Two Day National Conference: RE Regulation India 2010

Review of RPS Implementation at state level February 2010

Agenda

Why Renewable?
Why regulatory/Policy interventions for renewable?
Different mechanism to promote renewable generation
What is RPO?
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Why Renewable?

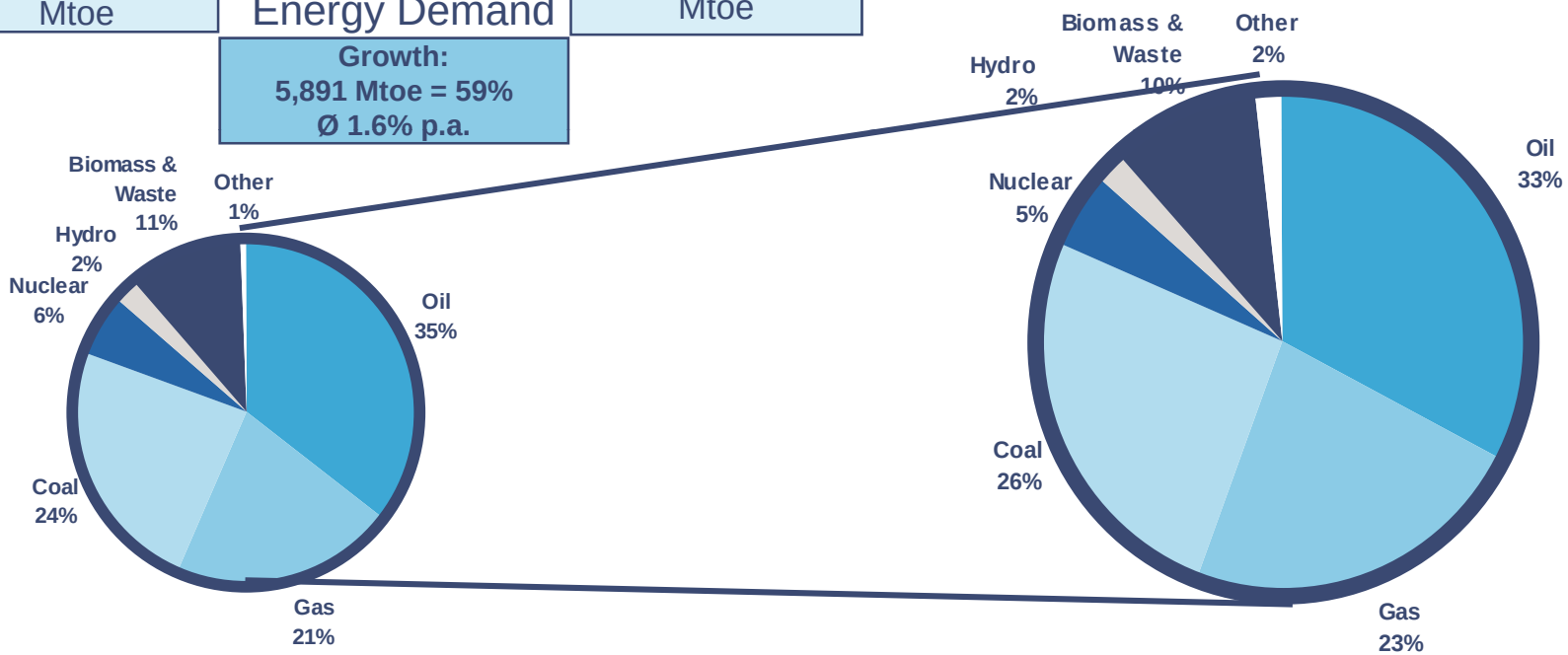
The share of fossil fuels is expected to increase from 80% to 82% by 2030. At these trends, the mission to reduce carbon emissions would not be sustainable. Hence, a strong case for improving the current policies and frameworks is emerging.

2004: 11,204 Mtoe

Energy Demand

Growth:
5,891 Mtoe = 59%
Ø 1.6% p.a.

2030: 17,095 Mtoe



2004: 26,079 Mt

Share of Power 41%

Energy-Related Co2 Emissions

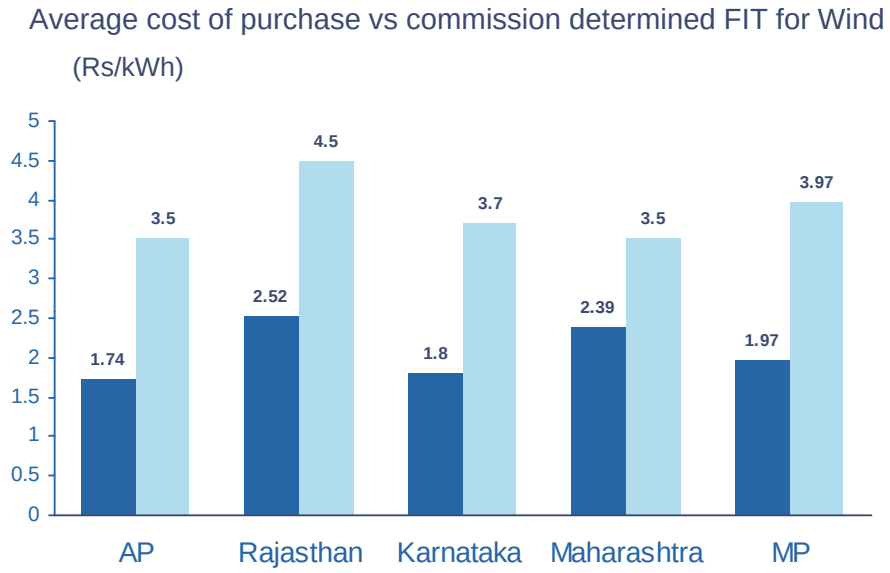
Growth:
14,341 Mt = 55%
Ø 1.7% p.a.

2030: 40,420 Mt

Share of Power 44%

Why regulatory/policy intervention for Renewable……1

- Present market conditions make renewable uncompetitive
- But Regulatory support and improvement in RE technology will help RE achieve Grid Parity.
- In addition, chronic power shortages and increasing fuel cost builds a strong case for promoting renewable.
- ***Increase in conventional fuel cost over the life of the plant implies that SHP becomes more attractive than coal based generation, and wind generation becomes more attractive than gas generation within a few years of plant life***.



Why regulatory/policy intervention for Renewable…….2

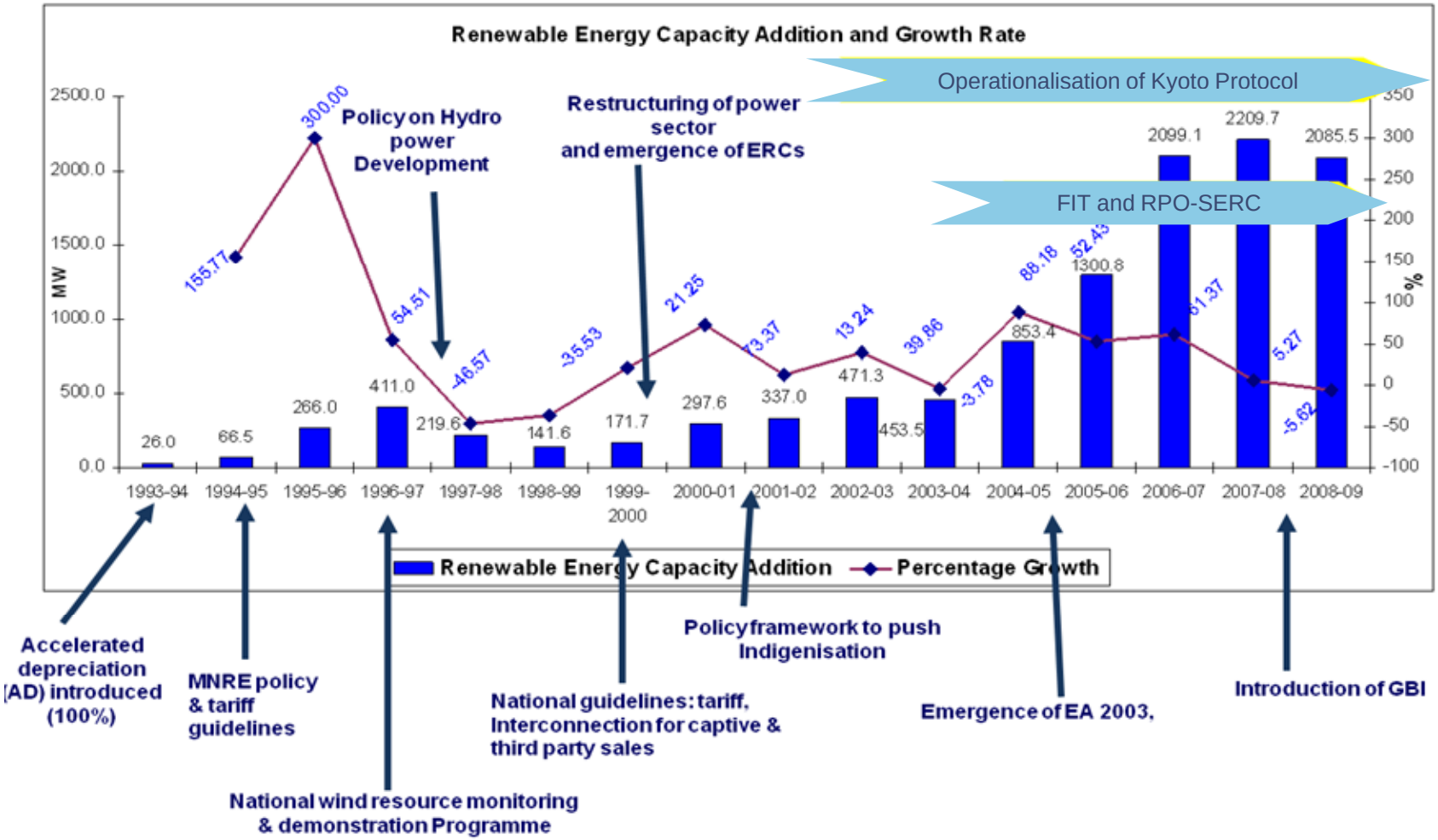
- A review of policies and regulatory framework across countries indicates that early commercialization of RE technologies remains dependent on support from the government.
- Facilitating policy and regulatory instruments have made RE an economically and commercially viable source of alternative energy.
- International experience with successful leveraging of these instruments and resulting into decrease in cost of generation are:

    - **Germany** (soft loans for residential solar photovoltaic systems, feed-in tariffs for wind and solar, technology specific renewable purchase obligations);
    - **Japan:** (net metering, grants for demonstration projects and subsidy for decentralised residential solar photovoltaic systems);
    - **California:** (accelerated depreciation for small scale projects, renewable portfolio standard for states, feed-in tariffs for all RE technologies);
    - **Texas:** (renewable purchase targets) and Spain (high feed-in tariffs for solar – photovoltaic as well as solar thermal).

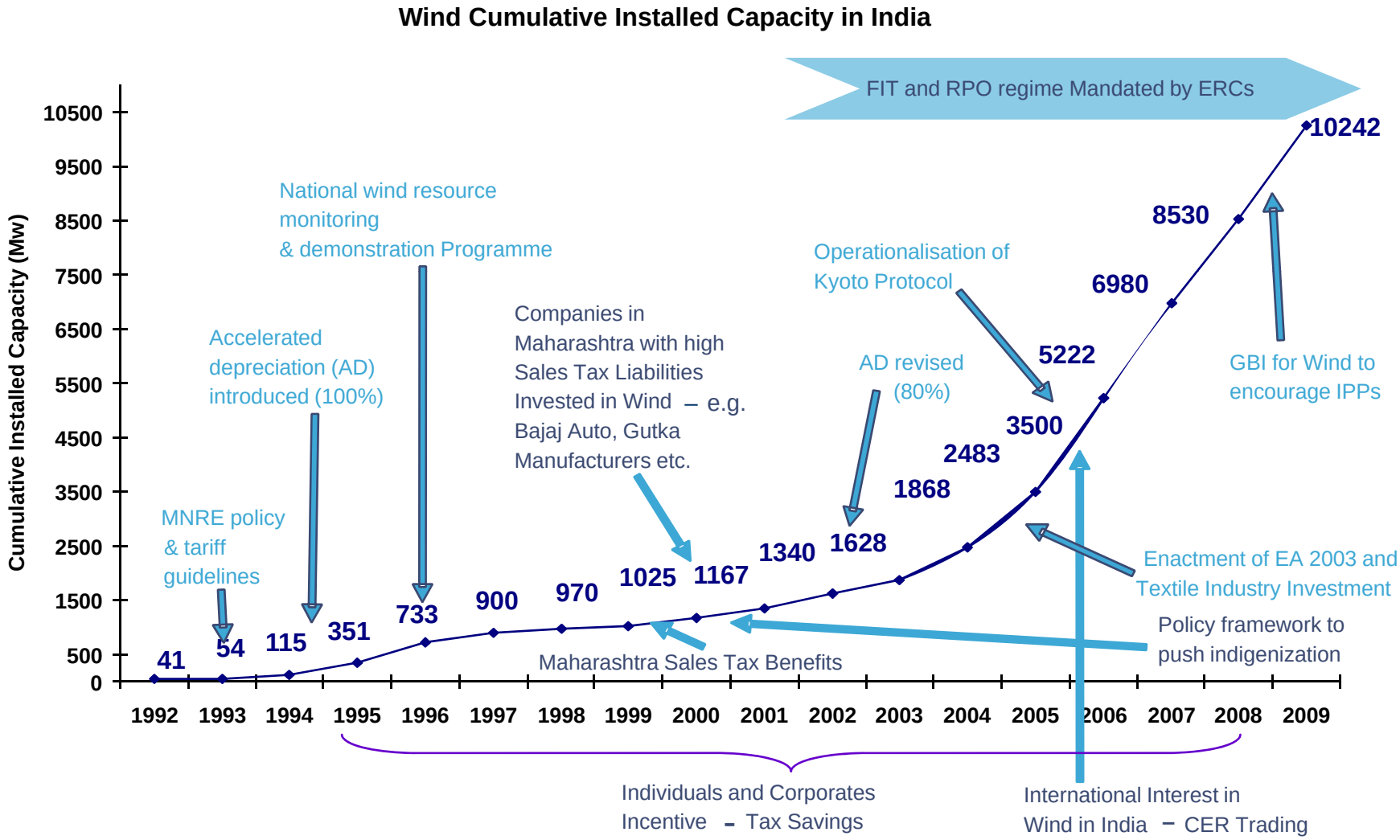
Different mechanism to promote renewable generation

Non Fiscal Regulatory instrument	FiT, RPS, competitive bidding scheme.
Financial Instruments	Capital subsidy, production incentives, soft loans, R&D support, Rebates, etc
Fiscal Instrument	Investment tax credit, production tax incentive, property tax reduction, VAT reduction, Excise duty reduction, accelerated depreciation.
Kyoto Protocol mechanism	CDM, JI, Emission trading.
Other Policy/ legislative support	Clean Energy funds, RE Law, Infrastructure support.

Growth of renewable market in India can be attributed to Regulatory/policy support



Growth of wind market illustrates effectiveness of regulatory support



Source : PwC Compilation

What is RPO?

- RPO policies require electric utilities to provide renewable electricity to their customers, typically as a percentage of total energy use.
- It stimulates demand side for take-up of cleaner sources of energy.
- Boosts investors' confidence by providing guaranteed market for sale of RE power.
- RPO policies appear to have successfully motivated new renewable development across the globe:
  - India experienced its renewable capacity growth to more than 15.5 GW in 2009 from 4.2 GW in 2003 (approx. 400% increase).
  - From 1998-2007, an estimated 8,900 MW of new non-hydro renewable capacity (more than half of that constructed) was built in the United states with RPO policies.

  (although it is difficult to demonstrate that RPO policies were the only factor driving RE development).

Regulatory/Policy provision for RPO/Renewable in India

EA 2003

- **(Section 3):** *National Electricity Policy and Plan for development of power system based on optimal utilization of resources including renewable sources of energy.*
- **(Section 61(h)*):*** *Tariff Regulations by Regulatory Commission to be guided by promotion of generation of electricity from renewable energy sources in their area of jurisdiction.*
- **(Section 86(1)(e)):** *Regulatory Commission to specify Purchase Obligation from renewable energy sources.*

Tariff Policy

- **(Para 6.4 of the Tariff Policy stipulates:** *"Pursuant to provisions of S 86(1) (e) of EA 2003, Appropriate Commission shall fix minimum percentage for purchase of power from RE sources taking into account availability of such sources in the region and its impact on retail tariffs."*

NAPCC

- At national level for 2010, minimum target of 5% for RE purchase of total grid purchase, to be increased 1% each year till 2010.
- Central and state governments to set up a verification mechanism to ensure that RPO is met.
- Penalties as may be allowed under EA 2003 may be levied, is utilities fall short of their RPO.

Regulatory framework for RPO in India……1

- RPOs are mandated by the Electricity Act 2003 and National Tariff Policy, but only adopted by 16 SERCs and targets met by 5 states only.
- Lack of clarity on principles and methodology for determining RPO standards. Present RPO framework describes the inconsistency:

States	RE Source / Eligible Entities	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Andhra Pradesh		5%	5%	5%	5%	5%	5%
Chhattisgarh	Biomass			5%	5%	5%	
	Small Hydro			3%	3%	3%	
	Others			2%	2%	2%	
Delhi			1%	1%	1%	1%	
Gujarat		1%	1%	2%	2%	8%*	9%*
Haryana			3%	5%	10%	10%	10%
HP			>20%	>20%	>20%		
Karnataka	BESCOM,MESCOM&CESC	10%	10%	10%	10%		
	Others	7%	7%	7%	7%		

*Draft regulation

Regulatory framework for RPO in India…….2

States	RE technology	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Kerala	SHP-2%	5%	5%	5%			
	Wind-2%						
	Others-1%						
Madhya Pradesh	Wind			5%	6%	6%	6%
	Biomass			2%	2%	2%	2%
	Cogeneration & Others			3%	2%	2%	2%
Maharashtra		3%	4%	5%	6%		
Punjab			1%	1%	2%	3%	4%
Rajasthan	Wind	2.00%	4.00%	5.00%	6.00%	6.75%	7.50%
	Biomass	0.50%	0.88%	1.25%	1.45%	1.75%	2.00%
Tamil Nadu		10%	10%	10%	13%	14%	
U.P		7.5%	7.5%	7.5%	7.5%	7.5%	
Uttarakhand			5%	5%	8%	9%	10%
West Bengal	WBSEB			4.8%	6.8%	8.3%	10.0%
	CESC			4.0%	6.0%	8.0%	10.0%
	DPL			2.5%	4.0%	7.0%	10.0%
	DPSC			2.0%	4.0%	7.0%	10.0%

RPO framework in key states……1

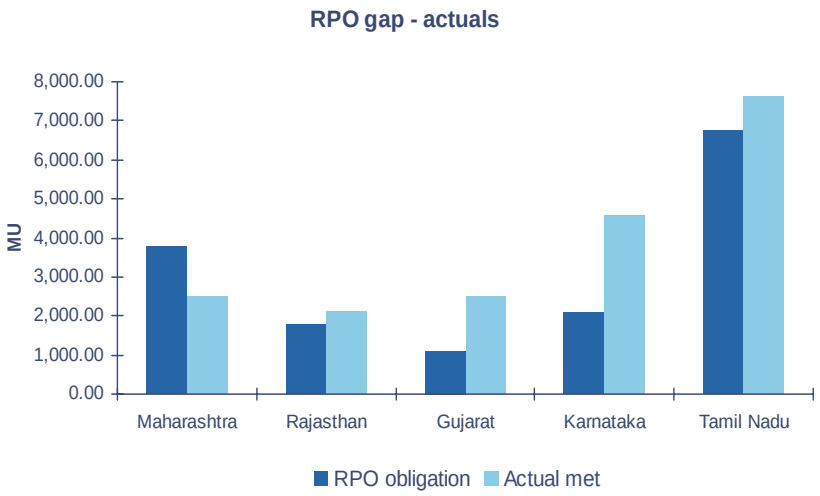
States	RE Technology	RPO			
		2009-10	2010-11	2011-12	
Tamil Nadu	All renewable sources	13% of energy input into the system.	14% of energy input into the system.		Of the energy input into the system.
Rajasthan (to all distribution licensees, captive generators and open access users.)	Wind	Minimum – 6% Maximum – 7.5%	Minimum – 6.5% Maximum – 8%	Minimum – 7.5% Maximum – 8.5%	Of total consumption.
	For electricity drawn from the CPP and through Open Access.	7.45%	8.5%	9.5%	Of total energy drawn other than from distribution licensee.
Gujarat (to all distribution licensees, captive generators and open access users.)	All renewable sources	2%	Wind – 6% Solar – 1.5% Others – 0.5% Minimum of 10% all renewable	Wind – 7% Solar – 1.5% Others – 0.5% Minimum of 10% all renewable	If the mentioned minimum quantum of power purchase from solar and other renewable sources is not available in a particular year, then in such cases, additional wind energy over and above that specified, shall be utilized for fulfilment of the total RPO.
Karnataka	All renewable sources	Minimum – 5% Maximum – 10%			Of its total consumption during a year.
Maharashtra (to all distribution licensees, captive generators and open access users.)	All renewable sources	6%			
Andhra Pradesh	All renewable sources	5%	5%	5%	

RPO framework in key states…….2

States	Penalty mechanism	RPO Status
Tamil Nadu	No penalty mechanism in place.	The erstwhile RPO of 10% has been achieved by the State in 2007-08.
Rajasthan	Subject to payment of Renewable energy surcharge (For 2007-08: 3.59 Rs/kWh)	Met RPO in 2008-09
Gujarat	Penalty as determined under section 142 of EA 2003.	RPO of 2% is achieved by the State for 2008-09.
Karnataka	No penalty mechanism in place.	Met the RPO of maximum of 10% in 2008-09.
Maharashtra	The eligible persons shall be liable to pay at the rate of Rs. 7.00 per unit of shortfall for 2009-10. Further, it will not be allowed as 'pass through' expenses in their Annual Revenue Requirement.	Except TPCC, others did not meet RPO in 2007-08 and 2008-09. But the Commission is of the view that lower of (a) RPO target as specified or (b) actual achievement of RPO target shall be considered.
Andhra Pradesh	Under relevant provisions of EA 2003.	4.6% met in 2007-08, dropped to 4.1% in 2008-09; against RPO of 5%

Demand for Renewable

- Presently, Maharashtra has a gap of 35%.
- But with revised RPO targets in Gujarat and Tamil Nadu, these sates will have to contract additional capacity.
- There is an additional RE requirement of 17.5 BU by 2012. Considering CUF of 20%, 10,000 additional renewable capacity will be required to meet this RPO in 2012 in these states.
- Based on NAPCC there is RE requirement of 42.4 BU by 2010 and to 67.8 BU by 2012. With annual CUF of 20%, this converts into capacity of 39,000 MW by 2012 (additional requirement of 24,000 MW) .
- To meet this additional requirement states will have to increase their RPO targets.



Estimated market	Purchase as per RPO in 2011-12 (A)	Present RE purchase (A)	Additional requirement (MU)	Additional requirement (MW
	MU	MU	MU	MW
Maharashtra	7902	2493	5409	3087
Rajasthan	3668	2106	1562	891
Gujarat	7690	2520	5170	2950
Karnataka	5354	4600	754	430
Tamil Nadu	12211	7615	4596	2623
Total	**33570**	**19334**	**17492**	**9984**

Way Forward

- At one stage, we are promoting renewable by specifying RPO's and penalty mechanisms but it is also import to address transmission and UI issues-
  - The Regulators should appreciate the intermittent nature of wind and hydro resources and exempt them from UI charges and scheduling.
  - To avoid state level open access constraints, CERC should promote inter-state open access at retail levels and exempt wind and hydro from the scheduling and imbalance charges.
- There should be clear monitoring mechanism to assess if there is really no progress on renewable supply or is it on account of the bottlenecks created by the utilities.
- More transparency and accountability in enforcing RPO obligations should be ensured. Are the companies (especially SLDC) operating independently?
- How can we enforce RPO penalties ? What is the status and progress on the penalties? Are the Regulators seriously imposing these penalties on the utilities for not complying RPO obligations (case of Maharashtra)
- How are we enforcing RPO on open access and captive consumers ? Who is monitoring them ? How are we accounting their consumption and monitoring compliance?

FOR Recommendation for RPO

- FOR report on “Policies on Renewable” provides guidelines, methodologies, and framework for RE development. It addresses various issues related to RE- percentage specification, pricing incentives etc.
- Its recommendation for RPO framework are:
  - Overall RPO should be specified (Except new technologies like Solar, tidal, etc.)
  - Compliance with RPO, may be enforced by invoking sections 142 and 149 of EA 2003 against the responsible officer of the utility.
  - This penalty should be levied in addition to imposition of financial liability in terms of Rs/unit of shortfall and this amount should not be allowed to pass in ARR.
  - Fulfillment of RE obligations may be considered as part of the license condition, and non-fulfillment of RPO obligations would be treated as violation of license conditions and attract the provisions of the Act.
  - In order to promote RE sources, use of only non-fossil fuel-based co-generation should qualify for fulfillment of RPOs.

To Summarise

- Renewable policy/regulatory intervention required for growth of Renewable market;
- Only 15 states have notified RPO for 2009-10; Four of them have RPO less than 5% which is below NAPCC target;
- 8 states have notified RPO till 2012; RPO of only 5 states match NAPCC target of 7%;
- 13 states are yet to notify RPO targets; These sates may adopt NAPCC targets;
- CERC should address transmission and UI issues to enable inter-state transactions.
- Strict penalty mechanism should be adopted (may be linked with marginal cost of power purchase).
- Appropriate monitoring mechanism should be implemented with the help of SNA to monitor implementation of RPO.
- As recommended by FOR, penalty mechanism should consider penalty provisions as per EA 2003 as well as financial liability in terms of Rs/kWh for RE shortfall.
- NAPCC targets should be adopted by SRECs as minimum RPO targets.

Thank You

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