

## The REC Mechanism in India

### **Global experience**

Internationally, the concept has been introduced to facilitate a robust and credible market for trading the green attributes of electricity, with a view to provide additional source of revenue to renewable energy generators.

Tradable RECs have been used extensively as a successful market-based policy instrument to promote renewables in Australia, Japan, the US (Texas Arizona, Wisconsin and Nevada), the Netherlands, Denmark, and the UK (where these are called Renewable Obligation Certificate or ROCs).

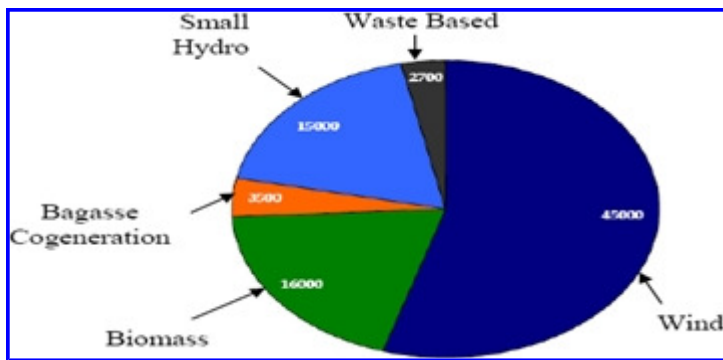
### **The REC Mechanism in India**

#### **An Introduction**

Renewable Energy Certificates (RECs) are a market-based instrument to promote RE power. The REC is a policy instrument which provides evidence that an electricity generator has produced a certain quantum of power from a renewable energy source such as wind, solar, biomass, waste to energy etc.

An REC is created when one megawatt hour of electricity is generated from an eligible renewable energy resource. It represents the entire benefit of renewable energy based electricity over electricity from non-renewable resources. The renewable energy certificates are a good option for addressing the constraints related to the site specific nature of many renewables.

The potential of various RE sources in India, excluding solar energy, is shown in Figure 1.



**Figure 1: India's Technical Potential of Renewable Power in MW**

Though currently renewable energy meets only 9 per cent of the total power requirement of the country, efforts are being made by the Union government to encourage trade in the RE sector as well as facilitate greater grid integration of such technologies.

As on 31 December 2009, India's installed capacity of grid-interactive renewable power (including solar) stood at 15,681.43 MW, with wind power being the major contributor having an installed capacity of 10,915 MW. While small hydro accounted for 2558.92 MW installed capacity, cogeneration-bagasse was at 1302 MW. The break-up of the figure is as follows:

### India's Installed Capacity of Renewable Power in MW up to 31 Dec 2009

#### Grid-interactive renewable power

- Wind 10,915 MW
- Small hydro (up to 25 MW) 2558.92 MW
- Biomass power (agro residues) 834.5MW
- Cogeneration-bagasse 1302MW
- Waste to power 65.01MW
- Solar 6 MW

To support the growth and development of renewable energy technologies across country, favourable tariff policies have been devised by the different State Electricity Regulatory Commissions (SERCs). The tariffs for various renewable energy technologies across different States in India are summarised in Table 1.

**Table 1: RE Tariff for Different Sates according to RE technologies:**

<u>State</u>	<u>Wind</u>	<u>SHP</u>	<u>Biomass</u>	<u>Bagasse</u>	<i>Source: MNRE website</i>
Andhra Pradesh	3.50	2.6	4.15	3.29	The Union government in the National Action Plan for Climate Change (NAPCC) has formulated a target implementation scenario in respect
Gujarat	3.56	-	3.08	3	
Himachal Pradesh	-	2.87	-	-	
Haryana	4.08	3.67	4	3.74	
Karnataka	3.70	2.8	3.1	3.06	
Madhya Pradesh	-	-	3.39	2.82	
Maharashtra	3.5	3	4.28	3.05	
Rajasthan	3.83/4.03	-	4.36	-	
Tamil Nadu	3.39	-	4.5	4.38	
West Bengal	4	3.6	4	2.55	

of Renewable Energy Certificate Potential Market Assessment. According to the assessment, the total energy requirement for FY 2010-11 is estimated at 906.32 billion units. If 6 per cent of this has to come from renewable energy, according to the NAPCC target, the figure will come to 54.38 billion units. In order to achieve this, the country will need to add 11.96 billion units of renewable power. When compared to the current scenario, the potential for harnessing renewable energy looks immense with renewable energy availability being 47.96 billion units.

A detailed table on the REC Potential Market Assessment as envisaged under the NAPCC target implementation scenario is presented below in Table 2

NAPCC Target implementation scenario		Unit	2008-09	2009-10	2010-11	2011-12	
Energy Requirement		BU		848.39	906.32	965.66	
NAPCC Target		%		5%	6%	7%	
Renewable Energy		BU		42.42	54.38	67.81	
Incremental Renewable Energy		BU			11.96	13.43	
Current Scenario			2007-08	2008-09	2009-10	2010-11	2011-12
Renewable Installed Capacity		MW	10250.0	12712.2	15765.9	19553.1	24250.0
CUF	28%	%	28%	28%	28%	28%	28%
Renewable Energy Availability		BU	25.14	31.18	38.67	47.96	59.48
Renewable Energy Availability					4.56%	5.29%	6.14%
Incremental Renewable Energy Availability		BU			7.49	9.29	11.52

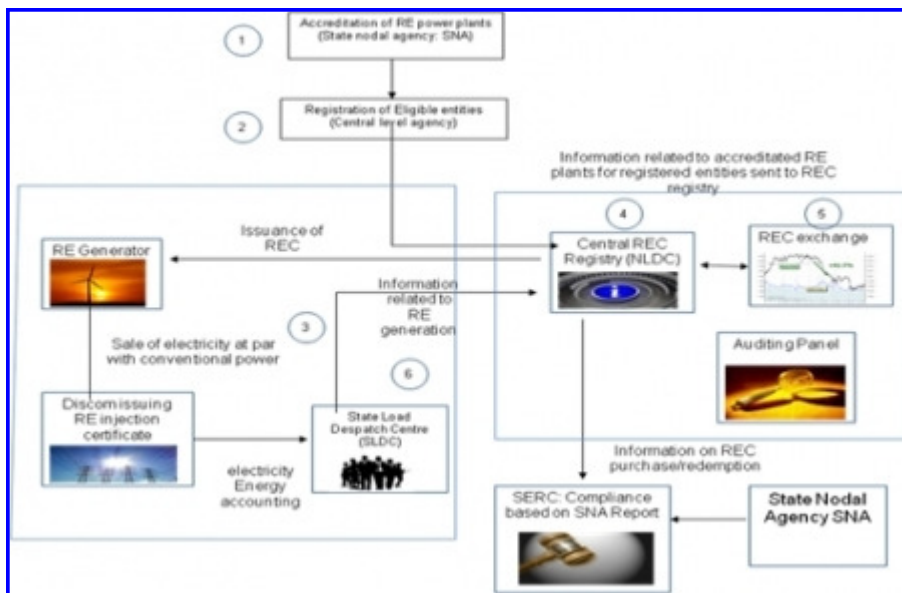
**Table 2: REC Potential Market Assessment**

*Source: MNRE*

The present development of renewable power generation, especially the wind power, is limited to the States which have the renewable resource. In case of wind power the development is mainly in the States of Tamil Nadu, Gujarat, Maharashtra, Karnataka, Rajasthan and Madhya Pradesh as there is high wind potential. As per Section 86 (1) (e) of the Electricity Act, 2003, SERCs have to specify a percentage of total electricity consumption to come from renewable energy sources. Many of the States which do not have or have a little renewable energy potential have specified a very low percentage for renewables. To overcome this imbalance and to optimally utilise the renewable energy potential a “Renewable Energy Certificate” (REC) Mechanism is being developed. Under this mechanism the States which have limited renewable energy potential can meet the obligation by procuring the REC generated from projects in other States. The States which have high renewable energy potential and already have high renewable energy percentage can further develop the renewable energy projects without affecting the consumer prices of electricity in the State.

Under the REC Mechanism, Renewable Energy Certificates will be issued by the National Load Despatch Centre, appointed as the Central Agency by CERC for the purpose of REC Mechanism implementation. The certificates will be issued only to RE generators with capacity untied in power purchase agreement. According to the Mechanism, the purchase of REC would be considered as purchase of renewable energy.

In this context the Central Electricity Regulatory Commission (CERC) has issued the CERC (Terms and Conditions for recognition and issuance of REC for Renewable Energy Generation) Regulations 2010. In addition, the Forum of Regulators (FOR) has developed model REC Regulations which can be issued by the SERCs. These regulations provide an operational framework for implementation of RECs in India. These Regulations define the agencies that would be responsible for undertaking different functions from accreditation and registration of projects, issuance and redemption of RECs, to maintaining the registry of RECs etc.



**Figure 3: Steps involved in the REC Mechanism**

The main agencies which are important in the REC Mechanism are

**Central Agency:** The functions of the Central Agency will be to undertake: registration of eligible entities; issuance of certificates; maintain and settling accounts in respect of certificates repository of transactions in certificates; and, such other functions incidental to the implementation of renewable energy certificate mechanism as may be assigned by the Commission from time to time.

However, the Central Electricity Regulatory Commission will have the authority to issue directions to the Central agency in regard to the discharge of its functions and the Central Agency will always act in accordance with the directions issues by CERC.

**State Agency:** The functions of the State Agency will be to comply with the directions issued by host SERC; scrutinise and verify the documents prior to the accreditation; provide recommendation for registration and reasons for rejection (in case of rejection of the application); issue extension of the validity of existing accredited renewable projects; and revoke the accreditation and communicate regarding the accreditation to Central Agency, concerned SLDC and host distribution company.

**State Load Despatch Centre (SLDC):** The functions of SLDC will be to comply with the directives issued by the Indian Electricity Grid Code (IEGC) and State Grid Code (SGC) for accounting renewable power injected into the grid; maintaining the records of meter readings and communicating the power injection report for each accredited projects of the registered eligible entity, if connected to transmission network, within the State to Central Agency on a monthly basis; establishing protocol for receipt of information and maintaining the record of meter readings (in case eligible entity is connected to distribution utility) and communicating with State Agency regarding the power injected into the grid by each accredited RE project of eligible entity within the State.

Under the REC Mechanism, only RE technologies, as recognised by MNRE, will be eligible.

**The operational framework as per the FOR Model Regulations is as follows**

**Accreditation:**

- By State Agency (SNA)
- Verification of application and project
- Only accredited generators can receive REC

#### ***Registration of accredited generators:***

- By central agency, that is, NLDC
- Registry to be regulated by CERC under Section 66 of the Electricity Act 2003

#### ***Issuance of RECs:***

- Central agency to issue REC, based on information from SLDC about injection of RE into the grid
- Eligible RE generator will receive a certificate for a specified quantity of electricity generated

#### ***Exchange of RECs:***

- On power exchanges approved by CERC

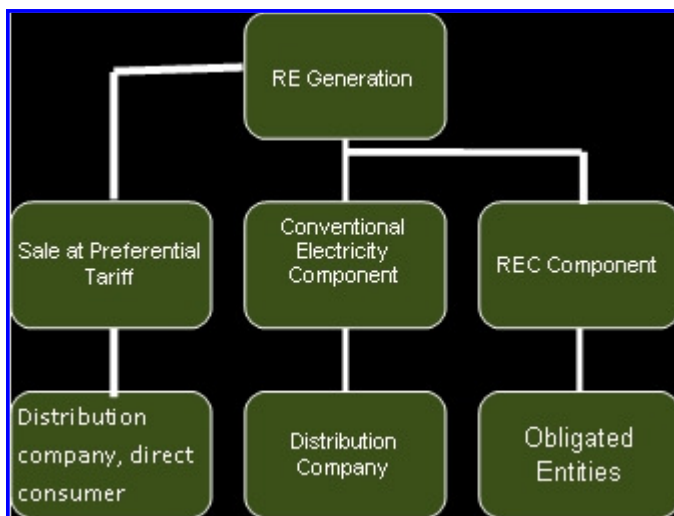
#### ***Validity of RECs:***

- The certificate once issued shall remain valid for 365 days from the date of issuance.

#### **Proposed Pricing of RECs:**

- Electricity Component Price = Average Power Purchase Cost (PPC) of utility in previous financial year; REC component price = Notional Price (Rs 1.5 /kWh)
- *Forbearance price* for exchange of RECs to be decided by SERCs based on the recommendation of FOR

According to the REC Mechanism, new renewable energy generators would have two options – Selling the electricity at preferential tariff determined by the respective SERC or selling only the electricity component to distribution utilities and selling the REC component through market mechanism. This conceptual framework of the REC Mechanism is shown in Figure 4.



**Figure 4: Conceptual framework of the REC Mechanism**

For the purpose, the REC Mechanism details such as denomination of an REC, eligible technologies, eligible renewable energy generators, pricing methodology for the electricity component as well as the renewable energy component, structure of the operational mechanism for certification of REC and the REC registry are under development.

Dr. Deo recently said, “RECs can provide a greater push to RE electricity by way of removing bottlenecks like higher costs, uneven distribution of RE resources across India, and scheduling or despatchability of RE electricity, in procurement of RE electricity by utilities”.

*Sources:*

<http://www.financialexpress.com/news/new-mechanism-to-improve-viability-of-renewable-energy/422262/>

[http://mnes.nic.in/pdf/MNRE\\_REC\\_Report.pdf](http://mnes.nic.in/pdf/MNRE_REC_Report.pdf)

<http://www.iitk.ac.in>

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## **2 Responses to *The REC Mechanism in India***

1.  *PRAVEEN KULKARNI* says:  
[September 3, 2010 at 7:56 AM](#)

IN KARNATAKA WE HAVE INDEPENDENT POWER PROJECT OF 15 MW(WIND MILLS). PRODUCTION HAS ALREADY ON FROM LAST ONE YEAR. WE ARE SELLING POWER TO PVT. PARTY UNDER OPEN ACCESS. PL. CONFIRM :

1. WHETHER WE ARE ELIGIBLE FOR REC.
2. WHAT IS THE SELLING PRICE OF EACH REC
3. IS THERE ANY AGENCIES WHO CAN HELP US IN THIS PROCESS.
4. INCASE THE COMPANIES FAIL TO ACHIECVE RPO WHAT IS THE EXTENT OF PENALTY THEY HAVE TO PAY TO THE GOVERNMENT.

[Reply](#)

-  *anaghabhambri* says:  
[September 8, 2010 at 12:25 PM](#)

Dear Mr Kulkarni,

I have gone through your query.

1. RECs are issued only to RE generators with capacity untied in power purchase agreement.

2. The notional price of an REC is Rs. 1.5/kWh

3. For assistance and further information you can contact the Karnataka State Electricity Regulatory Commission. The address and email ID are given below:

**\*KARNATAKA ELECTRICITY REGULATORY COMMISSION\***

\* 6th & 7th Floor, Mahalaxmi Chambers, \* \*# 9/2, M.G.Road, Bangalore – 560 001\* \*  
Ph: +91-080-25320213, 214, 25320339, 25323765 Fax:080-25320338, \*\*

Email:kerc35@bsnl.in

4. Since the penalty is decided by the State regulatory commission only, it will be difficult to tell you offhand how much will it be in your case.

In case you need more information, please write to Mr. Manish K. Singh, Secretary, Indian Wind Energy Association. His email id is: [ksmanish@gmail.com](mailto:ksmanish@gmail.com)

Best regards, Anagha \*