of Rs 4.5 lakh crore in 2020-21: CRISIL

Latest Rs. 6 trillion by FY22; Appr. 20% of the revenue of Govt. of India

The energy transition – for renewables to be integrated efficiently – requires

- Investment in flexible, low-carbon technologies (likely expensive)
- Integrated dispatch, either through markets or system operator
- Resolution/Management of cost-recovery issues

~90% transaction through PPAs is a problem because...high costs, limited flexibility



“... in 2030, during an hour with high renewable energy, **more than 40%** of total Indian electricity demand needs to be met by electricity that crosses an interstate border.” -- TERI, 2020

“... lead to an increase in operational costs by up to 29%, emissions by up to 4%, and RE curtailment by up to 25% in some seasons in RE rich states, as compared to centralised (copper-plate) national dispatch” -- Chitkara et.al, 2021

The existing dispatch mechanism could pose a significant barrier to the 500GW target, and therefore, carbon emissions mitigation in the power sector!

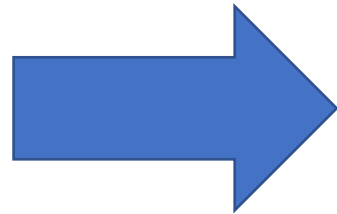
In the last decade, the central actors have proposed or introduced a slew of market mechanisms

- Power exchanges
 - Real time market (operating at 30 min intervals);
 - Plans for ancillary services market
 - Term ahead markets
-
- Even so, short term markets only account for 4% of the volume of transactions.

Note: SCED – Security constrained economic dispatch, amongst inter-state generators (Cumulative savings of Rs. 1624 crores between April 2019 and Jan 2021)

A national dispatch mechanism, MBED, was proposed as a partial solution, to unlock physical PPAs

Long-term physical power purchase agreements



What is MBED?

Market Based Economic Dispatch - a national merit order dispatch scheme.

Objective:

Minimize system cost – scheduling and dispatch purely on economics. Has the potential to save 10-30% in operational costs!

Enable greater grid flexibility - national-level balancing of generation and load demand.



Mechanism:

- Doesn't alter the existing bilateral contracts
 - allow for contracted FC payment
 - hedging arrangement to refund difference between market clearing price and the contracted price



However, the MBED Scheme has not taken off! Why?

Research Objectives

To identify institutional challenges associated with implementing a regional or national market based economic dispatch scheme.

To elucidate how the interests of the states and the union government complement or conflict each other in the application of this scheme

Documents/reports

20+ independent reports

40+ Stakeholder comments

Media articles

Structured Interviews

Interview questionnaire

3 interviews

(constrained due to COVID)

Workshop

Involving panelists from regulatory commissions, discoms, central and state level official.

The answer has implications for other market mechanisms too!

Key findings

Challenges to implementing the MBED scheme fall into these major categories:

- Cost recovery issues and lack of working capital
- Winners and losers (stranded assets) amongst power plants
- Profit sharing between discoms and gencos
- Limited capability to take decisions under increasing uncertainty
- Political issues of autonomy

'The mother of all problems' -- working capital

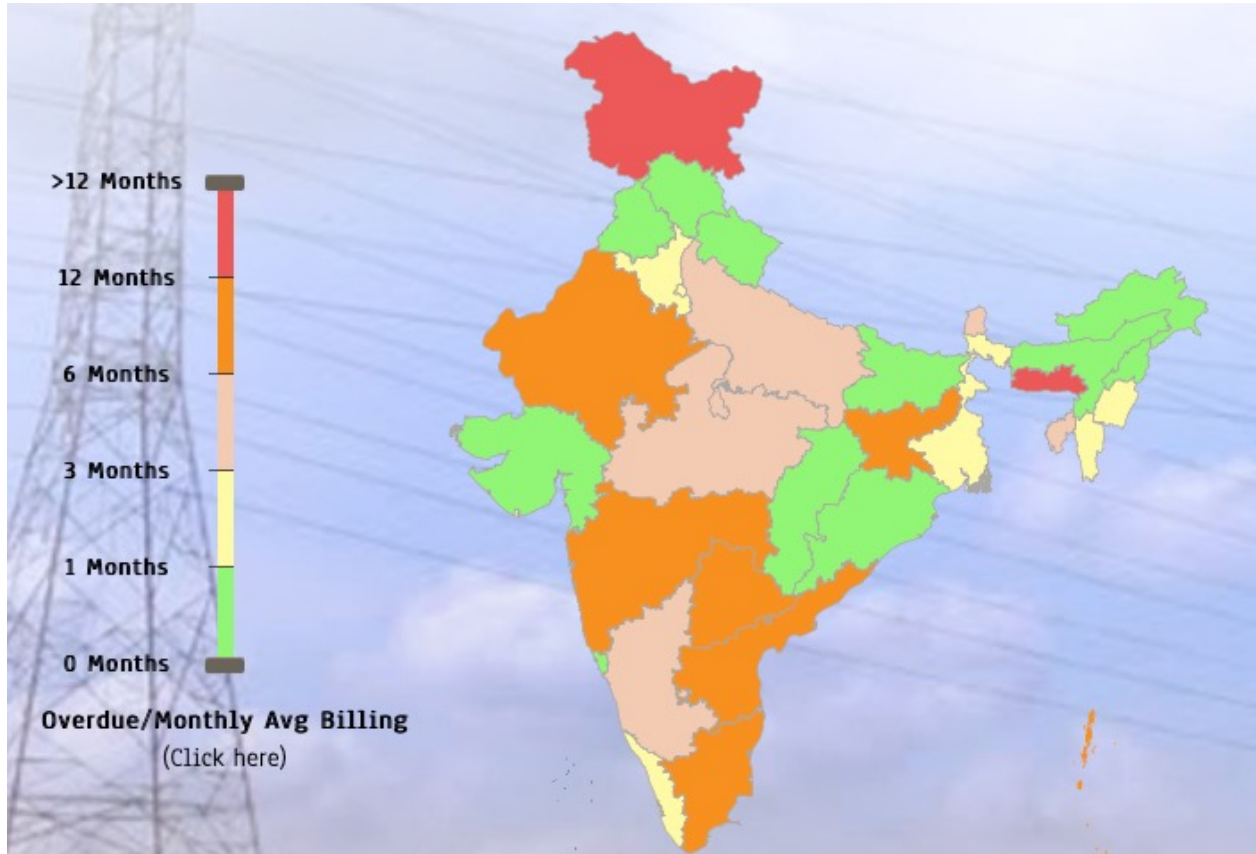


Figure: Payment overdue for different durations across states; Source: Praapti portal, downloaded on 8th Dec 2021

'The mother of all problems!'
-- Managing Director, Madhya Pradesh Discom

'The proposed MBED mechanism requires creation of huge working capital with DISCOMs.'
– PCKL, Karnataka (Discom)

'Current advance settlement for Exchange based transactions on daily basis will not be possible to continue for cash strapped DISCOMs.'
-- BSES, Delhi

On average, DISCOMs across India take average 2 to 3 years to make the payments to the Generating Companies! (1 year for central/inter-state generators)

'The mother of all problems' -- working capital

	Union government	State government
Resources	*Finance *Capacity	*local knowledge
Interests	*Reduce cost *Increase RE integration	*Reduce costs
Perceived challenges		*Limited finance *Lack of capacity

Complementary interests, resources, needs between centre and state.

However, important that financial support is anti-cyclical (does not punish the worse-off, making them even worse off!)

Winners and losers amongst power plants

Tata Power:

'... desirable if a mechanism be evolved to increase the dispatch from stranded and stressed generation rather maximizing the dispatch from low cost generation....'

State owned generation company from Maharashtra:

*'**State Governments have developed power projects at different locations in geographical regions keeping in view the regional power balance and also keeping in view region specific growth perspectives and such project development was not with purely commercial view.'***


Consultant to State discom:

'...if you consider from the perspective of Chief Engineer who is a technical person from this field, he would be happy that MBED is getting a cheaper amount of power.' 'However, if the MD, or the Principal Secretary to whom he reports, says that a particular plant needs to run, it has to run.' 'The goals of MD are different than the goals of the Chief Engineer.'

Which plants should run?

	Union government	State government
Resources	*large centrally owned fleet (NTPC)	*local natural resources
Interests	*Reduce overall cost *Increase RE integration	*Reduce overall cost *Preference to run own plants (for different reasons Ex: AP vs. Rajasthan)
Perceived challenges	Islanded operation, inefficient!	*Limited finance *Stranded assets

Conflicting interests, resources, needs between centre and state.



Not all states strongly prefer in state generation!
Ex: Bihar

Who gets the profit (from sale of extra power)?

Karnataka, Maharashtra Discoms:

'As DISCOMs bear the fixed charges of the Generator, the benefit of the profit should be 100% passed to the DISCOM.'

versus

Genco:

'The sharing should be 50:50 of net revenue after factoring in the variable costs and the associated power sale costs incurred by GENCO.'

Weakly conflicting between centre and state; potentially strong influence of generation companies on policy design?

Capability of discoms to operate with MBED and other short term markets

- Discoms have operated with relatively high certainty while procuring power through PPAs; markets considered risky and inconvenient
- Short term markets and dispatch require very different skills
- Managing decisions under increasing uncertainty from
 - Demand
 - Renewable generation
 - Price
- Yet, some states have managed to develop in-house capacity to deal with markets, saving thousands of crores of rupees Ex: AP saved

Complements
between centre
and state!

Issues of autonomy – who decides the rules of the game?

Proposed Electricity Bill is against federal spirit, KCR tells PM Modi

Telangana chief minister K Chandrasekhar Rao stressed that states should have the flexibility to determine their own policy on renewable energy,

Strongly conflicting
between centre and
states!

*'The proposed bill **takes away** certain **powers of the State government**. For instance, the provision to appoint State Electricity Regulatory Commission (SERC) by a selection committee constituted by the Centre and entrusting the responsibilities to a neighboring SERC would **hit the core of federal polity, which is enshrined in the Constitution.**'*

Key challenges, categorised by centre-state interactions

Complements

- Cost recovery issues and lack of working capital
- Limited capability to take decisions under increasing uncertainty

Conflicts

- Winners and losers (stranded assets*) amongst power plants
- Profit sharing between discoms and gencos
- Political issues of autonomy

*particularly amongst merchant plants

Key challenges, categorised by centre-state interactions

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Resolution:

- Centre-state co-ordination/consultation
- Strategic consultations on financial support
 - Capability building in reducing losses

- Inter state co-ordination:
- States as engines of innovation
 - United by common challenges and opportunities

Path forward to energy and climate outcomes

Resolve challenges...

- Cost recovery issues across and within states
- Socio-political between centre/state, across states
- Resolving distributive pressures within states
- Risk sharing between private/public entities

To achieve

- Integration of renewables
- Efficient and equitable investment in new, low-carbon technologies
- Incentivizing demand response outcomes
- Reliable access to all!

Thank you!

The path forward to efficient a power sector and successful climate policy requires:

Exploiting complementarities

- *Cost recovery issues limit interstate trade*: could a centrally-funded public finance mechanism help ailing discoms engage in trade?
- *Norms and capability*: Strengthening capability of stakeholders (gencos and discoms) who transact electricity

Resolving conflicting interests:

- *Stranded Capital*: Managing stranded capital and unemployment associated with regions which stand to lose
- *Autonomy*: Encouraging inter-state trade while protecting autonomy of states (politically, promoting co-operation and trust between them)

