International Training Programme on "Renewable Energy: Techno-economic, Finance and Socio-environmental Issues:

Background and Objectives: Integrated Research and Action for Development (IRADe) organized a two weeks International Training Programme in December 2004 on "Renewable Energy: Techno-economic, Finance and Socio-environmental Issues" The training course was sponsored by Ministry of Non-conventional Energy Source, Govt. of India. The specific objectives of the training course were:

- To give a broad based understanding of the renewable energy in the overall context of energy sector planning and global energy and environmental issues.
- Why renewable energy is needed for energy security and environmental considerations. Give national and global energy perspectives and discuss new paradigms to reduce fossil fuel dependence.
- Techno-economic understanding of major renewable technologies. Discuss cost-benefit framework as well as relative comparisons with fossil fuels and pricing issues.
- To stress the need for innovative finance approaches and micro credit so that the people take responsibilities of financing at local level.
- Hands-on experience about understanding of their own country's energy balances. This is necessary for reducing dependence on subsidies.
- Visit Renewable Energy project sites

Organization and Participation:

In all, eleven participants attended the 2nd International Training Course, representing 10 organizations. Out of these six are from Africa (List is attached as Anexxure1). The participants were from were from middle, senior level ranks officers (Director, Executive Director, Advisor, Assistant Professor, Assistant lecturer) from ministry, Non-governmental organizations and from different universities Asia and Africa. The participants were from following background and work experiences;

- Energy planning for buildings,
- Rural electrification and infrastructure development

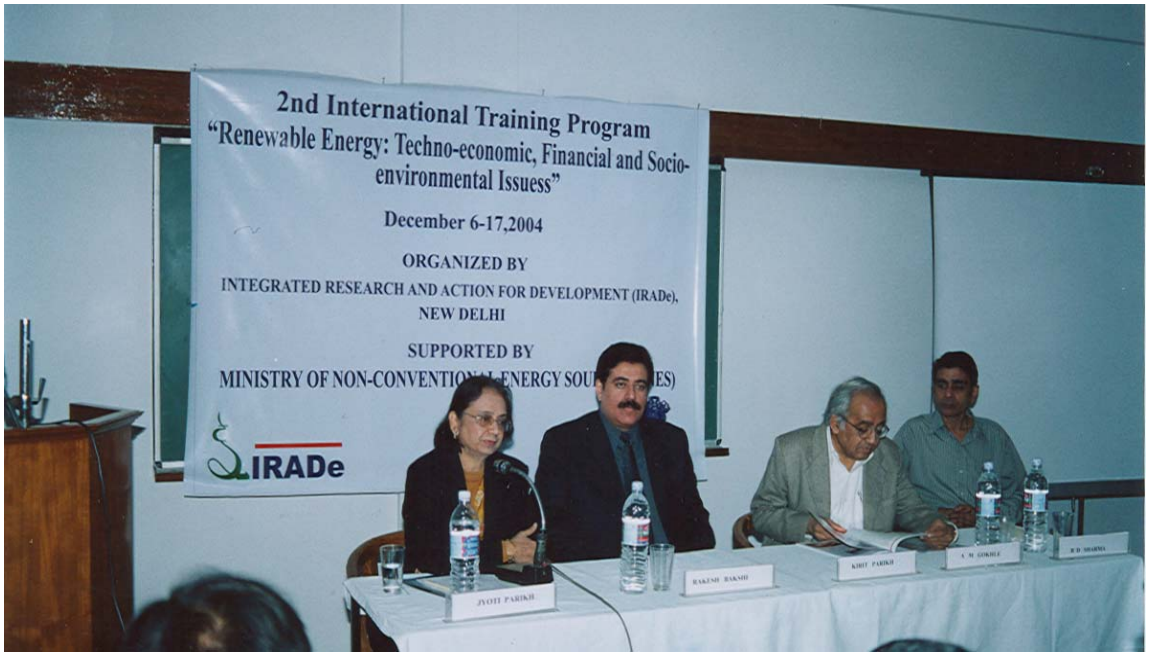
- Electrical engineering and power transmission
- Trainer, Coordination
- Environmental Science
- Accountant
- Electrical engineering and energy efficiency
- Rural economy and energy
- Academic (Energy)
- Financial Manager (Energy)

Inaugural Session

Welcome Address: Dr. Jyoti Parikh

Dr. J. Parikh welcomed the participants on behalf of Integrated Research and Action for Development (IRADe). She thanked Ministry of Non-conventional Energy Sources for giving opportunity to organize International Training Programme on Renewable Energy. She also thanked to Secretary, MNES who could not be present during the inauguration session for health reasons. She also thanked Mr Rakesh Bakshi CEO of Vestas RRB, for taking time to take part in the inauguration session. She praised the remarkable achievements of Vestas RRB in the field of Wind power generation in India.

Professor Jyoti Parikh raised concerns related to renewable energy and environmental issues in the context of developing countries. She also gave the introduction about the training program. She highlighted the role of energy as a key input to social and economic development. Energy use has increased steadily during the last century and its demand is expected to further increase as economic growth occurs in developing countries, incomes rise, the trend toward urbanization continues and as the process of globalization moves forward through efforts to decouple energy use and economic growth are under way in many countries. She suggested to use clean development mechanism (CDM) to bridge the gap between affordable and market price of renewable energy, by earning carbon credits for the development of renewable energy sources.



Professor J. Parikh, Executive Director, IRADe addressing the participants during the inauguration session

Inaugural address by Rakesh Bakshi, Managing Director, VESTAS RRB

Growing at about 30% per annum, the wind energy sector in India is emerging as an economically viable option to meet the current power deficit of the country. With hundreds of wind turbines producing clean green energy at an economically competitive cost, the Indian wind energy sector is emerging as the fifth most rapidly growing market in the world. More than 97.5% wind farms in India are installed by the private sector. Renewables play a significant role, especially in the context of the need for abating global warming and mitigating climate change. This is the only fascinating answer to energy since India is aiming at achieving the goal of 'power to all' by 2012. Vestas RRB India Ltd, an Indo-Danish 51:49 joint venture between RRB Consultants and Engineers Pvt. Ltd, India, and Denmark-based Vestas Wind Systems A/S, was set up in 1987 to manufacture wind electric generators (WEG) in India for harnessing of power from wind.

In India wind energy generators of various capacities at different locations in Gujrat, Maharashtra, Madhya Pradesh, Orissa, Tamil-Nadu, Kerala and Karnataka. VESTAS

RRB is the first company to test its V39-500 kW wind electric generator at Centre for Wind Energy Technology (C-WET), an autonomous institution of the ministry of non-conventional energy sources

India is harnessing solar energy for hot water production in hotels, hospitals, etc. It is still growing and turnover is very marginal.

While the majority of equipment is Indianised but certain components in the wind sector like blades and controllers are imported from Denmark and other European countries. Soon these products will be built locally but we need certain threshold quantities. We can bring the price down with more and more products being manufactured locally," Vestas RRB, recognized the great potential that alternative sources of energy offered, and so committed all his strengths and resources towards developing them. Renewables play a significant role, especially in the context of the need for abating Global Warming and mitigating Climate Change. India has successfully promoted and implemented advanced climate friendly technologies, more particularly by converting renewable sources of energy into heat and power.

More than 50 per cent of the 2800 MW of wind energy produced by the country comes from the wind farms in Tamil-Nadu,

Hiccups

Setting up a wind farm is not a child's play. "We have conditions on grid network which can get erratic and need reengineering equipment to integrate with the network as wind turbines are suited to the local wind conditions.

To erect these projects where nothing exists is a tedious job. "It is quite challenging to go to remote areas where hiring a crane is more expensive than doing a project. We have to reinvent the methodologies and visualize everything before hand"

Future plans

At present, India plans to accelerate its own efforts within the country and enter newer states. It is looking at more viable options like hybrid systems with wind as the

predominant source of energy. We are planning to foray into building wind and biomass hybrids. Both can supplement each other and it is just the question of marrying the two, Vestas RRB has proposed to generate an additional 100 MW of power before March 31, 2005 by setting up wind farms in Tamil Nadu and Karnataka., it is also planning to invest Rs 35 crore by next next year for building a robust equipment which can engineer perfection locally in a cost effective manner.

Mr Rakesh Bakshi CEO of Vestas RRB speaking at the inauguration session of the 2nd International Training Programme

Chairman's Address:

Professor Kirit Parikh, Chairman IRADe, welcomed all participants from various parts of the developing nations. He gave introduction about the Integrated Research and Action for Development (IRADe), its mandate, profile and various activities. He also thanked The Ministry of Non Conventional Energy Sources (MNES) Govt. of India, for its remarkable achievements in the field of renewable energy from the time of its commencement and its future commitments towards renewable energy. He also mentioned about its uniqueness, as it is the only ministry in the world of its kind. The ministry came into being in the country early eighties. At that time gobar gas, later called

biogas, was one of the main programmes-based on converting animal dung and human excreta into “biogas” [Methane +] that was primarily for use as a fuel in domestic kitchens.

He mentioned the importance of renewable energy sources, more so in the present scenario of energy demand. He stressed upon the issues related to energy security of a developing nation as a backbone of a growing economy. The energy security is a matter of concern in the present context of geopolitical and technological development. He also highlighted the various areas of the non-conventional energy sources which are yet to be tapped of are in the pilot stage such as geothermal energy, tidal energy and Hydrogen energy. He gave an overview of the renewable energy processes i.e. material, process, product, energy conservation and available energy in the form of electricity. He also mentioned the importance of such type of international training programmes where experiences of both success and failures can be mutually shared.

Professor Kirit Parikh: Inaugurating the 2nd International Training programme

Vote of Thanks: Dr. B.D.Sharma, Consultant, IRADe

Dr B.D Sharma, senior consultant in IRADe thanked, Ministry of non Conventional Energy Sources for supporting this training programme. He also thanked Mr. Rakesh Bakshi, CEO, Vestas-RRB. for taking out time from his schedule for the occasion and addressing the participants. He also thanked Professor Kirit Parikh and Professor Jyoti Parikh, without their initiative the programme would not have been possible. And finally he thanked the organizing staff of IRADe for their effort for making this event possible.