

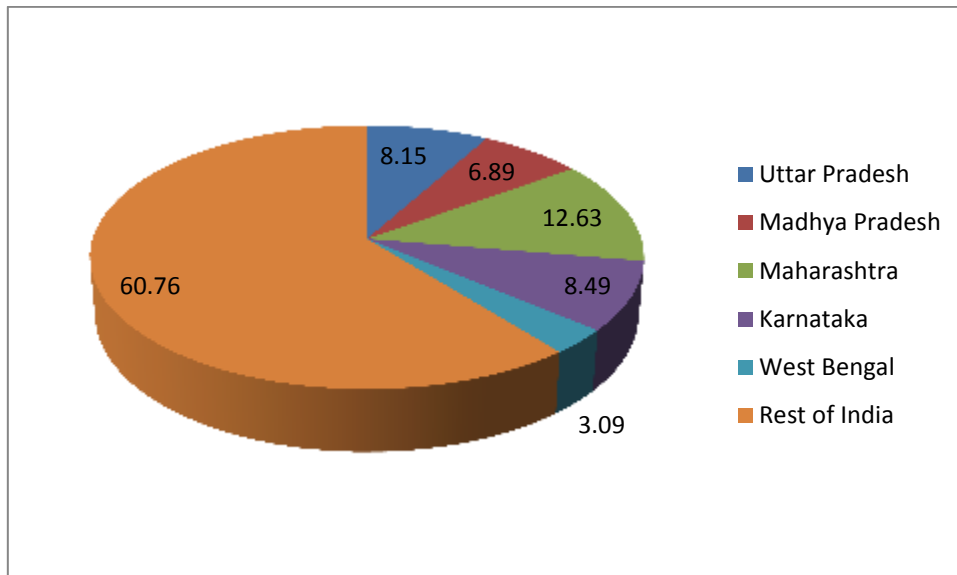
# Regulatory Role & Engagement in India's Clean Energy Transformation

## Balancing Political, Economic and Environmental Considerations

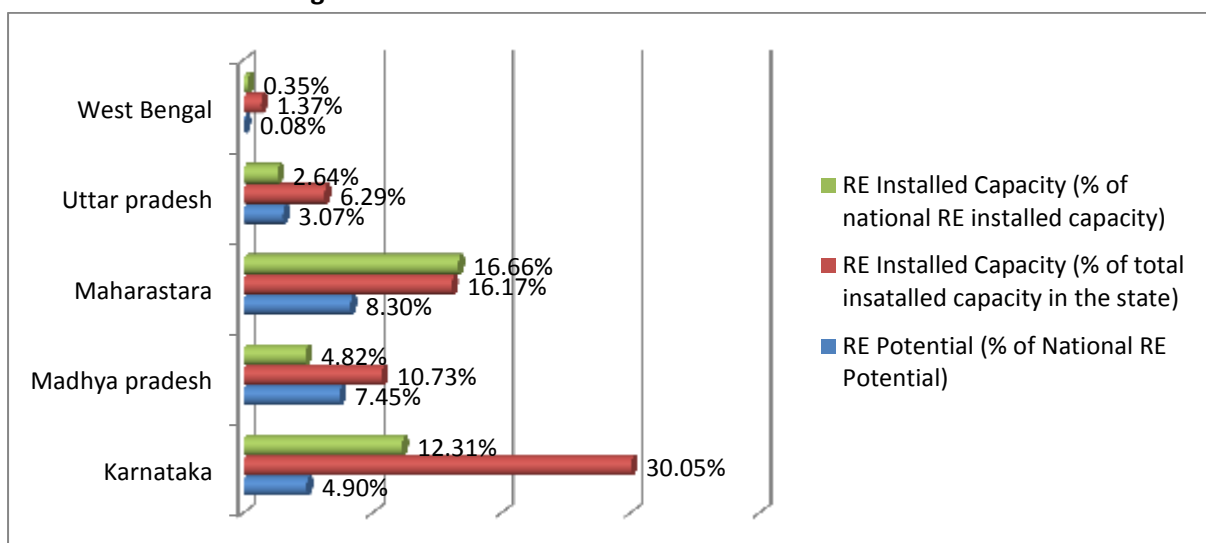
### SELECTION OF STATES

The goal here is to select a set of five states with varying degree of experience. In selecting states, we have considered potential of RE in the state vis-à-vis achievements and existing policies. In addition, we have also considered electrification status, infrastructure development and discom performance and health. While DSM and EE are relatively new areas for most of the states, many of the selected five states have picked up RE earlier. The five states together account for about 40 percent of the targeted 175 GW RE capacity by 2022 (See Fig 1). Fig 2 provides current state of RE development in the states vis-à-vis their RE potential. Further detail on each state is provided below.

**Figure 1: State-wise share of India's 175 GW RE Target**



**Figure 2: RE Potential and Achievement in the States**



### 1. Maharashtra:

- High rate of village electrification (99.9%) and household electrification (83.9%). With 38 GW installed capacity the state accounts for 13% of national capacity.
- One of the first states to pursue RE capacity addition in big scale. First state to have set a RPO target, even before the central regulation on RPOs came into force. Technology specific RPOs for solar and small hydro.
- High RE potential, 74.5 GW. With 6.23 GW of RE installed capacity, the state has 16% RE in its energy mix.
- The state nearly complies with RPO targets, aligned with the national target.
- In terms of efficiency, the state has achieved significant reduction in AT&C loss, which was 14.39% in 2013-14. Accumulated debt is on the lower side with Rs 4,649 crores.
- The state has multiple policies supporting promotion of various segments of RE.
- One of the first states to have a DSM regulation. Multiple initiatives to promote DSM: Load management charge, load management reward, peak and off-peak tariff for industries and feeder segregation.

### 2. Karnataka:

- A state with high electrification: 99.88% village electrification and 90.6% household electrification. Demand supply gap is significant at 4.7%.
- A state with significant RE potential (44.4 GW) and achievement (4.6 GW of RE installed capacity). RE accounts for 30% of installed capacity in the state.
- One of the few states to have achieved more than the RPO target. In 2012-13, the RPO achievement was 9.93% compared to a target of 7.25%.
- In terms of AT&C loss, the state is still on the higher side with 22% loss. Yet, significant recent attempts are being made to curb the losses. Accumulated debt is reasonably lower in the state at Rs 1,656 crores.
- Appropriate policies are in place for promotion of RE and DSM. But these policies are more of recent initiatives. There is a greater focus on solar at present.

### 3. Madhya Pradesh:

- Low household electrification (67.1%), even though the state has achieved 97.2% village electrification. Demand supply gap is significantly low in the state at 0.6%.
- The state has an RE installed capacity of 1.8 GW, accounting for 10.73% of the total installed capacity. However, the achievement is way too small compared to the potential in the state, i.e. 66.8 GW.
- The state has a very low RPO target at 4% in 2012-13. Compliance data for the state is not available.
- Losses are significantly high at 28% and the state has an accumulated debt of Rs 14,411 crores.
- However, the state has greater emphasis on solar based generation in recent years. It has been pursuing solar UMPPs very aggressively.
- The state has a range of policies focused on various RE technologies. But, it does not have a policy/regulation on DSM.

#### **4. West Bengal:**

- Though the state has high village electrification (99.9%), half of the households (45.5%) are yet to be connected. Demand supply gap in the state is significantly low at 0.5%.
- The state has a lower RE potential compared to the other four states and considering its size (RE potential 7.22 GW). Though being a first mover in RE (especially off-grid solar), the state has a very minimal achievement at 0.13 GW, contributing to mere 1.37% of total installed capacity in the state.
- Subsequently, the state has a lower RPO target set at mere 3%, which the state has failed to achieve. In 2012-13, the state managed to procure only 1.47% of its electricity from RE sources.
- AT&C losses in the state are one of the highest at 32%. However, accumulated debt has been significantly low at Rs 212 crores.
- The state has a range of policies and regulations to promote RE, but does not have any significant policy measure for promotion of DSM.

#### **5. Uttar Pradesh:**

- Disturbingly low rate of household electrification, with only 36.8% households connected to the grid, though the grid has been extended to 98.7% of the villages. Yet, the state experiences a high degree of demand supply gap, estimated to be 16.3%.
- While the state has an RE potential of 27.6 GW, the current RE installed capacity is mere 0.99 GW, accounting for 6.29% of the total installed capacity.
- Subsequently, the state has failed to achieve the set RPO. In 2012-13, RPO achievement was 4.68%, while the requirement was set at 6%.
- AT&C losses are also on the higher side at 24.65%, while accumulated debt is Rs 33,600 crores.
- The state has a range of policies/regulations for promotion of RE and DSM. Some of these policies (for wind and biomass) are in the draft stage.

Year	Karnataka	Madhya Pradesh	Maharashtra	Uttar Pradesh	West Bengal
2015	<ul style="list-style-type: none"> <li>RE Procurement Regulation</li> <li>DSM Regulation</li> <li>EE &amp; Conservation Policy</li> </ul>	<ul style="list-style-type: none"> <li>Forecasting, scheduling, deviation for Solar &amp; Wind Regulation</li> <li>DSM Regulation (DRAFT)</li> </ul>	<ul style="list-style-type: none"> <li>RE Policy</li> <li>Net-metering for rooftop SPV Regulation</li> </ul>	<ul style="list-style-type: none"> <li>Net-metering for rooftop SPV Regulation</li> <li>Wind Policy (DRAFT)</li> <li>Biomass Policy (DRAFT)</li> </ul>	
2014	<ul style="list-style-type: none"> <li>Solar Policy</li> </ul>			<ul style="list-style-type: none"> <li>Rooftop Solar Policy</li> <li>Captive &amp; RE Generating Plants Regulation</li> <li>DSM Regulation</li> </ul>	
2013				<ul style="list-style-type: none"> <li>Solar Policy</li> </ul>	<ul style="list-style-type: none"> <li>Cogeneration &amp; Generation of RE Regulation</li> <li>REC Regulation</li> </ul>
2012		<ul style="list-style-type: none"> <li>Wind Policy</li> <li>Solar Policy</li> </ul>			<ul style="list-style-type: none"> <li>RE Policy</li> </ul>
2011		<ul style="list-style-type: none"> <li>Small Hydro Policy</li> <li>Biomass Policy</li> </ul>			
2010		<ul style="list-style-type: none"> <li>Cogeneration &amp; Generation from RE Sources Regulation</li> </ul>	<ul style="list-style-type: none"> <li>RPO Regulation</li> <li>DSM Regulation</li> </ul>	<ul style="list-style-type: none"> <li>RPO Regulation</li> </ul>	<ul style="list-style-type: none"> <li>Cogeneration &amp; Generation of RE Regulation</li> </ul>
2009	<ul style="list-style-type: none"> <li>RE Policy</li> <li>Load Forecast Regulation</li> </ul>				
2008			<ul style="list-style-type: none"> <li>Generation from non-conventional sources, Policy</li> </ul>	<ul style="list-style-type: none"> <li>Small Hydro Policy</li> </ul>	<ul style="list-style-type: none"> <li>Cogeneration &amp; Generation of RE Regulation</li> </ul>
2007					
2006					<ul style="list-style-type: none"> <li>Cogeneration &amp; Generation of RE Regulation</li> </ul>
2005			<ul style="list-style-type: none"> <li>RPO Regulation</li> <li>Small Hydro Policy</li> </ul>	<ul style="list-style-type: none"> <li>T&amp;C for tariff &amp; sale of RE Regulation</li> </ul>	
2004					
2003					

This is a working table and will include the state level schemes also, along with the regulations and policies. The goal here is to: 1) to understand the consistency and spread of state level initiatives; 2) map policy & regulatory developments vis-à-vis political and leadership change. In fact, we can have an additional column on National Policy & CERC Regulations and see how states have responded/reacted to them.