



**Renewables Asia Regional
Workshop**

**in preparation to the Bonn
International Renewable
Energy Conference-2004,
7-8 February 2004, New
Delhi, India**

Meeting Report

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Renewables Asia Regional Workshop in preparation to the Bonn International
Renewable Energy Conference- 2004

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Executive Summary

1. As a preparatory step to the International Renewable Energy Conference 2004 to be held at Bonn, TERI organized a workshop for the Asian region on 7-8 February 2004. The workshop was held in association with the German Federal Ministry for Economic Cooperation and Development, the Ministry of Non-conventional Energy Sources, Government of India and the GTZ - German Agency for Technical Cooperation
2. The workshop was opened on the evening of 7 February with welcome address by Dr. R K Pachauri, Director General TERI, followed by an address by Mr. Bjorn Stigson, President, World Business Council for Sustainable Development, Geneva. The inaugural address was delivered by Mr. A M Gokhale, Secretary, Ministry of Non-conventional Energy Sources, Government of India. Mr Erich Stather, State Secretary of the German Federal Ministry for Economic Cooperation and Development gave the special address on this occasion. Ms. Akanksha Chaurey, Fellow at TERI, proposed the vote of thanks. The session was concluded with a reception and dinner for all the participants and distinguished guests
3. The morning session on Feb 8 opened with a brief presentation on the Bonn International Conference on Renewable Energy by Dr Manfred Konukiewitz, Head, Division 313 "Water; Energy, Urban Development", Federal Ministry for Economic Cooperation and Development
4. Of the several themes that the Bonn conference would be focusing upon, the Renewables Asia Workshop deliberated upon three themes most relevant for the region. These were:
 - Policies for technology development, transfer, adaptation and absorption
 - Financing renewable energy sector
 - Institutional mechanisms to promote renewables
5. Highlights of the discussion in the above three sessions are presented below:
 - a) Need for a centralised thinking, followed by a plan of action. In other words, better coordination and cooperation among various agencies dealing with renewables to define a common agenda for development
 - b) Need for an atmosphere of stable policies with regulatory back-up
 - c) Linking of renewables options with end-use efficiency in order to provide a complete value chain of products and services

- d) International cooperation on improving efficiencies in selected technologies such as biomass technologies
- e) Ensuring customer interface for and during technology development
- f) Differential fiscal and financial incentives to promote technologies at different levels of development in order to ensure that services are delivered to end-user at a common platform as the customer's requirements are technology-neutral
- g) Technology being only one dimension; financing and fund flow an equally important agenda for cooperation requiring mechanisms for fund flow from north to south
- h) International fora to duly recognise the local experience dealing with off-grid technologies; often the grid –connected technologies take the centre-stage
- i) Funds to be available for technology dissemination also, not for technology development alone
- j) Corporates and NGOs to be the main drivers for technology development
- k) Governments-local, regional and international- to focus on capacity building at the grass roots level
- l) Emphasis on standardisation of components, systems and packages
- m) Realistic assessment of resources, particularly biomass in tropical countries; harnessing (not destroying) forests for biomass in countries such as Bangladesh
- n) Example of Nepal on how renewables fit in local development agenda- 10th plan to focus on poverty reduction-energisation is one of the important means of poverty reduction- renewables as an important tool for energisation
- o) Need for different financing mechanisms and channels for different countries such as India and Germany, keeping in mind the local and regional peculiarities
- p) Renewables to move away from perpetual state of “R&D and intermediate technology” that results in low confidence among investors; still considered as “concept selling” and not “investment marketing”
- q) Need for standard methodologies and firm pricing indicators to facilitate investors
- r) Green tariff, if to be charged on renewables electricity and distributed over conventional electricity, would not result in any significant increment for tariff on the latter

- s) Customers need to be educated about merits of green electricity, market development to be undertaken for investors to enter
 - t) Environmental externalities to be built in tariff calculations for conventional electricity
 - u) Subsidising off-grid sector where grid can not reach, not subsidising renewables
6. A panel discussion concluded the workshop
 7. The workshop was attended by 92 participants. Apart from India and Germany, eight countries were represented. These were Bangladesh, Indonesia, Korea, Maldives, Nepal, Philippines, Sri Lanka and Thailand. Confirmed participants from China and Fiji could not attend due to logistics related problems at last minute
 8. The participants were from the NGO and civil society sectors (16); industry and corporate (19); funding institutions (11); government (15) and the academic and research institutions (31)
 9. This report includes summary of each session, list of participants, agenda, and selected speeches and presentations

Summary of sessions

Session I: Policies for technology development, transfer, adaptation and absorption

In his opening remarks, Dr Peter Hennicke, Wuppertal Institute briefed the audience on the status of renewable energy technologies in Germany. The German experience has shown that increasing the share of renewables requires policy support. A market for renewable energy has been created in the last ten years with appropriate fiscal and financial incentives under the German Renewable Energy Act. Although the costs of renewable energy have been steadily decreasing, there are concerns about rising subsidies. The recommendation is to give the highest priority to projects that integrate renewables with efficiency improvement. This would have the desired effect of decoupling energy growth from energy consumption, and would help 'buy down bills' for renewable energy. In the long run, greening and diversifying the supply side is imperative for a risk minimizing strategy in both developed and developing countries.

Dr Manfred Konukiewitz, German Federal Ministry for Economic Cooperation and Development, gave an overview of plans for Renewables 2004. The conference follows up on the WSSD Plan of Implementation and highlights the recognition that sustainable development needs both renewable energy and energy efficiency. The conference has been preceded by regional preparatory meetings, and focuses on themes such as policies for market development, financing options, and human capacity, institutions and technology development. Planned outcomes include a political declaration, international action plan, and guidance for good policies.

Mr V Raghuraman, Confederation of Indian Industry, spoke of the dichotomies that exist in India with respect to the institutionalisation of renewable energy programmes (for instance, the multitude of ministries responsible for different forms of energy). Renewable energy policy in India must synergistically address several challenges to ensure implementation of renewable energy programmes in a sustained manner. The role of state governments and state electricity regulatory commissions is of great importance in promoting renewable energy

development, for instance, through tariff mandates. Given the local and regional environmental problems associated with biomass use, technology development for more efficient biomass use is essential. Hybrid systems are required in rural areas for periods when renewable energy sources are not available. International partnerships can be used successfully for technology development and adaptation, and for the creation of institutional capacity for maintaining systems. Finally, public-private cooperation is necessary to harness renewable energy more effectively for the enhancement of livelihoods and catalysing change in rural areas.

Mr A K Vora, Tata BP Solar India Ltd, identified the main driving forces driving renewable energy growth in the world, including energy for sustainable development in rural and remote areas, energy security, and global environmental challenges like climate change. In recent years in India, competition has changed the market scenario, brought in the latest technologies, and led to exports to developing and developed countries. But technology development and adaptation can thrive only through interface with customers and end users. Policymakers need to ensure competition, but with quality assurance mechanisms and reliable customer service networks, else technology will be discredited. Further, policies need to be backed by a long-term legislative framework to ensure stability and rapid growth of the sector. It must also be recognised that different renewable energy technologies are at different levels of development, and hence require differentiated fiscal support. Finally, the establishment of a level playing field for renewables vis-à-vis fossil fuels is essential. These factors are key to technology development, absorption, and adaptation. The Renewables 2004 conference is opportune as it will provide a forum for greater dialogue between developing and industrialised countries, not just on technology but also on financing and on-ground experiences in developing countries.

Dr Ijaz Hossain, Bangladesh University of Engineering and Technology, highlighted the 'policy confusion' that exists in many developing countries. In Bangladesh, for instance, the absence of clear policy signals on village electrification is a hindrance to renewable energy development. Dr Hossain mentioned successful solar photovoltaic programmes in Bangladesh and Kenya, and drew lessons from less effective programmes. Biomass data availability is critically important in planning projects, yet is neglected. Social aspects (such as

minimum cow ownership requirements for household biogas projects) also cannot be ignored.

Dr Abdul Razzak Idris, Maldives, described the slow evolution of the energy strategy of the Maldives government. He emphasized that policy should focus not only on technology development, but equally on aspects like pricing, security, and dissemination.

Mr Ram Hari Aryal, National Planning Commission Secretariat, Nepal, said that renewable energy for rural areas has been given high priority in Nepal's Tenth Plan as a means of reducing poverty. The Planning Commission is now in the process of developing an integrated energy policy. The emphasis is on R&D at government and non-government levels, and human capacity building for technology adaptation.

Dr V V N Kishore, TERI, focused on the lack of adequate funds for development and dissemination of indigenous technology. He identified the drivers of technology policy as being the Ministry for Non-conventional Energy Sources, private entrepreneurs, and multilateral funding agencies. The limited success of dissemination programmes so far can partly be explained by the MNES' approach of setting simple targets. Private entrepreneurs can take advantage of subsidies, but this resulted in uneven development of different technologies and limited mainstreaming of renewables. Corporates, despite being market-driven, should be viewed as a legitimate force in technology development. NGOs also have the capacity to unleash hitherto unclear markets. Governments should have larger goals, like the eradication of all smoke-related diseases. Finally, there is need for unified thinking and action, which is not limited to the mandate of only a single ministry.

Issues that came up in the open discussion included the need for technology transfer that supports local manufacturing plants and demonstration projects. Developed and developing countries could establish an agenda for joint technology development programmes for renewables, recognizing the maturity of the Indian renewables industry.

Although some renewable energy programmes like solar water heating are purely market-driven, most continue to be scheme-driven. Subsidy-driven programmes decline once incentives are withdrawn, due to the price advantage

enjoyed by conventional electricity. Hence, the right kind of pricing signals are very important for technology development, absorption, and dissemination. Banks and financial institutions can also play a key role in commercialisation by providing finance to consumers until costs are eventually reduced.

The importance of giving integrated and fully workable solutions to the community was underscored. As we move into the commercial domain, people demand reliable services. Market forces, and not subsidies, will determine the extent of penetration. In fact, the standardisation of renewable energy technologies was put forward as a possible issue for the Renewables 2004 conference in Bonn.

Session II Financing renewable energy sector

The session was chaired by Dr Ajay Mathur, Former Team Leader of Climate Change, The World Bank. Mr. T. N Thakur, Chairman cum Managing Director of Power Trading Corporation, India, made his presentation on the basis of experiences gained in the financing the renewable energy projects. His general observation was that though many proposals are received from the developers still not much has been done in marketing the renewable energy power. He emphasized that there is a strong correlation between economic growth and availability of economically priced energy. Thus there is strong need to attract private fund in government dominated sector, as the subsidies and incentives which were provided with an objective of “access to all” resulted in distorted tariff patterns.

Total power concerns in developed countries relates to issues of energy security, environmental concerns and efficient markets with relation to cogeneration technique. In developing countries renewable energy plays important role in both kinds of economies.

In developing economies it gives improved balance of trade, reduction in import bills, access through decentralized manner, employment generation, human development, prevents excess pressure on rural areas etc. In developed economies it mitigates the dependency on imported fuel.

The main differences in the renewable energy projects compared to conventional projects were identified as the alternate use of biomass as cooking fuel, constant

state of R&D with various dimensions which don't give faith of the investors and financiers to support, high cost of generation which makes it difficult to mobilize the investment resources with low tangent rates of return, low capacity utilization factor and less volume of energy which is still just complementary to conventional power bank. Moreover the projects are driven by environmentalist demand.

Thus the need to develop commercially viable projects for financiers was emphasized. For the same the project should focus on market, financial and credits with reduced risks involved on completion and O&M. Since different technologies are at different stage of commercialization the relative cost and relative viability should be devised during designing the project. Present legal structure has also not been found to be supportive. The project should also address the issue of pricing and returns. The subsidies should be provided in the form of incentives with regard to high investment cost. Thus the marketability should be private partnership to state utilities.

In order to promote the renewable energy market the non-monitory benefits must be priced and should be available at local, retail and institutional level. Though the concerns remain about the financial strength of retail buyers as well as SEBs. The potential of market should be increased by enhancing the choice options, facilitating government, awareness generation, sensitizing various stakeholders, introducing credit risk and payment security mechanism. For facilitation of potential market, consortium of single level plants can be formed with multi dimensional base and small capacity plants should tie up capacities for long term. Conventional models in power sector financing are based on non-resource/limited resource financing. The financing mechanisms should have policy and institutional support, should have cost effective pricing, special credit package, encourage local participation and should have good sector policy implementation. In electricity act 2003 the market trading is easily possible. In present Electricity Act-2003 even 5-10 MW capacities grid/off-grid are encouraged though they are not cost effective. Policy decision to consume 2-3% of energy from renewables should be made at local, state and national level. Though the initial capital cost investment is high the application appraisal criteria should include the prices of environment and social benefits during financial evaluation of the project.

The presentation also covered the successful models in RE delivery system like standby purchase agreement in Karnataka.

The presentation was concluded with prescribed policy decision to move forward which included compulsory 3-5% renewable consumption at national level, customized approach in financing through intensive, measures to achieve critical mass, identification of long term market needs and consistent policy measures.

Mr. Dipal Barua from Grammen Shakti, Bangladesh also supported the high initial cost of renewables as the major barrier of its market and income generation as the key to success. Bangladesh followed credit selling rather than providing subsidies to serve 70% non-electrified population. The model gave success with 50% loan and payback extended to 3 years. These payment terms were acceptable to consumers as they soon learnt to recover part of the money by renting one bulb to neighbors. The plan is now to extend it up to 5 years. Mr. Barua informed that legal and regulatory framework is not in place at Bangladesh. There is 33% tax to import solar systems, which is soon expected to be withdrawn by the government. According to him there is a need to have innovative financing mechanisms and associating it with income and employment generation. The example of “Gramin Phones”, a micro level telephone battery charging station at household level by ladies was stated. The other options to promote RE markets could be after-sales service center, certification as an incentive, ownership incentives etc.

Mr. Klaus-Peter Pischke stated that there is no free lunch, even in the context of RE. Either the actual customer pays, or customer of some other service pays. Either the actual tax payer pays or the taxpayers in some country pays. In other words, subsidies or incentives are easing the burden from one class and putting it on some other who perhaps can better afford it. According to him the present financial mechanisms only channel money and does not make it cheaper. He identified two tasks to be addressed; high cost of technologies and how to support RE markets.

Mr. B.V. Rao shared the barriers experienced by IREDA in financing the RE projects. A few of these are – absence of sustainable long term policy, lack of appropriate appraisal methods, linkage of fiscal benefits to the performance of

the project, involvement of financial institutions at local, state and national level.

Mr. Ashoka Abeygunawardana stated that financing mechanism in Sri Lanka includes lending through banks such as DFCC under GEF co-financing. SHS is financed up to 200 US\$/system and microhydro receives 400\$/kW of installation capacity, maximum up to 20,000\$. He emphasized that in order to have off-grid system there is a need of partnership not only with private sector but also with public and civil society. Mr. Abeygunawardana stated that subsidies for electrifying remote areas where grid can not reach should not be considered as subsidizing renewables; instead it should be considered as subsidizing access in off-grid sector.

Mr. D K Dhar from Rama Krishna Mission shared their experiences gained during working at grass roots level. Their experience says that subsidy could motivate very small fraction of rural population to buy even a small system like solar lanterns. Home lighting system is also beyond the affordability limit of most villagers. According to him, the association of income generation to any RET and after sales service is the best way to help promoting renewables in rural areas. He gave examples of how solar systems have helped businesses like tailor shops and mobile food stalls in enhancing their incomes. Battery charging facility for charging lanterns and other batteries and renting them out is also a viable income generation activity that can be built around RETs.

Major points which came up during open discussion were i) to integrate micro-credit system in solar systems promotion, ii) burdening of SEBs with stringent renewable energy consumption policy and, iii) credit financing mechanism.

Session III Institutional mechanisms to promote renewables

The session was opened by the Chairperson- Dr. V V N Kishore's remarks that lack of institutional mechanisms is perhaps the most critical barrier that renewables still face, and in order bring them into mainstream of energy sector, these issues need to be discussed prior to technology policies and financing.

Mr. Hans Joerg Mueller, China Renewable Energy Programme, GTZ, made his presentation on the basis of GTZ's work in China in the field of renewable energy. His presentation emphasised on how institutional mechanism is

important for the promotion of renewables. In china, 97% population have access to electricity. Rest 30 million are deprived of getting this facility. In the year 1999, the “ brightness program” has been introduced which is meant for people living in dark. About 800-1000 large villages are to be covered through township electrification programme. Out of all RETs, the main emphasis in China is on solar, wind or solar /wind hybrid systems. Recently, the government of China has also started a small program in biogas. Chinese programmes are commensurate with Chinese technology. The main RE target groups in rural areas are private households/farmers, small-scale craft men and owners of services. In his views, institutional building and dissemination strategies are the major components of renewable energy. Public-private partnership program should be encouraged and major focus should be on training programme for operation and maintenance of the system. System integrator and operator are the best candidates for training program. He summarised the presentation with challenges faced and lessons learned. One of the main lessons was that Energy Service Company (ESCO) should come closer to the end users. There is a need of local network for the optimum maintenance of the system. Private ownership, user tariffs and revenue collection are some of the important issues, which should be clearly defined. Electrification through renewable should link with income generation activities. Poverty alleviation, gender equality, environmental sustainability, educational improvements are some of major advantages found in renewable energy projects.

Mr. Jami Hossain, Indian Wind Energy Association, India in his speech mentioned that till now the achievement through renewable energy is far from its potential and there exists a huge knowledge gap at user level. Unlike urban population, it is difficult to sensitise the rural and semi urban people. Institutions like rural banks, micro enterprises etc should be intensified. Mr. Hossain further emphasised that linkages among various institutions is a must for success of any RE programme. To elaborate his point, he presented a matrix that links several institutions together. (Enclosed in section 4 on selected speeches and presentations)

Dr. Qwanruedee Chotichanathawewong, Director of energy, Industry and Environment program (EIP), Thailand Environment Institute, Thailand in her speech said that green marketing and proper networking of the system should be encouraged.

Ms. Ratna Ariati, Director, Renewable Energy and Energy Utilisation, Indonesia mentioned that though the existing RE penetration is very low due to high investment cost, it has the potential to develop further. Proper networking should be created with stakeholders. Government initiation to provide all the assistance to entrepreneurs was highlighted. She also took up the issue of renewable technologies becoming redundant after the grid connection of the same areas, which is a matter to be taken up seriously. She also emphasised on the small hydro programs coming up due to GTZ's funding in Indonesia.

Dr Kalipada Chatterjee, Head, Climate Change Centre, Development Alternatives, New Delhi, India questioned about various issues in renewables. In his speech he mentioned that financing for renewables is important, but it is equally important to track how these finances were being utilised. He suggested that a strong rural mechanism has to be worked out with strong emphasis given to education of the rural masses about renewables. He also said that strong sustainable practices should be brought forward to improve the demand.

Dr Madan Basnyat, Executive Director, Alternate Energy Promotion Council, provided a brief status of renewables in Nepal. He gave inputs about the type of renewables used for different purposes. He suggested some very important points regarding how institutional mechanisms should work. The main points put forward by Dr Basnyat were

- Government to implement the programmes through the private sector
- Standardisation of products and their quality maintenance
- Capacity building of private sectors for renewables by the government
- Public and private sector partnerships
- A sustainable financial model for all renewables
- Effective education and training the masses
- Creating demand by awareness programmes

Focus was given to how renewables could be made sustainable by generating income from the energy produced. All the points were well substantiated by good examples.

In the question and answers session various queries from participants were raised and answered regarding various kinds of mechanisms used to promote renewables, financial models that exist in countries like Nepal, Philippines, Sri

Lanka, Bangladesh, Indonesia and also the necessity of all the end users to participate in the success of sustainable renewables.

Panel discussion and concluding session

The session was chaired by Mr. J.L. Bajaj, Distinguished Fellow, TERI.

The session started with brief summery report of the day's proceedings by Ms. Akanksha Chaurey, Fellow and Area Convenor Renewable Energy technology Applications (RETA) area, Energy Environment Technology (EET) division, TERI. In her presentation, she highlighted the few critical issues raised in earlier sessions.

In his address Mr. Sunil Khatri, Joint secretary, Ministry of Non-conventional Energy Sources (MNES), Government of India referred to the agenda of the Renewables-2004, Bonn conference and mentioned that the agenda indicates that the countries out side EU should have quota for Renewables in their national programme. Deliberating his and his Ministry's views on this he mentioned that the drivers for renewables in developing countries like India and in the developed countries like European countries are different. The main driver in EU is climate change and Kyoto Protocol requirements whereas in India, which is running the programmes for renewables for last 20 years, the main drivers are energy security concerns. He explained that the barriers for renewable are high cost, low capacity utilization factor. He made observation that the capital cost of wind machines in India is @ 50% higher than that in European countries. He mentioned that in spite of custom duty as low as 5%, the cost of on- shore Indian wind farms is same as that of offshore wind farms installed in Denmark. The other observation he made is that the plant load factors are very less (typically @ 1600hr /year) for wind farms and even less than that resulting in high cost of generation @ 7 cents/ kWh. He referred to the speech of Hon. Secretary MNES, and mentioned that Clean Development Mechanism (CDM) is not likely to have any major impact on the MNES program. The main reason, according to him is that US and Russia, which represent more than 60% market for CDM, have not signed the Kyoto protocol and it has become the buyers market. He mentioned that the renewable energies are not new to Asia and about 1/3rd of the total energy consumed comes from renewable sources like biomass, hydro etc. However, the share of renewable in

electricity generation is about 3% but that represent only 0.13% of total energy mix. Thus, he argued, that even if RE share is increased to 10% the total impact on energy mix would be very less.

He stressed the need for technology upgradation in bio mass gasification technologies such as from atmospheric gasification to pressurised gasification. However, the non- availability of skilled personnel for operation and maintenance of gas turbines used for this technology may be a major barrier. He pointed out that Asian countries should not accept compulsive or voluntary targets for implementation of renewables. He pointed out that even US energy policy mentions that RE will contribute only upto 2.8%. Poor countries cannot afford the costly power and all studies indicate that major source for power will be fossil fuel, amounting to more than 90% of requirements. He appealed to Asian countries to emphasise that negotiations should only be held under multilateral approach.

Mr. Joe Madiath of Gram Vikas, an NGO from Orissa, made the second presentation. He mentioned that when financial concessions are offered to multinational companies they are treated as incentives, while the financial aid given to rural poor is termed as subsidy. The current policies for reducing subsidies may not help the poor. He gave the example of biogas programme in India where the decline in support has given a setback to the programme. In his views, this is one of the most successful programmes and should be continued. He felt that the urban society should take responsibility of uplifting the rural society. He also suggested that the R&D efforts should be supported along with the support for commercialisation of technologies that are developed through the R&D efforts. The social considerations should be kept in mind while promoting the 'free market' concept.

Mr. Vic Roaring, Executive Director, Renewable Energy Association of the Philippines made last presentation of the session. He highlighted the success and usefulness of Pico-hydro power (10-200 W) in Philippines.

Comments from the floor

Dr. V V N Kishore, senior fellow, TERI, made a point that MNES and MoEF (Ministry of Environment and Forests), which is pursuing CDM, should work together on such issues in order to avoid giving confusing signals to international funding agencies.

Dr Manfred Konukiewitz, Head, Division 'Water, Human Settlements and Infrastructure', Federal Ministry for Economic Cooperation and Development, Germany, clarified that the Bonn conference is not for imposing conditionality on any country but to bring all Governments and other agencies together to promote renewables (even if the drivers for promotion of RE are different in different countries). The conference is for sharing experience and knowledge.

Concluding remarks by Chairperson Mr J L Bajaj

Mr J L Bajaj, chairman of the session, in his concluding remarks made following observations

- There is a need for centralized thinking and planning (in the energy sector). Flexibility and better coordination in working of all concerned institutions is a must for developing RE sector
- The reasons for low penetration of RE, after about two decades of promotion, should be analysed
- The Indian lawmakers recognize the importance of renewables and the different clauses in the Electricity Act regarding renewables are an indicator of it
- There is a difference between rural electrification and household electrification and in many states of India, like Uttar Pradesh, Bihar etc. about 2/3 of households still do not have electricity. These can be targeted by decentralized RE systems with different resources like biomass, small hydro solar energy etc.
- The present methodologies for cost estimation for conventional energy are 'mechanical' and do not consider the hidden costs such as subsidies, cost of distribution (losses) etc. If these costs are considered, the cost of landed energy would be higher and in this situation many of the RE systems would become competitive.
- The Indian law does not rule out role of subsidies, however it requires them to be transparent.
- In conclusion we need to have common vision and action plan for increasing contribution of RE systems.

The session ended with vote of thanks from chairperson.

Agenda

Day 1, February 7, 2004 at Magnolia

1700- 1800 Registration

1800- 1900 Opening session

Welcome – Dr R K Pachauri, Director General, TERI

Address- Mr Bjorn Stigson, President, World Business Council for Sustainable Development, Geneva

Inaugural Address – Mr A M Gokhale, Secretary, Ministry of Non-conventional Energy Sources, Government of India

Special Address – Mr Erich Stather, State Secretary of the German Federal Ministry for Economic Cooperation and Development

Vote of thanks – Ms Akanksha Chaurey, Fellow, TERI

1900- 2100 Reception and Dinner at Silver Oak Lawns

Day 2, February 8, 2004 at The Silver Oak

0900- 0945 Registration

0945- 1115 Session 1 – Policies for technology development, transfer, adaptation and absorption

Chairperson – Prof. Peter Henricke, President, Wuppertal Institute on Climate, Environment and Energy, Germany

Presentation on the Bonn International Conference on Renewable Energy- Dr Manfred Konukiewitz, Head, Division 313 "Water; Energy, Urban Development", Federal Ministry for Economic Cooperation and Development

Speaker – Mr. V Raghuraman, Senior Advisor-Energy, Confederation of Indian Industry, India

Speaker- Mr. A K Vora, Managing Director, Tata BP Solar India Ltd., India

Discussants -

- Dr Ram Hari Aryal, Joint Secretary, National Planning Commission, Nepal
- Mr. Abdul Razzak Idris, Director General, Renewable Energy, Ministry of Communication, Science and Technology, Maldives
- Dr V V N Kishore, Senior Fellow, TERI
- Dr Ijaz Hossain, Professor, Bangladesh University of Engineering and Technology, Bangladesh

Open discussion

1115-1130 Tea

1130-1300**Session 2 – Financing renewable energy sector***Chairperson* – Dr Ajay Mathur, Former Team Leader, Climate Change, The World Bank*Speaker* – Mr. T N Thakur, Chairman cum Managing Director, Power Trading Corporation, India*Discussants* –

- Mr. Dipal Barua, Managing Director, Grameen Shakti, Bangladesh
- Mr. Klaus-Peter Pischke, Vice President, Energy Sector and Policy Division, KfW Group, Germany
- Mr. B V Rao, Deputy General Manager, Indian Renewable Energy Development Agency, India
- Mr. Asoka Abeygunawardana, Energy Forum, Sri Lanka
- Mr. D K Dhar, Rama Krishna Mission, Kolkata, India

*Open discussion***1300-1400****Lunch****1400-1530****Session 3 – Institutional mechanisms to promote renewables***Chairperson* – Dr. V V N Kishore, Senior Fellow, TERI*Speaker* – Mr. Hans Joerg Mueller, China Renewable Energy Programme, GTZ, China*Discussants* –

- Mr. Jami Hossain, Indian Wind Energy Association, India
- Dr Qwanruedee Chotichanathawewong, Director of Energy, Industry and Environment Program (EIP), Thailand Environment Institute, Thailand
- Dr Madan Basnyat, Ex. Director, Alternate Energy Promotion Council, Nepal
- Ms. Ratna Ariati, Director, Renewable Energy and Energy Conservation, Directorate General of Electricity and Energy Utilization, Indonesia
- Mr. Kalipada Chatterjee, Head, Climate Change Centre, Development Alternatives, New Delhi, India

*Open discussion***1530-1545****Tea****1545-1645****Panel discussion and concluding session**

Summary of proceedings- Ms. Akanksha Chaurey, Fellow, TERI

Chairperson – Mr. J L Bajaj, Distinguished Fellow, TERI*Panelists*

- Mr. Sunil Khatri, Joint Secretary, Ministry of Non-conventional Energy Sources, Government of India
- Mr. Joe Madiath, Gram Vikas
- Mr. Vic Roaring, Executive Director, Renewable Energy Association of the Philippines

List of participants

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Inaugural address by Shri. A. M. Gokhale, Secretary Ministry of Non-conventional Energy Sources, Govt. of India

1. It is my proud privilege to address the Renewables Asia Regional Workshop. There could not have been a more fitting destination than India for this workshop where over one-third of the total energy-mix contains renewables. I would like to congratulate TERI for organizing the workshop.
2. Many parts of Asia are still characterised by low per capita income, high population growth, a large agrarian structure and a rapidly growing energy demand. Even then, Asian per capita energy utilization pattern is entirely different from that of developed countries as renewables contribute significantly to its total energy-mix.
3. The remaining two-third of our energy-mix comes from fossil fuels such as coal, liquid hydrocarbons and natural gas. For comparison, the present share of renewables in total energy-mix of major developed countries like the United States, United Kingdom and Germany is under 5 per cent. Compared to the share of renewables in the total energy-mix of developed countries, India is doing much better. We are all aware of the European Union's directive for a target of 12 per cent of renewable power in the electricity mix by 2010. Our contention is that the focus cannot be electricity alone which accounts for only a small fraction of the total energy-mix in Asian Countries. We have all along advocated that energy needs to be viewed in its entirety and any attempt to segregate electricity from it do not stand scrutiny.
4. A major global concern is that twenty per cent of the world's population consumes 80 per cent of the energy while the remaining 80 per cent consumes the 20 per cent. The per capita energy consumption in India and several other countries in the region is one-fifth of the global average and one-fifteenth of the developed countries. Developed countries with their high energy consumption patterns account for over two-thirds of the global carbon emissions. USA and Russia, which together contribute more than one-third of carbon emissions, have not yet ratified the Kyoto Protocol.

5. We all are aware of the numerous UN resolutions which have emphasized the need for member countries to strive to promote sustainable consumption patterns and that developed countries have to take a lead in this regard. You will all agree with us that we cannot have two models of life styles, one for the 20 per cent and another for the 80 per cent, especially in a situation where the global community is becoming one. Apparently, there is need to check conspicuous energy consumption and developed countries which average more than three times the global average will have to take immediate steps to bring down their energy consumption in keeping with sustainability needs.
6. Environmental concerns have gained momentum with unsustainable energy consumption patterns of affluent societies along with the waking up of Asia. The global community has now seriously started looking into clean energy options, including renewables. In India, the importance of renewable energy was recognized as early as 1970s as it has acted as a supplement to conventional energy. Our efforts to harness renewable energy started much before global warming concerns came to centre stage.
7. As our economy is growing so is electricity demand which is expanding at an annual average rate of 8%. Thus, in the medium term we require to add, on average, around 10,000 MW installed power generating capacity every year over the next ten years. In keeping with our national priorities, the Ministry of Non-Conventional Energy Sources has centered its renewable energy programmes to provide reliable energy supply through a diverse and sustainable fuel-mix to supplement conventional energy. Currently, renewable power contributes around 4% to the total installed power generating capacity, which aggregates to around 4300 MW. In addition, several million renewable energy household systems and devices have been provided for cooking and lighting purposes.
8. During the 10th and 11th plan periods, 10% additional power generating capacity corresponding to around 10,000 MW is aimed to come from renewables. We emphasized decentralized energy systems based on renewables. Accordingly, we have planned electrification of over 30,000 remote villages through renewables by 2007. In the new technology area, focus is on hydrogen and fuel-cells for transportation and stationary applications.
9. Since over one-third of our energy needs are met from renewables, we have initiated a programme for the efficient utilization of biomass. Gasification of biomass for meeting both lighting and cooking energy needs in rural areas

is being given a serious thought. Today's technology has the potential to reduce biomass consumption for cooking in rural areas by 75% and biomass thus saved can be utilized, among other things, for electricity generation for lighting and productive purposes. Such a step would not only help mitigate human health problems in rural areas but also lead to the creation of employment opportunities at all levels.

10. The Indian effort in promoting renewable energy is in line with the plan of implementation adopted at the World Summit on Sustainable Development wherein all the countries were required to diversify energy supply by developing advanced, cleaner, more efficient, affordable and cost-effective energy technologies, including renewable energy technologies. As is known, renewable energy technologies are at different stages of development across the globe. Currently, not only do renewable energy based power generating systems cost more but they also supply intermittent power. Solutions have to be found to address these and related issues. We understand that EU and G-8 partnership(s) are being forged for some time now to develop climate change technologies. While climate change has been accepted as a global concern, it has not yet been established as to whether these R&D partnerships will be made open to Asian countries and those outside the current framework.
11. The Clean Development Mechanism which held much promise is unlikely to take-off for reasons known to all of us. In this changed scenario, some estimates reveal that inflows from developed countries through the CDM route would be insignificant. India, however, will continue to promote renewables with or without CDM.
12. We strongly believe that all of us will have to work together to ensure sustainable, equitable and clean energy consumption patterns. In this context, I consider this workshop an important event. With these words, I have great pleasure in declaring the workshop open.

Paper presented by Mr. Jami Hossain, Indian Wind Energy Association

Institutional Mechanisms to promote renewables

There are a number of RE technologies, approaches and solutions that are applicable to various sectors of Indian economy. This is also true of other developing countries. However, in spite of the importance being shown by the government to renewable energy and many donor driven projects and programs,

I feel we are still far from tapping the real potential for utilization of renewable energy.

While we do have these technologies and solutions available commercially, there is huge gap of knowledge and technical knowhow at the user level where these solutions have the real market.

In the urban sectors it is relatively easy to sensitize people and institutions to renewable energy solutions and its benefits because of various institutions that reach out to the target groups but in the rural and semi-urban sector, this is a daunting task.

While there is a huge market that exists, even multinationals like Shell and BP find it difficult to develop and serve this market. There is clearly a wide gap between the RE technologies and solutions and the market. This gap can perhaps be addressed by identifying and sensitizing the existing institutions. The institutions that have the reach and that are there already. Some of these institutions link up to a national level apex institutions such as the rural banks that link up with NABARD. In such cases, there few points of influence one has to work on. At the same time there are some areas such as Semi-urban and rural micro-enterprises like the roadside dhabas that remain untouched by any such institution. Perhaps new institutions are also needed.

Without a proper network of institutions that link up with apex institutions, Renewable Energy will remain a dream for most of us in the developing world!

Institutional Matrix for Renewable Energy Development in India

Economy Sector	Technologies	Institutions	Apex bodies	
Grid Connected	Windfarms Microhydro Solar PV	Utility, SERC Investors & Developers IREDA/ Fis MNES Consulting & Research State Nodal Agencies Industry Associations Suppliers & Manufacturers	CERC, SERC, Ministry of Power, MNES, INWEA	Well Evolved

Industry	Waste heat recovery Cogeneration Industrial Solar Water Heating Waste disposal	Industry Associations IREDA/Fis MNES Consulting & Research State Nodal Agencies MNES Suppliers & Manufacturers	CII, FICCI, BEE	Well Evolved
Domestic Urban	Solar Water heating Solar lighting Solar Passive building design	Electric Utility Supplier outlets Building material supplier outlets Electrical accessories supplier outlets Architects & Association of Architects Housing Finance Companies & Banks, Schools, Hospitals	AIWC Association of Architects Builders Association IEEMA	Institutions in place. Should be sensitised
Rural Domestic	Solar Water pumping Solar Water heating Solar lighting Wind Pumps Productive use applications Biomass applications Efficient cooking Biogas	Women's Self Help Groups, Rural Banks, Micro Finance Institutions Rural NGOs, Industry & Multinationals sourcing material and products from rural areas Industry & Multinationals servicing the rural Development sector programs of the government Government agencies, State Nodal Agencies, MNES Power Utility	NABARD AIWC MNES	Such Institutional linkages are almost missing or do not exist on the scale desired. Efforts to create these linkages should be taken up on a priority basis
Semi-urban, rural micro-enterprises (Roadside dhaba's, eating places,	Efficient Cooking Solar lighting Solar passive building Solar water heating	Petrol Pumps on the highways, Multinationals servicing the rural sector SHG Panchayat Power Utility	NABARD, PCRA, Oil Companies AIWC Tribal Development Agency	Such Institutional linkages are almost missing or do not exist on the scale

small commercial establishments	Solar cookers Productive use applications			desired. Efforts to create these linkages should be taken up on a priority basis
Rural Industry/ enterprises	Solar lighting Productive use applications Solar Water heating Solar Cooking Solar Passive building	Rural Banks, Industry & Multinationals sourcing material and products from rural areas Rural NGOs, State Nodal Agencies		Ministry of Rural Development Tribal Development Agency, State Khadi departments, Government Agencies
