

INDIAN RENEWABLE ENERGY REGULATORY SCENARIO



REGULATORY AFFAIRS

Contents

1. Renewable Energy in India - Potential, Installed Capacity (Wind) and Target	4
1.1. Renewable Energy Potential	4
1.1.1. RE Potential- India	4
1.1.2. RE Potential- Wind (State-wise)	4
1.2. RE Installed Capacity	5
1.2.1. RE Installed Capacity- India (as on March 2013)	5
1.2.2. Wind trajectory in India- (since 2002)	6
1.3. RE Energy Targets	6
1.3.1. 12th PLAN PROGRAMME	6
1.3.2. 13th PLAN PROGRAMME	7
2. Power Sector Structure	8
3. RE Supportive Framework- Global/India (Central & State)	9
4. Regulatory Scenario	10
4.1. Electricity Act- 2003: 10th June, 2003	10
4.2. Policies	11
4.2.1. National Electricity Policy- 12th February, 2005	11
4.2.2. National Tariff Policy- 6 January, 2006 (& its amendments)	12
4.3. National Missions	13
4.3.1. National Action Plan on Climate Change- 30th June 2008	14
4.3.2. National Solar Mission	14
5. States Regulations/Orders	15
5.1. Wind Energy (Feed-In-Tariff) – Major wind states	15
5.2. Renewable Purchase Obligation	17
6. Renewable Energy Certificate Mechanism- INDIA	27
6.1. Conceptual Framework	27
6.2. REC Highlights	27
6.3. Process Flow Chart	28
6.4. Fees and Charges	29
6.5. REC Update	30
6.6. REC Demand Supply Gap Trajectory- IEX & PXIL	33
7. Salient Features of Various Mechanism	34

8.	Option Available for Sale of Renewable Sources.....	35
9.	Options for Wind Energy Generators	36
10.	Useful Links	37

1. Renewable Energy in India - Potential, Installed Capacity (Wind) and Target

1.1. Renewable Energy Potential

1.1.1. RE Potential- India

Sources	Potential (in MW)
Wind Power	49130
Small Hydro Power	15000
Biomass Power	18000
Bagasse Cogeneration	5000
WTE- Urban and Industrial	2700
Solar	4-7 kWh per sq. m per day

(Source: MNRE)

1.1.2. RE Potential- Wind (State-wise)

Sources	Potential (MW)
Gujarat	10609
Karnataka	8591
Maharashtra	5439
Andhra Pradesh	5394
Tamil Nadu	5374
Jammu Kashmir*	5311
Rajasthan	5005
Madhya Pradesh	920
Orissa	910
Kerala	790
Arunachal Pradesh*	201

Uttrakhand*	161
Uttar Pradesh*	137
Sikkim*	98
Assam*	53
Meghalaya*	44
Chhattisgarh*	23
West Bengal *	22
Himachal Pradesh*	20
Lakshadweep	16
Manipur*	7
Nagaland*	3
Andaman & Nicobar	2
Total	49130

*Wind potential has yet to be validated with measurements

(Source: **MNRE**)

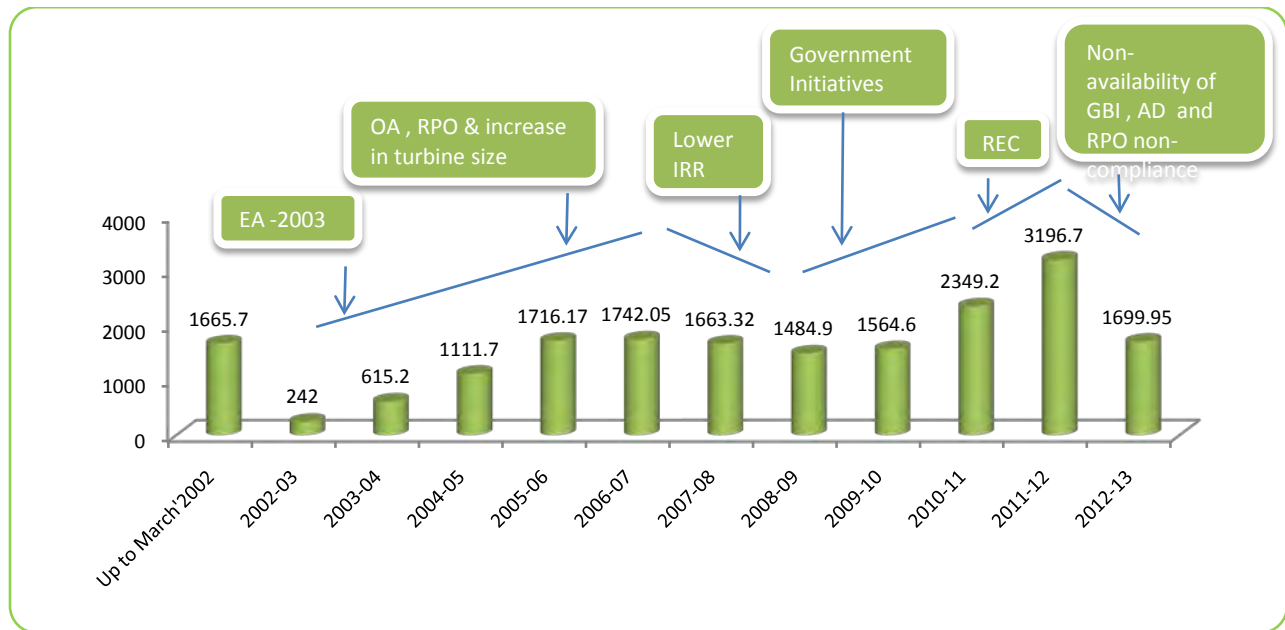
1.2. RE Installed Capacity

1.2.1. RE Installed Capacity- India (as on March 2013)

Sources	Installed Capacity (in MW)
Wind Power	19051.45
Small Hydro Power	3632.25
Biomass Power	1264.80
Bagasse Cogeneration	2337.43
WTE- Urban	96.08
Solar Power (SPV)	1686.44
Total	28068.45

(Source: **MNRE**)

1.2.2. Wind trajectory in India- (since 2002)



(Source: **MNRE**)

1.3. RE Energy Targets

1.3.1. 12th PLAN PROGRAMME

12TH PLAN TENTATIVE PROGRAMME FOR GRID INTERACTIVE RENEWABLE POWER (in MW)	
Wind Power	11,000
Small Hydro Power(up to 25 MW)	1,600
Biomass Power, Bagasse Cogeneration, Biomass Gasifier	2,100
Solar Power	3,800
Total	18,500

[Source: Report of the Working Group on Power for Twelfth Plan (2012-17)]

1.3.2. 13th PLAN PROGRAMME

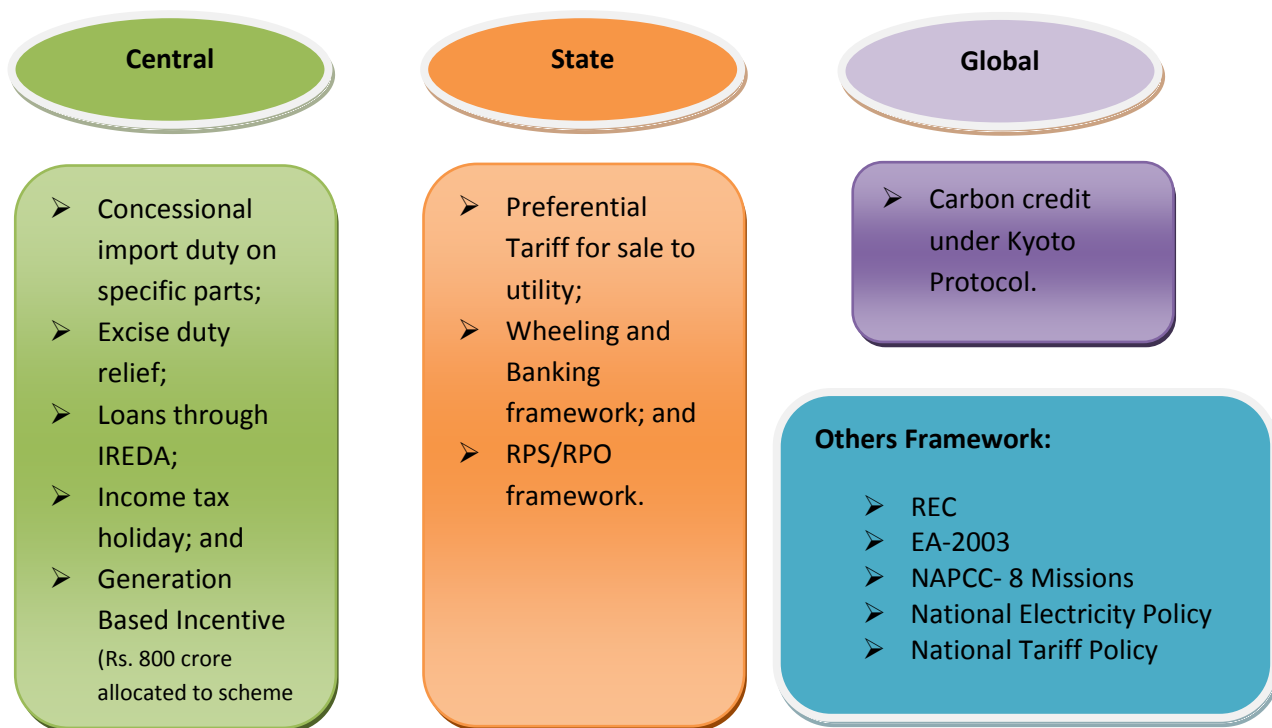
13TH PLAN TENTATIVE PROGRAMME FOR GRID INTERACTIVE RENEWABLE POWER (in MW)	
Wind Power	11,000
Small Hydro Power	1,500
Biomass Power, Bagasse Cogeneration, Biomass Gasifier	2,000
Solar Power	16,000
Total	30,500

[Source: Report of the Working Group on Power for Twelfth Plan (2012-17)]

2. Power Sector Structure

Parameters	Central	State	Private
Policy	Ministry of Power / Ministry of New and Renewable Energy	Department of Energy	-
Planning	Central Electricity Authority	-	-
Regulation	Central Electricity Regulatory Commission	States Electricity Regulatory Commission	-
Generation	Central Generating Station	State Generating Stations	Independent Power Producers /Captive Power Plant/Merchant Power Plant
Transmission	Power Grid Corporation of India	State Transmission Utilities	Increasing number of private service providers (KEC/Tata etc)
Execution	National Load Despatch centre and Regional Load Despatch Centre	State Load Despatch Centre	-
Distribution	-	State Distribution Utilities	Private service provider(NDPL/BSES/Torrent/TPC)
Trade	PTC India ltd Licensee	Licensee	Licensee
Power Exchange	Indian Energy Exchange / Power Exchange India Limited		
Law	Appellate Tribunal of Electricity and Supreme court		

3. RE Supportive Framework- Global/India (Central & State)



SET OFF FOR RE PURCHASE

Electricity Act 2003- Section 86(1)(e)

(State Commissions to specify a percentage of the total consumption of electricity in the area of a distribution licensee to be purchased from RE sources)

NAPCC - recommended RPO 15% by 2020
NSM- recommended solar RPO 3% by 2022

State Specific- RPO Targets

National Tariff Policy- Clause 6.4

(State Commissions to fix a minimum percentage for purchased purchase of energy from such sources taking into account availability of such resources in the region and its impact on retail tariffs)

4. Regulatory Scenario

4.1. Electricity Act- 2003: 10th June, 2003

“Indian Electricity Act 2003, is an act **to consolidate the laws relating to generation**, transmission, distribution, trading and use of electricity and generally for taking measures conducive to **development of electricity industry**, promoting competition therein, protecting interest of consumers and supply of electricity to all areas, rationalization of electricity tariff, ensuring transparent policies regarding subsidies, **promotion of efficient and environmentally benign policies** constitution of Central Electricity Authority, Regulatory Commissions and establishment of Appellate Tribunal and for matters connected therewith or incidental thereto.”

Section 86(1)(e) states that the State Commission shall Promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measure for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee.

Section 86 (4) states that State Commission in discharge of its functions shall be guided by the National Electricity Policy, National Electricity Plan and Tariff Policy published under section 3.

Section 61(h) states that State Commission shall Tariff Regulations specify the terms and conditions for determination of tariff and in doing so shall be guided by the following namely (h) the promotion of cogeneration and generation of electricity from renewable sources of energy and (i) the National Electricity Policy and Tariff Policy.

Section 66 states that the appropriate commission shall endeavour to promote the development of a market (including trading) in power in such manner as may be specified and shall be guided by the National Electricity Policy referred to in section 3 in this regard.

4.2. Policies

4.2.1. National Electricity Policy- 12th February, 2005

5.2 Generation (Non-Conventional Energy Sources)

5.2.20 Feasible potential of non-conventional energy resources, mainly small hydro, wind and bio-mass would also need to be exploited fully to create additional power generation capacity. With a view to increase the overall share of non-conventional energy sources in the electricity mix, efforts will be made to encourage private sector participation through suitable promotional measures.

5.12 Cogeneration and Non-conventional Energy Sources

5.12.1 Non-conventional sources of energy being the most environment friendly there is an urgent need to promote generation of electricity based on such sources of energy. For this purpose, efforts need to be made to reduce the capital cost of energy can also be reduced by promoting competition within such projects. At the same time, adequate promotional measures would also have to be taken for development of technologies and a sustained growth of these sources.

5.12.2 The Electricity Act 2003 provides that co-generation and generation of electricity from non-conventional sources would be promoted by the State Electricity Regulatory Commissions (SERCs) by providing suitable measures for connectivity with grid and sale of electricity to any person and also by specifying, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee. Such percentage for purchase of power from non-conventional sources should be made applicable for the tariffs to be determined by the SERCs at the earliest.

Progressively the share of electricity from non-conventional sources would need to be increased as prescribed by State Electricity Regulatory Commissions. Such purchase by distribution companies shall be through competitive bidding process. Considering the fact that it will take some time before non-conventional

technologies compete, in terms of cost, with conventional sources, the Commission may determine an appropriate differential in prices to promote these technologies.

5.12.3 Industries in which both process heat and electricity are needed are well suited for cogeneration of electricity. A significant potential for cogeneration exists in the country, particularly in the sugar industry. SERCs may promote arrangements between the cogenerator and the concerned distribution licensee for purchase of surplus power from such plants. Cogeneration system also needs to be encouraged in the overall interest of energy efficiency and also grid stability.

4.2.2. National Tariff Policy- 6 January, 2006 (& its amendments)

6.4 Non-conventional sources of energy generation including Co-generation:

(1) Pursuant to provisions of section 86(1)(e) of the Act, the Appropriate Commission shall fix a minimum percentage for purchase of energy from such sources taking into account availability of such resources in the region and its impact on retail tariffs. Such percentage for purchase of energy should be made applicable for the tariffs to be determined by the SERCs latest by April 1, 2006.

(i) Within the percentage so made applicable, to start with, the SERCs shall also reserve a minimum percentage for purchase of solar energy from the date of notification in the Official Gazette which will go up to 0.25% by the end of 2012-2013 and further upto 3% by 2022.

(ii) It is desirable that purchase of energy from non-conventional sources of energy takes place more or less in the same proportion in different States. To achieve this objective in the current scenario of large availability of such resources only in certain parts of the country, an appropriate mechanism such as Renewable Energy Certificate (REC) would need to be evolved. Through such a mechanism, the renewable energy based generation companies can sell the electricity to local distribution licensee at the rates for conventional power and can recover the balance cost by selling certificates to other distribution companies and obligated entities enabling

the latter to meet their renewable power purchase obligations. In view of the comparatively higher cost of electricity from solar energy currently, the REC mechanism should also have a solar specific REC.

(iii) It will take some time before non-conventional technologies can compete with conventional sources in terms of cost of electricity. Therefore, procurement by distribution companies shall be done at preferential tariffs determined by the Appropriate Commission”

(2)Such procurement by Distribution Licensees for future requirements shall be done, as far as possible, through competitive bidding process under Section 63 of the Act within suppliers offering energy from same type of non-conventional sources. In the long-term, these technologies would need to compete with other sources in terms of full costs.

(3)The Central Commission should lay down guidelines within three months for pricing non-firm power, especially from non-conventional sources, to be followed in cases where such procurement is not through competitive bidding.

4.3. National Missions

There are Eight National Missions which form the core of the National Action Plan, representing multi-pronged, long-term and integrated strategies for achieving key goals in the context of climate change. The eight missions are:

- National Solar Mission
- National Mission on Sustainable Habitat
- National Water Mission
- National Mission for Green India
- National Mission for Enhanced Energy Efficiency
- National Mission for Sustaining the Himalayan Ecosystem
- National Mission for Sustainable Agriculture
- National Mission on Strategic Knowledge for Climate Change

4.3.1. National Action Plan on Climate Change- 30th June 2008

In order to accelerate the large-scale deployment of renewable energy, the National Action Plan on Climate Change (NAPCC) envisages dynamic renewable purchase obligation target of 5% at national level for 2009-2010 with annual increase in trajectory over long term so as to reach around 15% RPO target by 2020 at national level.

Nation Action Plan on Climate Change											
Year	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Renewable Purchase Obligation (%)	5	6	7	8	9	10	11	12	13	14	15

(Source: NAPCC)

4.3.2. National Solar Mission

National Solar Mission specifies that National Tariff Policy, 2006 would be modified to mandate that the State electricity regulators fix a percentage for purchase of solar power. The solar power purchase obligation for States may start with 0.25% in the phase I and to go up to 3% by 2022.

Nation Solar Mission												
Year	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Solar Purchase Obligation (%)	0.25	0.50	0.75	1.0	1.25	1.50	1.75	2.0	2.25	2.50	2.75	3

(Source: NSM)

5. States Regulations/Orders

5.1. Wind Energy (Feed-In-Tariff) – Major wind states

States	Order Date	Tariff (Rs./kWh)	PPA period (years)
Madhya Pradesh	26 March 2013	5.92 (For FY 2013-14 to FY 2015-16)	25
Rajasthan	17 May 2013	For FY 2013-14 Jaisalmer, Barmer & Jodhpur Districts: Rs.5.46/kWH (AD Benefit not availed) Rs.5.12/kWH (AD benefit availed) Other districts: Rs.5.73/kWH (AD Benefit not availed) Rs.5.38/kWH (AD benefit availed)	25
Maharashtra	22 March 2013	For FY 2013-14 Wind zone-1(<=250): <ul style="list-style-type: none"> ➤ Rs.5.81/kWH (AD Benefit not availed) ➤ Rs.5.46/kWH (AD benefit availed) Wind zone-2 (< 250 & <=300): <ul style="list-style-type: none"> ➤ Rs.5.05/kWH (AD Benefit not availed) ➤ Rs.4.74/kWH (AD benefit availed) Wind zone-3 (< 300 & <= 400): <ul style="list-style-type: none"> ➤ Rs.4.31/kWH (AD Benefit 	13

		<p>not availed)</p> <p>➤ Rs.4.05/kWH (AD benefit availed)</p> <p>Wind zone-4(< 400):</p> <p>➤ Rs.3.88/kWH (AD Benefit not availed)</p> <p>➤ Rs.3.65/kWH (AD benefit availed)</p>	
Tamil Nadu	31 July 2012	<p>Rs 3.51 (For 2 years from 01.08.2012)</p>	20
Karnataka	11 December 2009	<p>Rs 3.70 (For 5 Years)</p>	10
Andhra Pradesh	15 November 2012	<p>Rs.4.70 (till 31.03.15)</p>	25
Gujarat	7 Jan 2013	<p>Rs 4.15 (With depreciation benefit, however irrespective AD is availed or not) (From 11Aug 2012-to 31 March 2016)</p>	25

(Source: SERCs)

5.2. Renewable Purchase Obligation

State	RPO Regulation/order	RE Category	RPO							Obligated Entities		
			FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	CPP	OA	DISCOM
Andhra Pradesh	Regulation No. 1 of 2012 dated 21 March, 2012 (under section 61, 66, 86(1)e and 181 of EA, 2003)	Total			5.00%	5.00%	5.00%	5.00%	5.00%	Yes (1 MW)	Yes	Yes
		Solar			0.25%	0.25%	0.25%	0.25%	0.25%			
		Non-solar			4.75%	4.75%	4.75%	4.75%	4.75%			
Arunachal Pradesh	No.APSPERC/NOTIFICATION/8//2012 dated 11 April 2012 (under section 181(1), 62(1), 66, 86(1) clause a,b and e, 181(2) clause zi of EA 2003(36 of 2003)	Total			4.20%	5.60%	7.00%			Yes (1 MW and above)	Yes	Yes
		Solar			0.10%	0.15%	0.20%					
		Non-solar			4.10%	5.45%	6.80%					
Assam	No. AERC/21/2010 dated 2 Nov, 2010 (under section 61, 66, 86(1)e & 181 of EA 2003)	Total	1.40%	2.80%	4.20%	5.60%	7.00%			Yes	Yes	Yes
		Solar	0.05%	0.10%	0.15%	0.20%	0.25%					
		Non-solar	1.35%	2.70%	4.05%	5.40%	6.75%					
Bihar	BERC-Regl-01/10-05 dated 16	Total	1.50%	2.50%	4.00%	4.50%	5.00%			Yes	Yes	Yes

State	RPO Regulation/order	RE Category	RPO							Obligated Entities		
			FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	CPP	OA	DISCOM
	November, 2010 (under section 61, 66, 86(1)e & 181 of EA 2003)	Solar	0.25%	0.50%	1.00%	1.25%	1.50%			(conventional captive power plant having capacity 5 MW and above)	(procured from conventional generation through OA/Third party sale)	
		Non-Solar	1.25%	2.00%	3.00%	3.25%	3.50%					
Chhattisgarh	No. 36/CSERC/2011 dated 4 March, 2011	Total	5.00%	5.25%	5.75%					Yes(1 MW and above consuming electricity other than RE sources)	Yes(contract not less than 1 MW)	Yes
		Solar	0.25%	0.25%	0.50%							
		Biomass	3.75%	3.75%	3.75%							
		Other RE	1.00%	1.25%	1.50%							
Delhi	F.3(292)/Tariff/DERC/2010-11/3026 dated 1 October, 2012 (under section 61, 62(1), 66, 86(1)e and 181 of EA, 2003)	Total			3.40%	4.80%	6.20%	7.60%	9.00%	Yes (exceeding 1 MW consuming electricity other than RE sources)	Yes (contract demand exceeding 1 MW from sources other than	Yes
		Solar			0.15%	0.20%	0.25%	0.30%	0.35%			

State	RPO Regulation/order	RE Category	RPO							Obligated Entities		
			FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	CPP	OA	DISCOM
		Non-solar			3.25%	4.60%	5.95%	7.30%	8.65%		RE sources)	
Goa	No.: JERC-14/2010 dated 30th November, 2010 (under section 61, 66, 86(1)e and 181 of EA, 2003)	Total	1.00%	2.00%	3.00%					Entities mandated under 86(1) e of EA 2003	Goa	No.: JERC-14/2010 dated 30th November, 2010 (under section 61, 66, 86(1)e and 181 of EA, 2003)
		Solar	0.25%	0.30%	0.40%							
		Non-solar	0.75%	1.70%	2.60%							
Gujarat	Notification No. 3 of 2010 dated 17 April, 2010 (under section 61, 66, 86(1)e and 181 of EA, 2003)	Total	5.00%	6.00%	7.00%					Yes (5 MW and above consuming electricity from conventional power plant)	Yes (procured from conventional generation)	Yes
		Solar	0.25%	0.50%	1.00%							
		Wind	4.50%	5.00%	5.50%							

State	RPO Regulation/order	RE Category	RPO							Obligated Entities		
			FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	CPP	OA	DISCOM
		Biomass	0.25%	0.50%	0.50%							
Haryana	Regulation No. HERC/23/2010 dated 03 February, 2011 (under section 181 of EA, 2003)	Total	1.50%	1.50%	2.00%	3.00%				Yes	Yes (long term OA consumer in haryana)	Yes
		Solar	0.25%	0.50%	0.75%	1.00%						
		Non-solar	1.25%	1.00%	1.25%	2.00%						
Himachal Pradesh	No. HPERC/438 dated 206May 2010 & No. HPERC/438 dated 3 October 2011 (under section 181(1), 62(1), 66, 86(1) clause a,b and e, 181(2) clause zi of EA 2003(36 of 2003) and section 21 of the General Clauses Act, 1897 (10 of 1897)	Total		10.01%	10.25%	10.25%	10.25%	11.25%	12.25%	Yes (1 MW and above consuming electricity from conventional power plant)	Yes (procured from conventional generation)	Yes
		Solar		0.01%	0.25%	0.25%	0.25%	0.25%	0.25%			
		Non-solar		10.00%	10.00%	10.00%	10.00%	11.00%	12.00%			
Jharkhand	No. 28 dated 21 July,2010 (under section 61, 66, 86(1)e and 181 of EA, 2003)	Total	2.00%	3.00%	4.00%					Yes (5 MW and above)	Yes (contract demand exceeding 1 MVA and consumes electricity procured	Yes
		Solar	0.25%	0.50%	1.00%							
		Non-solar	1.75%	2.50%	3.00%							

State	RPO Regulation/order	RE Category	RPO							Obligated Entities		
			FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	CPP	OA	DISCOM
											from conventional fossil fuel based generation)	
Karnataka	Notification No. S/03/1 dated 16 March, 2011 (under section 86(1)e and 181 of EA, 2003)	Total		10.25% / 7.25%	10.25% / 7.25%					Yes (exceeding 5 Mw and consuming electricity other than RE sources)	Yes (contract demand exceeding 5 MW and procured by OA from sources other than RE)	Yes
		Solar		0.25%	#####							
		Non-solar		10% / 7.0%	10% / 7.0%							
Kerala	No.442/CT/2012/KSERC dated 1 January, 2013 (under section 181 (1) of EA, 2003)	Total	3.00%	3.30%	3.63%	3.99%	4.39%	4.83%	5.31%	No	NO	Yes and STU or any other Licensee engaged in the activity of bulk purchase and sale of electricity to distribution licensee/s
		Solar	0.25%	0.28%	0.30%	0.33%	0.37%	0.40%	0.44%			
		Non-solar	2.75%	3.03%	3.33%	3.66%	4.03%	4.43%	4.87%			

State	RPO Regulation/order	RE Category	RPO							Obligated Entities		
			FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	CPP	OA	DISCOM
Madhya Pradesh	No. 3042/MPERC-2010 dated 9th November, 2010 (under section 181 (2)(zp) and 86(1) e of EA, 2003)	Total	0.80%	2.50%	4.00%	5.50%	7.00%			Yes	Yes	Yes
		Solar	0.00%	0.40%	0.60%	0.80%	1.00%					
		Non-solar	0.80%	2.10%	3.40%	4.70%	6.00%					
Maharashtra	No.MERC/Legal/2010/483 dated 7 June, 2010 (under section 61, 66, 86(1)e and 181 of EA, 2003)	Total	6.00%	7.00%	8.00%	9.00%	9.00%	9.00%		Yes (1 MW and above)	Yes (contract demand not less than 1 MVA and consumes electricity procured from conventional fossil fuel based generation)	Yes
		Solar	0.25%	0.25%	0.25%	0.50%	0.50%	0.50%				
		Non-Solar	5.75%	6.75%	7.75%	8.50%	8.50%	8.50%				
Manipur	No. H. 13011/5/09-JERC dated 5 May, 2010 (under section 61, 66, 86(1)e and	Total	2.00%	3.00%	5.00%					Yes (conventional captive power plant	Yes (procured from conventional	Yes
		Solar	0.25%	0.25%	0.25%							

State	RPO Regulation/order	RE Category	RPO							Obligated Entities		
			FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	CPP	OA	DISCOM
	181 of EA, 2003)	Non-solar	1.75%	2.75%	4.75%)	generation through OA/Third party sale)	
Meghalaya	NO.MSERC/05/61 dated 21 December, 2010 (under section 61 (b), 86(1)e and 181 of EA, 2003)	Total	0.50%	0.75%	1.00%					Yes	Yes	Yes
		Solar	0.20%	0.30%	0.40%							
		Wind	0.10%	0.15%	0.20%							
		Others	0.20%	0.30%	0.40%							
Mizoram	No. H. 13011/5/09-JERC dated 5 May, 2010 (under section 61, 66, 86(1)e and 181 of EA, 2003)	Total	5.00%	6.00%	7.00%					Yes (conventional captive power plant)	Yes (procured from conventional generation through OA/Third party sale)	Yes
		Solar	0.25%	0.25%	0.25%							
		Non-solar	4.75%	5.75%	6.75%							
Nagaland	No.NERC/REGN/2011 dated 29	Total	6.00%	7.00%	8.00%					Yes	Yes	Yes

State	RPO Regulation/order	RE Category	RPO							Obligated Entities		
			FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	CPP	OA	DISCOM
	August, 2011 (under section 61, 66, 86(1)e and 181 of EA, 2003)	Solar	0.25%	0.25%	0.25%					(conventional captive power plant)	(procured from conventional generation through OA/Third party sale)	
		Non-solar	5.75%	6.75%	7.75%							
Orissa	No. OERC-Engg-02/2010 dated 30 September, 2010 (under section 61, 66 and 86(1)e of EA, 2003)	Total	4.50%	5.00%	5.50%	6.00%	6.50%	7.00%		Yes (conventional captive power plant having capacity 5 MW and above)	Yes (procured from conventional generation through OA/Third party sale)	Yes
		Solar		0.10%	0.15%	2.00%	2.25%	3.00%				
		Non-solar	1.00%	1.20%	1.40%	1.60%	1.80%	2.00%				
		Co-generation	3.50%	3.70%	3.95%	4.20%	4.45%	4.70%				
Punjab	No.PSERC/Secy./Reg./55 dated 3 June 2011 (under section 61, 66 and 86(1)e of EA, 2003)	Total		2.40%	2.90%	3.50%	4.00%			Entities mandated under 86(1) e of EA 2003		
		Solar		0.03%	0.07%	0.13%	0.19%					
		Non-solar		2.37%	2.83%	3.37%	3.81%					

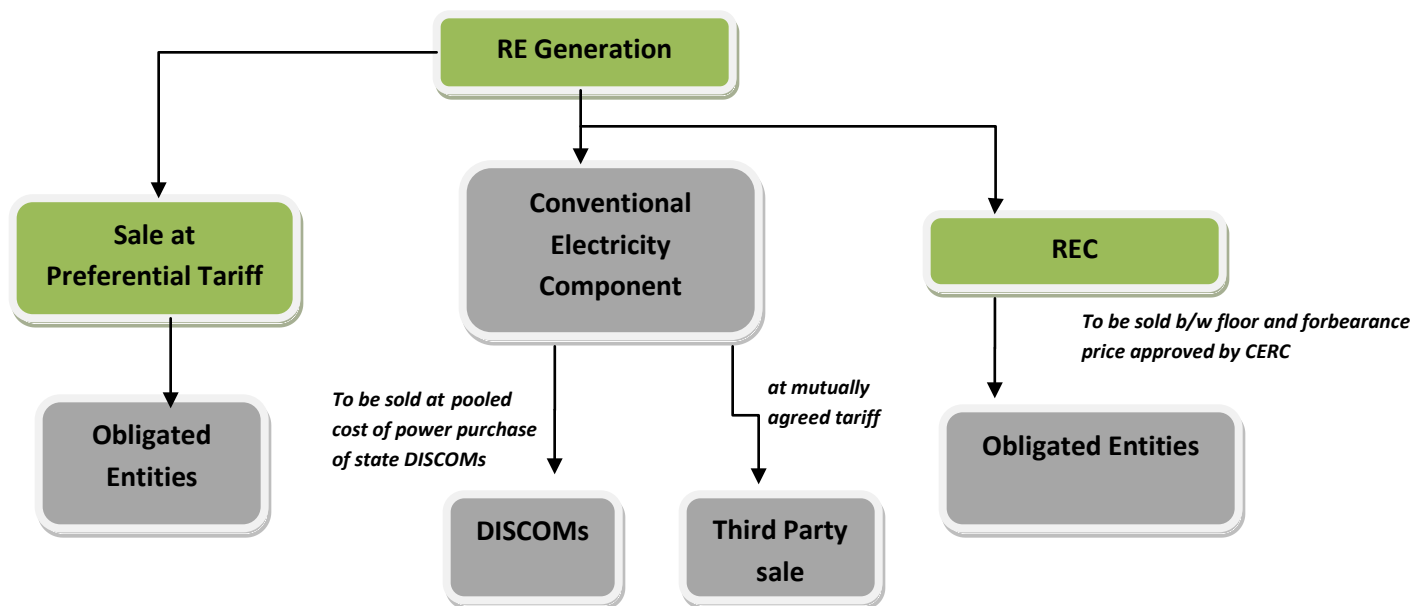
State	RPO Regulation/order	RE Category	RPO							Obligated Entities		
			FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	CPP	OA	DISCOM
Rajasthan	RERC/Secy./Regulation - 85 dated 24 May, 2011 and No.RERC/Secy/Reg. 82 dated 23 December,2010 (under section 86(1)b, 86(1)e of EA, 2003)	Total		6.00%	7.10%	8.20%				Yes (1 MW and above)	Yes	Yes
		Solar		0.50%	0.75%	1.00%						
		Wind		4.50%	5.10%	5.70%						
		Biomass		1.00%	1.25%	1.50%						
Tamil Nadu	Notification No. TNERC/RPO/ 19/1 dated 07 December, 2010 Notification No. TNERC/RPO/ 19/2 dated 29 November, 2011 (under section 61, 66 and 86(1)e of EA, 2003)	Total		9.00%						Yes (without availing RECs or any preferential measures)	Yes	Yes
		Solar		0.05%								
		Non-solar		8.95%								
Tripura	No. F.25/TERC/2009/415 dated 16 September, 2010 (under section 61, 66 and 86(1)e of EA, 2003)	Total	1.00%	1.00%	2.00%					Yes (conventional captive power plant having capacity 5 MW and above)	Yes (procured from conventional generation through OA/Third party sale)	Yes
		Solar	0.10%	0.10%	0.10%							
		Non-solar	0.90%	0.90%	1.90%							

State	RPO Regulation/order	RE Category	RPO							Obligated Entities		
			FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	CPP	OA	DISCOM
Uttar Pradesh	UPERC/Secy/Regulation/10 - 787 dated 17th August , 2010 (under section 61, 66 and 86(1)e of EA, 2003)	Total	4.00%	5.00%	6.00%					Yes (1 MW and above)	Yes (procured from conventional generation through OA)	Yes
		Solar	0.25%	0.50%	1.00%							
		Non-solar	3.75%	4.50%	5.00%							
Uttaranchal	No.F-9(21)/RG/UERC/2010/1422 dated 3 November, 2010 No.F-9(21)/RG/UERC/2010/ 697 dated 6 July 2010	Total	4.00%	4.50%	5.00%					Yes	Yes	Yes
		Solar		0.025%	0.05%							
		Non-solar	4.00%	4.48%	4.95%							
West Bengal	No. 47/WBERC dated 10 August 2010 (under section 181(1), 181(2)(zp) and 86(1)e of the EA 2003)	Total	2.00%	3.00%	4.00%					No	No	Yes
		Solar										
		Non-solar										

(Source: SERCs)

6. Renewable Energy Certificate Mechanism- INDIA

6.1. Conceptual Framework



1 REC = 1 MWhr of electricity generated from renewable energy source and injected or deemed to be injected (in case of self consumption by eligible captive power producer) into the grid

6.2. REC Highlights

REC HIGHLIGHTS	
Drivers	<p>Renewable Purchase Obligation specified by State Commissions</p> <p>Provisions to set RPO targets under</p> <ul style="list-style-type: none">➤ EA – 2003➤ NAPCC

	<ul style="list-style-type: none"> ➤ NSM ➤ National tariff Policy ➤ National Electricity Policy
Objectives	<ul style="list-style-type: none"> ➤ Effective implementation of RPO obligations across all states ➤ Creating competition among competing RE technologies ➤ Protecting the local distribution licensee selling RE ➤ Overcoming geographical impediments to use RE ➤ Reduce the costs for RE transactions
Floor & Forbearance Price	<p>Non- Solar</p> <ul style="list-style-type: none"> ➤ Floor Price: Rs 1500/REC ➤ Forbearance Price: Rs 3300/REC <p>Solar</p> <ul style="list-style-type: none"> ➤ Floor Price: Rs 9300/REC ➤ Forbearance Price: Rs 13400/REC
Validity of REC	730 day from the date of issuance(RECs issued on and after 1-11-2011)

6.3. Process Flow Chart



6.4. Fees and Charges

Fees and Charges for Accreditation	Amount (Rs. per application)
One-time Application Processing Fees	Rs. 5000
One-time Accreditation Charge	Rs.30000
Annual Charge	Rs. 10000
Revalidation/Extension of Validity (at the end of 5 year)	Rs. 15000

(Source: CERC)

(The CERC determines the fees and charges for accreditation of RE project(s) which will apply till such fees and charges are specified by State Commissions for the State Agency)

Fees and Charges for Registration	Amount (Rs. per application)
One-time Application Processing Fees	Rs. 1000
One-time Registration Charge	Rs.5000
Annual Charge	Rs. 1000
Revalidation/Extension of Validity (at the end of 5 year)	Rs. 5000

Service charge @12.36 will be applicable on total amount

(Source: CERC)

Fees and Charges for Issuance	Amount (Rs. per Certificate)
REC issuance fee	Rs. 10

Service charge @12.36 will be applicable on total amount

(Source: CERC)

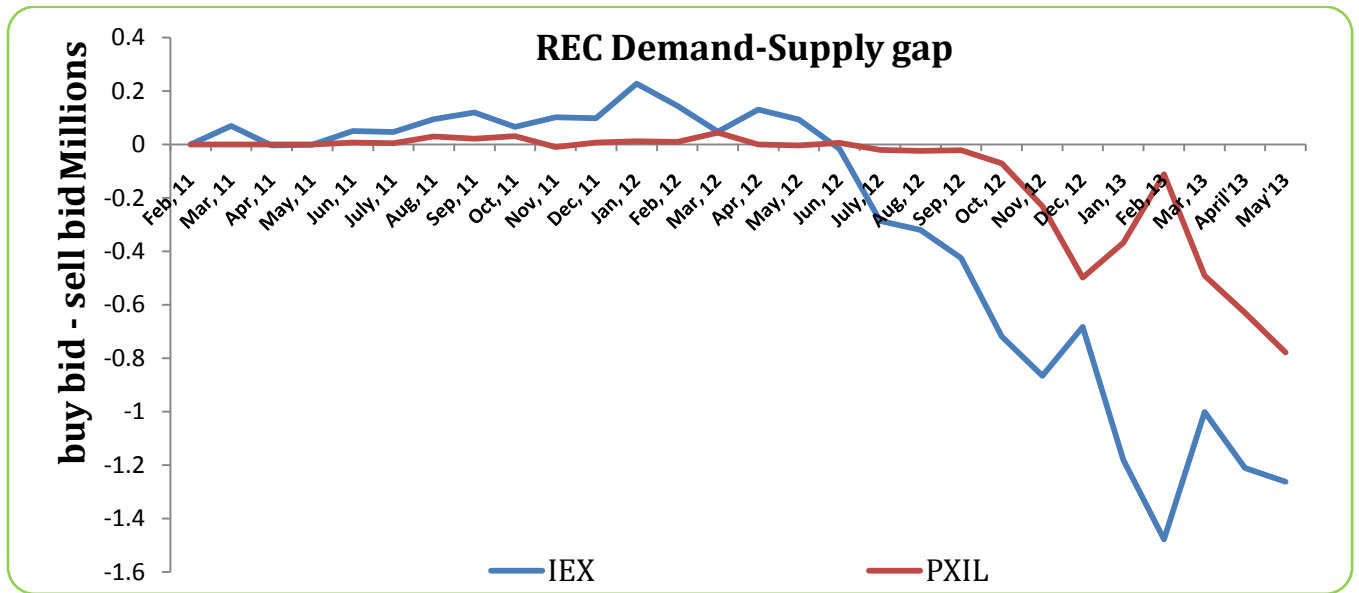
6.5. REC Update

Month	IEX					PXIL				
	Buy Bid	Sell Bid	Difference (Buy-Sell)	Cleared Volume (REC)	Price/REC traded	Buy Bid	Sell Bid	Difference (Buy-Sell)	Cleared Volume (REC)	Price/REC traded
Feb, 11	120	-	120	-	-	No trading session				
Mar, 11	70,377	150	70,227	150	Rs.3,900	324	274	50	274	Rs.2,225
Apr, 11	260	4,046	(3,786)	260	Rs.1,500	-	565	(565)	-	-
May, 11	14,002	15,143	(1,141)	14,002	Rs.1,500	4,500	5,322	(822)	4,500	Rs.1,500
Jun, 11	72,002	21,331	50,671	15,902	Rs.1,505	10,000	3,183	6,817	483	Rs.1,500
July, 11	81,493	34,976	46,517	14,668	Rs.1,555	14,766	9,800	4,966	3,900	Rs.1,500
Aug, 11	145,204	49,897	95,307	22,096	Rs.1,800	38,101	8,155	29,946	3,000	Rs.1,710
Sep, 11	196,159	76,026	120,133	41,385	Rs.2,300	30,853	9,562	21,291	4,977	Rs.2,300
Oct, 11	201,532	135,424	66,108	92,303	Rs.2,700	33,869	3,201	30,668	3,201	Rs.3,000

Nov, 11	257,578	155,917	101,661	96,154	Rs.2,900	20,882	30,317	(9,435)	9,373	Rs.2,800
Dec, 11	264,093	166,000	98,093	105,942	Rs.2,950	21,179	14,336	6,843	5,679	Rs.2,950
Jan, 12	414,387	186,610	227,777	165,460	Rs.3,051	18,113	6,072	12,041	6,064	Rs.3,051
Feb, 12	360,330	215,157	145,173	190,482	Rs.3,066	28,933	19,045	9,888	15,706	Rs.3,051
Mar, 12	272,366	223,907	48,459	192,354	Rs.2,900	51,401	7,405	43,996	7,383	Rs.3,100
Apr, 12	237,100	105,844	131,256	62,277	Rs.2,201	26,813	26,842	(29)	8,949	Rs.2,201
May, 12	339,882	246,501	93,381	153,125	Rs.2,402	25,449	28,728	(3,279)	15,550	Rs.2,150
Jun, 12	313,973	330,371	(16,398)	223,164	Rs.2,402	35,475	30,320	5,155	13,321	Rs.2,460
July, 12	149,628	435,348	(285,720)	147,369	Rs.2,000	11,400	32,194	(20,794)	10,851	Rs.2,202
Aug, 12	248,168	568,097	(319,929)	248,168	Rs.1,500	35,150	59,213	(24,063)	25,725	Rs.1,555
Sep, 12	239,364	664,641	(425,277)	239,364	Rs.1,500	25,082	46,530	(21,448)	25,082	Rs.1,500
Oct, 12	132,231	851,177	(718,946)	132,231	Rs.1,500	90,469	161,483	(71,014)	90,469	Rs.1,500
Nov, 12	54,976	921,376	(866,400)	54,976	Rs.1,500	77,376	308,685	(231,309)	77,376	Rs.1,500
Dec, 12	173,644	855,784	(682,140)	173,644	Rs.1,500	100,000	597,842	(497,842)	100,000	Rs.1,500

Jan, 13	190,875	1,371,503	(1,180,628)	190,875	Rs.1,500	2,462	370,389	(367,927)	2,462	Rs.1,500
Feb, 13	48,093	1,526,114	(1,478,021)	48,093	Rs.1,500	104,859	216,307	(111,448)	104,859	Rs.1,500
Mar, 13	307,260	1,308,044	(1,000,784)	307,260	Rs.1,500	120,611	611,388	(490,777)	120,611	Rs.1,500
April'13	10,670	1,221,579	(1,210,909)	10,670	Rs.1,500	33,789	663,365	(629,576)	33,789	Rs.1,500
May'13	18,543	1,280,605	(1,262,062)	18,543	Rs.1,500	34,425	812,485	(778,060)	34,425	Rs.1,500

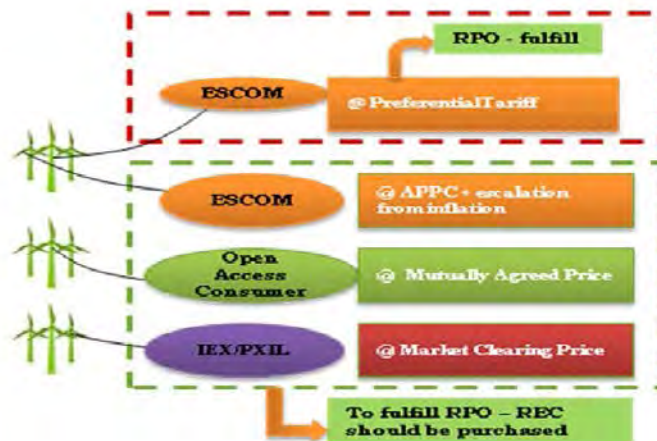
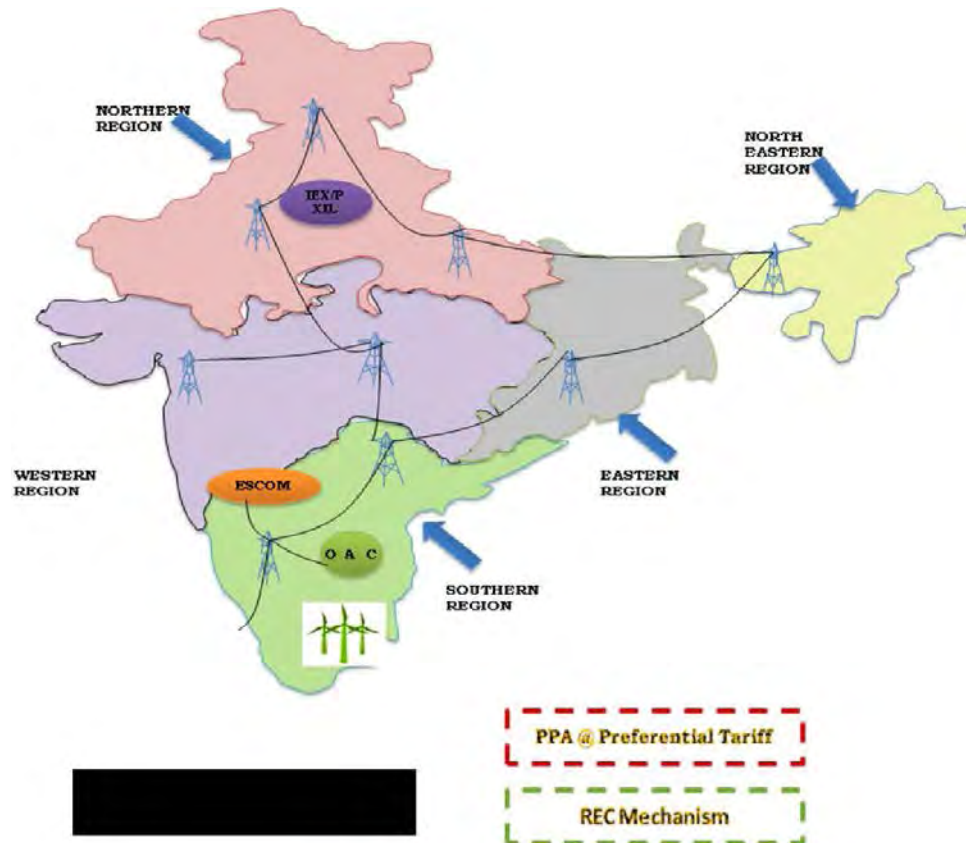
6.6. REC Demand Supply Gap Trajectory- IEX &PXIL



7. Salient Features of Various Mechanism

Salient Features of Various Mechanism							
Mechanism	Driver	Issuing Body	Eligibility Criteria	Applied to RE sources	Grid/Off-grid connected	Certificate/Incentive	Pricing Mechanism
Clean Development Mechanism	Kyoto Protocol To reduce Carbon Emission	DOE (Designated Operational Entities)	Prove Additionality Clause	All	Both	CERs/VERs	Market Based
Renewable Energy Certificate	NAPCC/RPO	NLDC (Central Agency)	Who does not have sign PPA at preferential tariff	All	Grid	REC – Solar and Non- Solar	Market Based
Rs 800 crore allocated under Generation Based Incentive (GBI) scheme in the Budget							

8. Option Available for Sale of Renewable Sources



9. Options for Wind Energy Generators

Wind - Available sale Options			
Mechanism	Buyer	Tariff	Incentives Available
Power Purchase Agreement	DISCOMs	Preferential	Clean Development Mechanism
OA/Third Part Sale	Industrial/ Commercial	Mutually Agreed	Clean Development Mechanism
Renewable Energy Certificates	DISCOMs	Average Pooled Cost of Power Purchase	Clean Development Mechanism Renewable Energy Certificates-(solar / Non-solar)
	OA Consumer (Bilateral Transactions)	Mutually Agreed	Clean Development Mechanism
	Power Exchange	Market Clearing Price	Clean Development Mechanism Renewable Energy Certificates-(solar / Non-solar)

10. Useful Links

Sr. No.	Ministries/Departments		Website Links
A	Ministries		
1	Ministry of Power	MoP	http://powermin.nic.in/
2	Ministry of New and Renewable Energy	MNRE	http://www.mnre.gov.in/
B	Central		
1	Central Electricity Authority	CEA	http://www.cea.nic.in/welcome1.htm
2	Central Electricity Regulatory Commission	CERC	http://cercind.gov.in/
3	Forum of Regulators	FOR	http://www.forumofregulators.gov.in/
4	Appellate Tribunal for Electricity	APTEL	http://aptel.gov.in/
5	National Load Despatch Center	NLDC	http://www.nldc.in/
C	Power Exchanges		
1	Indian Energy Exchange	IEX	http://www.iexindia.com/
2	Power Exchange India Limited	PXIL	http://www.powerexindia.com/pxil/

Sr. No.	State Commissions		
	States	State Commissions	Website links
1	Andaman and Nicobar Islands, Chandigarh, Dadra and Nagar Haveli, Daman and Diu, Goa, Lakshadweep, Pondicherry	Joint Electricity Regulatory Commission (for the State of Goa and Union Territories)	http://www.jercuts.gov.in/
	Andhra Pradesh	Andhra Pradesh Electricity Regulatory Commission	http://www.aperc.gov.in/
	Arunachal Pradesh	Arunachal Pradesh Electricity Regulatory Commission	http://apserc.in/
	Assam	Assam Electricity Regulatory Commission	http://aerc.nic.in/
	Bihar	Bihar Electricity Regulatory Commission	http://berc.co.in/
	Chhattisgarh	Chhattisgarh State Electricity Regulatory Commission	http://www.cserc.gov.in/
	Delhi	Delhi Electricity Regulatory	http://www.derc.gov.in/

		Commission	
	Gujarat	Gujarat Electricity Regulatory Commission	http://www.gercin.org/index.php
	Himachal Pradesh	Himachal Pradesh Electricity Regulatory Commission	http://www.hperc.org/
	Haryana	Haryana Electricity Regulatory Commission	http://herc.gov.in/
	Jammu & Kashmir	Jammu & Kashmir Electricity Regulatory Commission	http://jkserc.nic.in/
	Jharkhand	Jharkhand Electricity Regulatory Commission	http://www.jserc.org/
	Karnataka	Karnataka Electricity Regulatory Commission	http://www.kerc.org/_new/_/_/_/whatisnew.html
	Kerala	Kerala Electricity Regulatory Commission	http://www.erckerala.org/

	Madhya Pradesh	Madhya Pradesh Electricity Regulatory Commission	http://www.mperc.nic.in/
	Maharashtra	Maharashtra Electricity Regulatory Commission	http://www.mercindia.org.in/
	Meghalaya	Meghalaya State Electricity Regulatory Commission	http://www.mserc.gov.in/
	Nagaland	Nagaland Electricity Regulatory Commission	http://www.nerc.org.in/
	Orissa	Orissa Electricity Regulatory Commission	http://www.orierc.org/
	Punjab	Punjab State Electricity Regulatory Commission	http://pserc.nic.in/
	Rajasthan	Rajasthan Electricity Regulatory Commission	http://www.rerc.gov.in/

	Tamil Nadu	Tamil Nadu Electricity Regulatory Commission	http://tnerc.tn.nic.in/
	Tripura	Tripura Electricity Regulatory Commission	
	Uttarakhand	Uttarakhand Electricity Regulatory Commission	http://www.uerc.gov.in/
	Uttar Pradesh	Uttar Pradesh Electricity Regulatory Commission	http://www.uperc.org/Default2.aspx
	West Bengal	West Bengal Electricity Regulatory Commission	http://wberc.org/
	Manipur & Mizoram	Joint Electricity Regulatory Commission for the States of Manipur & Mizoram	http://www.jerc.mizoram.gov.in/