

Proceedings of National Conference on
Renewables and Regulatory Issues
21–22 February 2006, TERI, New Delhi

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**Capacity building for state regulators and policy makers in mainstreaming of
RET's in a reformed electricity sector**



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Conference agenda

21 February 2006

0930–1000	Registration	
1000–1100	Inaugural session	
	Welcome address	Dr R K Pachauri, Director-General, TERI
	Introduction to REEEP	Mr Mahesh Vipradas, Joint - Coordinator, REEEP SA Secretariat
	Inaugural address	Mr R V Shahi, Secretary, Ministry of Power, Government of India
	Keynote address	Dr Pramod Deo, Chairman, Maharashtra Electricity Regulatory Commission
	Presidential address	Mr V Subramanian, Secretary, Ministry of Non-conventional Energy Sources, Government of India
	Vote of thanks	Mr Ashish Kulkarni, The Energy and Resources Institute
1100–1130	Tea	
1130–1400	Technical session: International practices	
Chair: Mr J L Bajaj, Distinguished Fellow, TERI		
	Overview of international regulatory practices	Ms Namrata Mukherjee, TERI
	European regulations for the propagation of RETs: detailed analysis	Dr Catherine Mitchell, Centre for Management under Regulation, Warwick Business School, UK
	Regulatory practices in the US	Mr Matthew Brown, International Energy Agency, Paris
	Discussions	
1400–1500	Lunch	
1500–1700	Panel discussion I: Developer's perspective	
Chair: Prof. S L Rao, Chairman, Institute for Social and Economic Change & Visiting Distinguished Fellow, TERI		
	Key issues	Mr Mahesh Vipradas, TERI
	Panel	Mr Jami Hossain, Indian Wind Energy Association Dr Ajay Mathur, SynergyGlobal Mr S Chandrasekhar, Boruka Power Corporation Ltd
	Discussions	
1700–1730	Tea	
1800–2000	Networking reception and dinner	

22 February 2006

0930–1100	Panel discussion II: Regulator's perspective	
	Chair: Mr Bhanu Bhushan, Member, Central Electricity Regulatory Commission	
	Panel	<p>Mr P K Mehrotra, Chairman, Madhya Pradesh Electricity Regulatory Commission</p> <p>Mr G SubbaRao, Chairman, Gujarat Electricity Regulatory Commission</p> <p>Mr A Balraj, Chairman, Tamil Nadu Electricity Regulatory Commission</p> <p>Mr S K F Kujur, Chairman, Jharkhand State Electricity Regulatory Commission</p> <p>Ms Punam Sidhu, Director, Punjab Electricity Regulatory Commission</p>
1100–1130	Tea	
1130–1330	Moderated discussion and recommendations	
1330–1430	Lunch and closing	

Background

Ongoing reforms in India and legislation like the Electricity Act, 2003, have heralded a paradigm shift in the way renewables-based electricity would be promoted in future. Positive attributes of renewable-energy-based electricity generation are widely accepted, especially in context of energy independence and climate change mitigation.

Section 86 (1)(e) of the Electricity Act, 2003, states that 'to promote cogeneration and generation of electricity through renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any persons, 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.' Implementation of this clause is underway and different state electricity regulatory commissions are in the process of determining the share for power from renewable energy. However, note has to be taken of the fact that there are numerous issues that are involved while incorporating renewable energy in the total electricity generation mix. Some of these that merit discussion are as follows.

- Quota/renewable portfolio obligation
 - Tariff/pricing of RE (renewable energy)-based power
 - Intermittency issues
 - Grid connectivity
 - Wheeling charges
 - Power evacuation issues
 - Sharing of CDM (clean development mechanism) proceeds
- In this context, TERI attempted to initiate discussions on the aforementioned issues in the National Conference titled *Renewables and regulatory issues*, under the aegis of REEEP (Renewable Energy and Energy Efficiency Partnership), involving key stakeholders.

Aim of conference

The main objectives of the conference were to

- get insights into the nuances of some successful instruments for promotion of RET-based electricity in the developed countries,
- discuss key issues, critical to greater uptake of renewable-energy-resources-based electricity, taking into account, the regulators' as well as developers' perspectives, and
- devise a consensual approach for meeting broader goals of the Electricity Act, 2003, in an accelerated fashion.

Participation

A total of 75 participants from all over India and abroad, comprising the RE power project developers; regulators from all major states; research and consultancy organizations; as well as senior officials of MNES (Ministry of Non-conventional Energy Sources), state nodal agencies, industry, and corporates participated in this conference.

Panellists in the conference were a mix of international experts; central and state electricity regulators; and renewable energy power developers among others. The Presidential address was delivered by Mr V Subramanian, Secretary, Ministry of Non-conventional Energy Sources and the inaugural address was delivered by Mr R V Shahi, Secretary, Ministry of Power. Dr Pramod Deo, Chairman, Maharashtra Electricity Regulatory Commission, delivered the keynote address. Besides, there were two invited speakers (Dr Catherine Mitchell¹ and Mr Matthew Brown²) from abroad, who discussed the regulatory practices being followed in the Europe and the US for promotion of renewables-based power.

Summary of sessions

Inaugural session

Dr R K Pachauri, Director-General, TERI, while welcoming delegates and speakers, stated that this conference was very timely and relevant as at this juncture, major challenges faced by the country in the energy sector have major implications for the economic growth and development of the country. Moreover, it was very important to learn from the experiences of others and to use available knowledge for the betterment of society in general. He emphasized mainly on the energy security issues arising out of continued price rise in petroleum and gas. The other dimension pertained to the impact on the environment. Emphasizing the importance of renewables in today's energy context, Dr Pachauri suggested that regulators have to take into account externalities, including those imposed upon society by the conventional forms of

¹ Dr Catherine Mitchell is Deputy Director, the Centre for Management under Regulation in the Warwick Business School of the University of Warwick, UK. She had a leading role in devising the UK government's sustainable energy policy. She was Member, Government's Energy Advisory Panel in 1998–2003; besides being Advisory Board member of various sustainable energy bodies, both nationally and internationally.

² Mr Matthew Brown, currently working for the International Energy Agency, was Energy Programme Director in the *National Conference of State Legislatures*, USA. He has been providing technical assistance to state legislatures in 50 states on a wide variety of energy policy issues, including energy efficiency, renewable energy, utility regulation, and energy security.

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energy. He also suggested that security premium be imposed on forms of energy that would be far more secure in future.



Inaugural session

L to R: Dr R K Pachauri, Director-General, TERI, Mr V Subramanian, Secretary, MNES, Mr R V Shahi, Secretary, MoP, Dr Pramod Deo, Chairman, MERC, Mr Mahesh Vipradas, Joint Co-ordinator, REEEP SA Secretariat



Dr R K Pachauri, Director-General, TERI, delivering the Welcome address

Mr Mahesh Vipradas, Joint Co-ordinator, REEEP South Asia Secretariat then gave an insight into the activities of REEEP SA Secretariat, detailing out the 'bottom-up' approach being followed by REEEP in charting out its activities. He also gave an overall outlook of the REEEP network and its priority areas.



Mr Mahesh Vipradas, Joint Co-ordinator, REEEP SA Secretariat

The inaugural address was delivered by **Mr R V Shahi, Secretary, Ministry of Power, Government of India**. In his opening remarks, he emphasized the need for efforts to be made so that energy is used most efficiently. Citing the example of gas shortage because of which about 4500-MW gas-based power plants were lying idle, he suggested that in future, new capacities should be added only after long-term prediction of fossil fuel availability. He also dwelled upon the availability of coal and long-term strategies to meet the growing demand, such as importing coal. Speaking about hydro power, Mr Shahi argued that rather than differentiating on the basis of installed capacity, hydropower, whether big or small should be considered as renewable energy. However, some issues like resettlement and land need to be resolved well in advance.

Looking at the ambitious targets set for rural electrification, he felt that establishing grid network would not be able to supply reliable power to these villages unless there are a large numbers of distributed generation networks and here, decentralized power generation based on biomass and micro hydro technologies could bring about a major change. The

government has been thinking in terms of facilitating establishment of about 3–5 MW or even less capacity generating facilities based on non-conventional energy sources. In this regard, India has a very enabling legislation, the Electricity Act 2003, which has exempted generation, transmission, and distribution for the rural areas from licensing. He, however, emphasized upon the need for proper control over the licensees or entrepreneurs so that the end users are served better. The National Electricity Policy provides various facilitating frameworks and also, most institutional problems have been resolved after the launch of Rajiv Gandhi Grameen Vidyutikaran Yojana (Rajiv Gandhi Rural Electrification Scheme). He stressed that to electrify 56% villages in a short time frame was a challenge. However, it also presents an opportunity in the sense for those who wish to develop and invest, and opportunity is also there for the technology. He pointed out that not enough importance was being accorded to R&D in the field of renewable energy technologies, especially to make them affordable.

He also spoke on regulatory issues like fixing a quota and how each state could deal with them at its discretion and that is why a single 'national' quota was not fixed. The National Tariff Policy ensures that non-conventional form of generation should not be put in competition with the conventional sources of generation. Obviously conventional sources of generation have their own edge – technology wise or otherwise – and it will be unfair that non-conventional energy sources compete with conventional sources of generation. Nonetheless, within the non-conventional energy sources/technologies there should be a competition.



Mr R V Shahi, Secretary, Ministry of Power, delivering the inaugural address

Dr Pramod Deo, Chairman, Maharashtra Electricity Regulatory Commission delivered the Keynote address. He spoke mainly from his personal experience of reforms in the electricity sector in Maharashtra, dealing with issues commonly faced by regulatory commissions. He gave an insight into the history of reforms in context of renewables; policies that had just emerged in 1998; Regulatory Commission Act of 1998, formation of MERC (Maharashtra Electricity Regulatory Commission) in 1999; problems and their resolutions concerning bagasse-based cogeneration. He spoke about costing issues that had emerged and how they were solved. Talking about investors and financial institutions interested in renewables, he said that MERC's approach was based on creating a market for renewables. He also spoke about grid connectivity issues and the stand taken by MERC on the same, that is, the developer and state utility sharing the cost equally. He also touched upon incentives in the wind sector (for example, VAT and sales tax benefits) as well as capacity utilization factor and how did these impact the cost of electricity.

He suggested that MNES should take the lead in making a presentation to the CERC (Central Electricity Regulatory Commission), highlighting issues between different technologies. He ended his speech by saying that it is important to follow the same formula in all states while fixing the percentage.. Regarding competitive bidding in renewables, Dr Deo felt that while it was a necessity in the long run, it is too early to introduce it right now.



Dr Pramod Deo, Chairman, MERC, delivering the Keynote address

Mr V Subramanian, Secretary, MNES, delivering the presidential address, said that presently renewable energy could only complement the conventional form of energy. He was of the opinion that while it was becoming fashionable to talk about renewable energy, when it really comes to implementation there were very few people who can understand the intricacies, complexities, constraints, and economics of renewable energy technologies. He mentioned the high investment costs in the renewable energy sector and said it was imperative to bring them down if renewable energy's share was to increase. He also desired that the regulators have to ensure that the power purchase agreements between the developers and utilities are enforced otherwise, no industry would come forward to generate electricity.



Mr V Subramanian, Secretary, MNES, delivering the presidential address

Mr Ashish Kulkarni, TERI, thereafter proposed the vote of thanks.

Technical session: International practices

The session was chaired by **Mr J L Bajaj, Senior Visiting Fellow, TERI**



Technical session: International practices

Ms Namrata Mukherjee, TERI, gave an overview of the international regulatory practices in context of renewable-resource-based electricity generation. The overview included countries like Germany, the UK, the US, China, Thailand, Vietnam, and Sri Lanka. For each country, renewable-energy-related policies and programmes were discussed and key experiences shared.

In Germany, largest share of renewable energy was from wind (47.9%) followed by biomass (28.6%). The country has a 'Feed-in law' for renewable energy promotion. The Renewable Energy Sources Act, 2000, has a different provision for solar generated electricity, wind power, biomass power, and other renewable-based power. The feed in law provides greater flexibility and low transaction costs for implementation.

In the UK, 2.67% of the power is produced by the renewables whereas gas is the main source of power generation. The country has specified a RO (Renewable Obligation), primarily to ensure that licensed suppliers procure a certain percentage of power from renewable sources. For renewable-energy-based power generation contracts, competitive bidding system is employed and the contract is awarded for up to 15 years.

In Texas, USA, the contribution of RE is 1% of the total power generated; gas being the predominant resource (49%).

Under the RPS (Renewable Portfolio Standard) year-wise target are set and all electricity retailers have to necessarily meet this obligation. Besides, Renewable Energy Credits (green certificates) are given for the electricity produced through renewable energy. The regulatory body establishes the RPS regulations and enforces penalties for power production lesser than that stipulated quantum from renewable energy sources. The RPS also facilitates competition, lowers cost, provides flexible procurement options, and reduces uncertainty of eventual electricity price borne by the consumer. A tracking system is also in place for monitoring the status of the green certificates.

China produces most of its power from coal (75%). China passed the Renewable Energy Law in 2005, to be effected from 1 January 2006. The act offers financial incentives and discounted lending and tax preference for renewable energy projects. Besides, there are economic incentive policies, such as lesser import duties, purchase price incentives, low interest loans, and subsidies for promotion of RETs (renewable energy technologies).

In Thailand, the major renewable energy source is gas (69%). There are power purchase regulations for promotion of RE. It allows energy generator to export up to 1-MW electricity and has a provision for aggregate net metering and its combination with time-of-use metering.

Vietnam produces 59% of RE from hydro resources. They have set a renewable energy action plan programme to support an acceleration of renewable electricity production to meet the needs of isolated households and communities.

For Sri Lanka, the main source of electricity is thermal power (76%). Mini Hydro is the main RE source and accounts for 3% of the total power generation. Tariff for renewable-energy-based electricity is set by 'avoided cost method'.



Ms Namrata Mukherjee, Research Associate, TERI, giving an overview of international practices

Dr Catherine Mitchell, Centre for Management under Regulation, Warwick Business School, UK, presented a detailed analysis of 'European regulations for the propagation of RETs'. This presentation gave an overview of the European regulation for renewable-resources-based electricity generation and their relative merits and demerits vis-à-vis the German model. It was explained that the main policies for renewable energy support can be categorized as feed-in tariff, quota, tender, and tax measures. Of these policies, feed-in tariffs are generally the most popular and widely used. The UK Energy Policy aims to cut CO₂ emissions by about 60% by the year 2050 and achieve 15% electricity production from renewable sources. The UK model can be considered to be one end of the spectrum, in which there is minimal government intervention in the market. However, it has been observed that markets may or may not produce the desired results. For supporting the use of renewable sources within the UK, the government has laid down the 'Non Fossil Fuel Obligation' (1990–2002) and Renewable Obligation (2002–2027). Efforts are also being made in the R&D, and as a result, there is an increase in usage of renewables in electricity generation. However, progress has been tardy as the increase in renewable sources as a proportion of the total fuel mix has been less compared to countries like Germany that practice 'feed-in-tariff'.

The RO is an obligation placed on an electricity supplier to meet a certain percentage of the previous year's supply from eligible renewable electricity. There is a penalty for not meeting these targets. As a result of these, almost 60% of the targets are met in renewable power production. The penalty so collected is recycled back to the suppliers in proportion to their achievement of last year's RO targets. The feed-in tariff or RE Act aims to have a sustainable electricity system based on renewables. The German feed-in-tariff has features like fixed prices, long-term price security, priority access to electricity grid for renewables-based electricity, and low risk to generators.

Dr Mitchell concluded that the overall cost of feed-in-tariff mechanism was found to be cheaper than the quota mechanism. Besides, the feed-in-tariff provides planning and investment security, lower risk for investors, as well as easy handling.



Dr Catherine Mitchell talking about the UK experience

Mr Matthew Brown, IEA (International Energy Agency) talked about 'Regulatory Practices in the US'.

The emphasis of Mr Brown's presentation was on the regulatory experience of the US in developing policy interventions and incentives on renewable-energy-resource-based electricity. While highlighting the criticality of public policy in promoting renewable sources as part of the overall fuel mix for electricity generation, he emphasized the need to develop focused policy for specific renewables. Furthermore, Mr Brown opined that

renewable energy policies be designed in a concerted manner, after due consideration to the underlying implementation risks.

The US has adopted 'RPS (Renewable Portfolio Standards)' as a principal mechanism to support renewable energy usage in a competitive electricity marketplace. RPS primarily requires each electricity retailer to dedicate some percentage of its total product mix to renewable energy sources such as solar, wind, biomass, wood, geothermal, etc. While the objective of implementing the RPS policies varies in different countries, the principal goal has been economic development followed by fuel diversity, efficiency improvements, and cost reduction.

Energy credits are central to the RPS. A credit is primarily a tradable certificate of proof, which signifies that one MWh of electricity has been generated through a renewable source and sold to an end-user. These energy credits are a separate product from actual electricity itself. Each credit is considered as a proof of actual generation and sale of renewable electricity. He suggested seven steps aimed at efficient RPS management and implementation, including the following.

a. Resource identification: It is important to qualify the available resources for establishing the RPS. While wind, solar, geothermal, small hydro, and landfill gas resources are suitable for RPS implementation, there are certain questionable resources such as large hydro and fuel cells. Some US states have classified renewable sources as Tier I and II, as well as given incentives for use of specific resources.

b. Setting the quota requirement: Based on the available renewable energy base, underlying costs and system characteristics, a quota or percentage is established for the RPS. Subsequently, any transition from one quota level to the other needs to be meticulously planned and chalked out, with due consideration to the process and timeline. If the quota transition is too rapid, it could result in higher implementation costs and consequent non-achievement of goals.

c. Establishing the cost caps: In order to establish an upper limit on the price of renewable energy, a cap is generally set on the price that generators pay for credits. The cap is set somewhat higher than the expected marginal cost of credits but considerably less than the penalty for non-compliance of RPS. The cap, so established, needs to be regularly reviewed rather than be allowed to remain at one level. This review should be based on the ultimate objective to be achieved from the RPS policy. Additionally, it is imperative to ascertain the end-utilization of the penalty payment. While in the UK, collection from penalties is distributed amongst the electricity suppliers; in some US states, these are collected in a fund for supporting renewable energy projects.

d. Establish a mechanism to deal with the higher cost of renewable sources: policies could be structured to give electricity suppliers a right to recover additional costs incurred on compliance with the RPS. Alternatively, a cost-recovery mechanism could be established that provides for recovery beyond the allowable/regular rate.

e. RPS could lead to the least-cost achievement of a country's renewable energy goals. It is imperative to regularly review the RPS regulations to ensure efficiency and cost containment.

f. Establish a credit trading and tracking mechanism: credit trading not only helps ensure compliance of distribution utilities to the portfolio standard but also provides a cost-reducing alternative to building own renewable power generation. However, a proper credit-tracking mechanism is essential to ensure an efficient functioning of the trading system. This credit tracking mechanism should consider the time, year, and resource emission characteristics of renewable sources. Additionally, it should be efficient enough to avoid double counting or double claim.

g. Setting-up a procurement mechanism: the procurement of credits could either be structured through a bidding mechanism or through fixed tariffs. Nevertheless, it should ensure that no apparent preference is given to one bidder over other. Moreover, the bidding system should be simple, fair, transparent, and well-monitored. The performance of feed-in-



Mr Matthew Brown talking about 'Regulatory practices in the US'

mechanism (as in Germany) vis-à-vis the RPS depends upon the underlying renewable resource base.

While commenting on the status of RPS implementation in India, Mr J L Bajaj stated that only 2%–3% of the total electricity is being currently met through renewable sources. Furthermore, he emphasized that subsidy support to fossil fuel plants is extremely high in India, largely at the expense of renewable sources. While concluding the session discussions, the speakers highlighted the immense potential of solar power in India, which could be harnessed effectively with the help of an enabling policy framework.

Panel discussion I: Developer's perspective

The panel was chaired by **Prof. S L Rao, Ex-chairman, CERC**, and the panellists were **Mr Jami Hossain (Indian Wind Energy Association)**, **Mr Mahesh Vipradas (TERI)**, **Dr Ajay Mathur (SenergyGlobal)**, and **Mr S Chandrasekhar (Bhoruka Power Corporation Ltd)**.



Panel discussion I: Developer's perspective

The Panel discussion started with Mr Mahesh Vipradas giving a presentation on issues related to renewables based, grid-connected electricity in India. The panellists had the following views on specific issues.

Share of renewables

- There is a need to promote RETs for ensuring energy security of the country in the long run. In this context, both, the utilities and the regulator have only short-term objectives to meet. For developing a robust policy for development of the RETs in the country, a long-term perspective has to be considered.
- Generation through the RETs is site specific. Hence, to promote the share of RETs in intra and interstate trading should be allowed. Further, an instrument (for example, renewable energy certificates), which could be on similar lines of Carbon Emission Receipts can be introduced to boost trade.
- If these certificates are introduced then in that case, a penalty should also be levied on distribution companies, which are unable to meet their renewables targets.
- A mechanism of operating the RECs (renewable energy certificates) could be as follows.
 - Step I – Distribution company buys the RE-generated power at pool price
 - Step II – State regulator may mandate that a certain amount of REC has to be bought by the distribution company through a competitive bidding route
- All state distribution companies should be given targets of supplying the RET-generated electricity. This should be irrespective of the resource availability in the state.
- There is a wide variation in quotas assigned to the RETs in the total generation by different states. The percentage varies from 0.5% in certain states to 10% in certain states.

Pricing

- For determining tariffs for the RETs, the SERCs should take a long-term perspective. The associated costs of RETs are markedly lower after the loan-repayment period. Hence, when deciding the tariff, the Regulator should adopt a long-term time frame of about 20 years instead of 10 years.
- Tariffs for the RETs at present are benchmarked against the norms, which were set in 1990 for the conventional power plants.
- Pricing electricity generated through the RETs should be computed on levelized cost principles.
- Feed-in-tariffs at the national level should be introduced rather than at the present practice of state-level tariff for the RETs.
- Costing of the RETs is different from pricing of conventional power plants. Fuel costs in the former are not substantial; however, the latter has a substantial fuel price impact

attached to it. Hence, there is a need to adopt a different tariff setting methodology for the RETs vis-à-vis the conventional sources.

- Feed-in-tariff may continue till the share of renewables-based electricity reaches 10% of the total generation.

Grid connectivity

- Wheeling charges for electricity should be rationalized such that it is economical to wheel the RET-generated electricity, for instance, from Tamil Nadu to Delhi.
- Renewables-based electricity to be exempted from cross-subsidy surcharge for the grid-access.

General remarks

- There are softwares available on experimental basis that can forecast wind generation with a small margin of error.
- If CDM benefits have to be shared between the developer and utility, then the same sharing mechanism should also be applicable for penalties.
- To take care of the issue of in-firm power basket of the RE resources may be formed, for instance wind – biomass/ small hydro hybrid systems can be examined.

While summarizing the session's proceedings, Prof. S L Rao came out with the following suggestions.

1. There is a need to define the ambit of 'Renewables', for instance, should it also include large hydro.
2. Considering that renewables, such as wind and hydro do not have any fuel costs, for them annual escalation of tariffs is unnecessary.
3. Issue of 100% depreciation in case of wind must be revisited so that incentives are on generation, not on investment.
4. Options to achieve the desired share of renewables.
 - Percentage target for renewables must be set by the government; regulator cannot do it and must not be asked to since this is a public policy matter.
 - Distribution companies should compulsorily meet a percentage of their procurement through renewables. It may be through renewables certificates purchased from generation units anywhere in the country. This will also take care of the excess production and higher cost in a state like Tamil Nadu, which can then keep producing, getting compensated, and feeding renewable energy into its grid at pool prices.
5. The CERC and FoR (Forum of Regulators) should come out with a paper detailing standards that should be adopted by the regulators for estimating costs instead of estimating costs plant-

wise and using the norms developed by CEA for large thermal plants.

6. Competition among renewable generators is an issue that must wait till adequate quantities become available from such sources.

7. The SERCs should have separate fast track cells to deal with renewable producers' issues with the state utilities.

8. There is a need to highlight instances where the state regulators have come out with pitiful percentages like 0.5% for renewables.

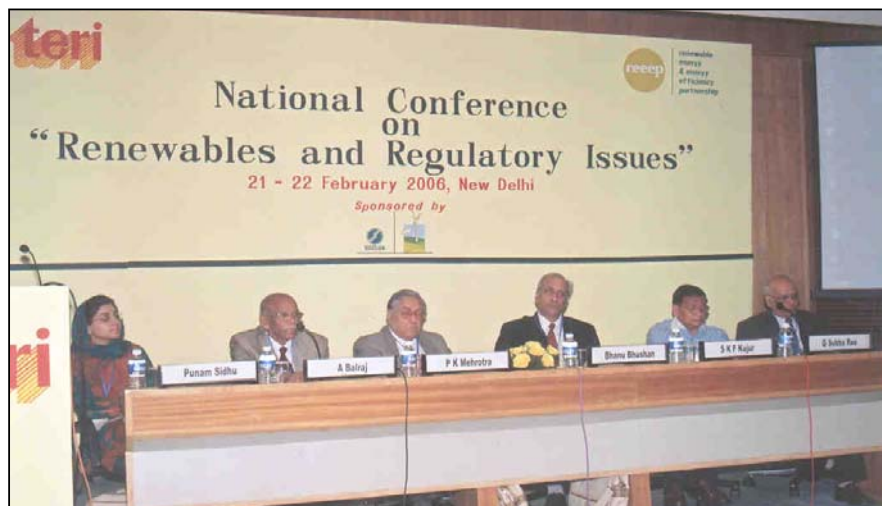
9. Regarding grid connectivity, renewable electricity producers should be exempted from surcharge on open access. (considering that some states have fixed it as high as 40%).

10. Since it was said that forecasting wind power 24-hours in advance is possible within 10% accuracy, the same may be used to compute as to how much of wind power can be made part of the firm power.

11. It is worth examining as to how tariffs for generation from high capital cost technologies like wind can be levelized over the life of the plant, on the lines of EMI (Equated Monthly Instalments) used in housing loans.

12. TERI may be asked to look at some of these ideas in depth and bring out a policy paper.

Panel discussion II – Regulator's perspective



Panel discussion II – Regulator's perspective

The Panel was chaired by **Mr Bhanu Bhushan, Member, CERC,s** and the panellists were **Mr P K Mehrotra, Chairman, MPERC (Madhya Pradesh Electricity Regulatory Commission); Mr A Balraj, Chairman, TNERC (Tamil Nadu Electricity Regulatory**

Commission); Mr Subba Rao, Chairman, GERC (Gujarat Electricity Regulatory Commission); Mr S K F Kujur, Chairman, JERC (Jharkhand Electricity Regulatory Commission); and Ms Punam Sidhu, Director, PERC (Punjab Electricity Regulatory Commission).

Mr P K Mehrotra, Chairman, MPERC, gave an insight about the RE initiatives taken up by Madhya Pradesh. MPERC has mandated that depending upon availability of resources, 0.5% of the total power production would be from wind. He informed that as far as transmission and distribution of RE-based electricity is concerned, MPERC has decided to subsidize the transmission cost and only 2% cost would be borne by developers whereas 4% of the energy cost to the licensee would be borne by the state government. Speaking on the National Tariff policy, he took up its two key provisions, namely, bidding for plants in private sector and initiating competition within the same RET. He opined that there was no standard investment cost for renewables to have a transparent cost-plus approach. He said it was better to take the competitive route to RE development rather than fixing up the obligation. His experience showed that contrary to what is being demanded by the developers, front-loaded tariff was not found to be attractive by the developers in Madhya Pradesh.

Mr Subba Rao, Chairman, GERC, told that at present, wind energy is the major RE source in Gujarat, contributing about 250MW of power generation. Now power generation through the other RE sources, such as biomass and bagasse has also been taken up in recent time. The state allows wheeling and banking.

In order to promote the generation and power purchase from renewable sources of energy, the GERC was of the view that in case the owner of such source of energy opts for wheeling power generated for its own use, the GETCO (Gujarat Energy Transmission Company Ltd) shall transmit power to the point of destination of use by charging 4% of energy injected as all-inclusive wheeling charge. In case the owner of renewable sources of energy opts to sell power to the distribution licensee, using GETCO's network, GETCO shall be entitled to recover 4% of the energy injected into the transmission network as an all-inclusive charge. In case the owner of renewable sources of energy opts to sell power to the third party, the GETCO shall be entitled to recover only 4% of the injected power for wheeling energy to the point of use. However, it will be subject to payment of cross subsidy surcharge. He opined that grid connectivity costs can be reduced and wheeling should be at

actual losses with a penalty for drawing reactive power. Considering low availability of the RE resources at certain regions in the state, the GERC has decided not to follow competitive bidding. In any case, it has been estimated that at the current level of RE power generation and tariffs, impact of tariff on consumer would be about 0.01 rupees/kWh only. He felt that the issue of sharing revenues out of carbon credits was a very premature idea. He also raised the issue of distribution of wheeling charges between the distribution and transmission companies.

Mr A Balraj, Chairman, TNERC, mentioned that almost all sugar factories in the state of Tamil Nadu had gone for bagasse cogeneration and about 3500 million units of electricity generated by wind is used for self-use. In fact, wind in Tamil Nadu had reached a saturation point. He was of the view that the present wheeling charges of 5% should be reduced. He talked about a three-tyre system with captive substations being put up by private power producers, having a long-term commitment. He also opined that incentives have to be taken into account for deciding tariffs. Social issues about land owners also came up and it was felt that due importance should be given to them also.

Mr S K F Kujur, Chairman, JERC, said that there was high potential for RE projects in the state of Jharkhand but the main barrier was lack of power evacuation infrastructure (one third of the region does not have transmission line and half of that region is isolated). He pointed out that there was a large potential for mini/micro hydro-based power generation. Fifty mini hydro sites have already been identified and a study conducted. He also stated that there is a large scope for cogeneration in 39 sponge iron industries in the state. Waste heat from industries can be used for power generation and in that case, cost of electricity generation comes out to be 0.26 rupees/unit. He mentioned that in future, the rural distribution network would be set up and maintained by the state government. The network can be used by anyone who pays for it.

It came out of the discussions that

- due importance should be given to renewables-based electricity,
- tariffs should be such that they are acceptable to all consumers,
- quotas should be determined on the basis of their impact on the consumer tariff: for instance, only that much percentage would come from renewables, the impact of which on tariff is

not more than 0.01 rupees/unit,

- Beginning may be made through the RPO (Renewable Purchase Obligation). This, however, may gradually shift to the RPS (Renewable Portfolio Standards),
- RPO should be imposed on discom, and
- as such not all RE projects will qualify for CDM and therefore, tariff calculation should not be made complicated by including the CDM proceeds; at least for the moment.

Moderated discussion

Discussions were moderated by **Mr K Ramanathan, Distinguished Fellow, TERI**. Apart from all delegates, the central and state electricity regulators also participated in them. Final discussions centred on the following key points that emerged out of the preceding two panel discussions.

- RETs that should form a part of the RPS quota
- A single national quota vis-à-vis state-level quota and subsequent mechanisms for procuring RE within and from other states
- Alternate model of RE credits
- Obligatory part: generators/discoms
- Penalties for non-compliance
- Role of MNES in mainstreaming RE



Mr Balraj, Chairman, Tamil Nadu Electricity Regulatory Commission speaking at the moderated discussions

The conference ended with the following suggestions.

- Quotas maybe imposed upon the generating companies rather than upon distribution companies.
- Fixing of quota may be at the state level as all states are not blessed with the RE resources.

- States that are not able to meet their quotas could meet the targets through interstate trading.
- Large hydro should be kept out of quota requirements.
- It may be more logical for regulatory commissions to obtain public approval on the proposed tariff for renewables-based electricity on the basis of overall increase in average cost of energy due to purchase of renewable energy.
- Depending upon the quantum of fund generated through increase in average cost of energy, regulatory commission may decide the total quantum (quota) of energy that can be procured.
- Subsidized open access changes and mandatory open access for renewables for increasing third party sales.
- There could be a two-pronged approach
 - feed-in-tariff for yet-to-be-commercialized technologies and
 - RPS for commercialized technologies.
- It is too premature to think about sharing of the CDM proceeds with the utilities.
- MNES should assume a more proactive role regarding
 - preparation of guidelines for tariff fixation for RE sources and
 - preparation of guidelines for RE certificate trading and quotas.

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