

Improved Energy Access Using RETs: field experiences
4 February 2006
Magnolia, Habitat Centre, New Delhi
Organized by REEEP South Asia Regional Secretariat

Agenda

8.15-8.30 Registration and Breakfast

8.30-8.45 *Welcome address* – Dr Sameer Maithel, Director, Energy Environment Technology Division, TERI (The Energy and Resources Institute)

Opening address – Mr Mark Runacres, Deputy High Commissioner, British High Commission

8.45-10.00

Panel discussion

Chairman – Dr Mohan Munasinghe, Chairman, Munasinghe Institute for Development

Panellists

- Ms Akanksha Chaurey, Associate Director, Distributed Generation and Rural Electrification, Energy Environment Technology Division, TERI
- Mr Terry Hart, Chief Executive Officer, IT Power India
- Dr Veena Joshi, Focus-in-Charge, Rural Energy and Housing, Swiss Agency for Development and Cooperation
- Dr Arun Kumar, Vice President, Development Alternatives



Summary of the session and discussion

Dr Sameer Maithel

As far as India is concerned, a large number of the population does not have access to electricity, and the government aims to provide electricity to all by 2012. It would be done in both ways: by extending the grid and by using distributed generation. Distributed generation would be done mainly with RETs (renewable energy technologies), which include solar, hydro, biomass, and wind. India has vast experience in RETs as more than 1000 villages have already been electrified with them. The overall experience has been mixed, and it has been a continuous learning process. Long-term sustainability of such projects is one of the key issues, which needs to be addressed. Therefore, the theme of the event is sharing field experience with improved energy access projects based on RETs.

Mr Mark Runacres

The UK (United Kingdom) government has been the main founder of REEEP (Renewable Energy and Energy Efficiency Partnership). It is not only providing significant funds but is also making sure that the partnership moves forward by making people aware on the ongoing support for this process. For instance, support is being provided for an extraordinary fragile habitat and community like Sunderbans, and TERI (The Energy and Resources Institute) has delivered a strategy to the West Bengal Renewable Energy Development Agency. But there exists a need to provide basic infrastructure with the energy. Also, there is still an unsustainable, expensive, and ultimately non-feasible energy generation situation, which has to be made sustainable.

Ms Akanksha Chaurey

A small group of researchers were working on a problem of 'three Rs' namely, reforms, rural electrification, and renewables. The relation came out in the form of rural electrification as the goal, reform as the facilitator, and renewables as the means. Rural electrification is a large sub set of rural energization. A lot of work has been done in reforms, particularly with respect to the Electricity Act 2003 of India. Section 5, of the Act says that bulk purchase of power management of local distribution in rural areas through PRIs (panchayati raj institutions), users associations, cooperative societies, and so on. Hence, rural electricity is opened to entities, which represent communities and NGOs (non-governmental organizations) as well as lowest bodies in the local governance. To implement the targets of national electrification, two major schemes have been formulated: the Rajiv Gandhi Grameen Vidyutikaran Yojna, and the Remote Village Electrification Programme of MNES (Ministry of Non-conventional Energy Sources). Distributed generation is a major part of these schemes as grid extension is not always possible especially for remote villages. Therefore rural electrification cannot be achieved without the utilization of renewables. All forms of renewables have been deployed for achieving the goals of rural electrification. For example, biomass gasifier and large PV (photovoltaic) power plants have been installed in the Sunderbans. Also, home-lighting systems have been installed in many places of India for rural electrification. The major challenge is to ensure their financial and institutional sustainability. Solar PV technology though very expensive, is the most reliable and user-friendly technology. The levelized cost of generation can be brought down from Rs 8 per unit to Rs 6 per unit with particular subsidy and rate of interest. Even at Rs 8 per unit rural electrification is financially viable because universal education is one of the MDGs (Millennium Development Goals), which cannot be achieved without electrification. If

one wants to bridge the gap between the cost of generation and what people can take then one can talk about income-generating activities, livelihood activities, and so on. If such income-generation activities are initiated as a result of electrification then the service provider can recover Rs 8 or more than that. Institutional sustainability can be achieved by forming local committees. For example, in Sunderbans, a VEC (village energy committee) has been formed, which manages the plant in a disciplined manner and avoids theft of electricity. These were some of the experiences shared by the speaker in order to understand, and solve the problem of financial and institutional sustainability of rural electrification projects.

Mr Terry Heart

One of the major activities of the IEA (International Energy Agency) is the PVPS (Photovoltaic Power Systems Programme) in which many countries are participating. The objective of this activity is to contribute to low cost or cost reduction in PV power allocation and to foster market development, increase awareness, and to enhance technology cooperation with non-IEA countries. In India, there is no large PV system of megawatt capacity. Now, such projects should be started. The goal here is to go beyond PV and include other renewable technologies, as PV is not a solution to every thing. One has to think about appropriate RE technology while planning a rural electrification project. The purpose of all these is to improve the supply of modern energy. RE technologies are particularly appropriate for small-scale operations in almost all locations in developing countries. The approach adopted is the collaboration between IEA and REEEP for collection, analysis, and dissemination of information to promote infrastructure requirement for sustainable development. The other approach is raising awareness in multilateral and bilateral donors as to how RE technologies can make this contribution. Many practical guides have been published for this. One can access these for the purpose of both designing and implementing rural electrification projects. The collaboration also provides support in the form of workshops and cooperation with external bodies. Collaboration with developing countries has become one of the key focal points of the IEA, and in particular within the REEEP collaboration. In conclusion, this collaboration of RE for services in the developing countries has shown potential to achieving the targets of MDGs. Within IT power, there are commercially oriented approaches to introduction of RE technologies. Within this framework there has been an investment programme in India in 1998 for PV market transformation initiative where the International Finance Corporation made available 25 million dollars, of which 15 million dollars were allocated to India in private sector business entities that are mostly involved in rural electrification. One of the entrepreneurs has installed more than 10 000 solar home systems on commercial basis without any subsidy, which makes sure that the consumer is satisfied and that he pays because it is done through credit mechanisms. There are two large investments in the state of Karnataka where 75 000 solar home systems are to be installed. This will be done in a commercial way without heavy subsidy. If one has the appropriate finance mechanism, access to credit mechanism, and also if micro finance can be put in place then these technologies can be made affordable to rural consumers.

Dr Arun Kumar

People need automotive toning, lighting, and entertaining service but they do not need electricity. This is the experience derived from real life situation in areas where all sorts of socio-economic service will tell that us people will not pay. People are willing to pay if the services are reliable, and are provided at their doorstep. It is basically the services

which people require not the electricity or technology. The issue of financing was raised, and it was mentioned that the cost of PV electricity is Rs 8 per unit but rural users are not daunted by that. One should look for the opportunity costs. If energy is available then farmers can pay Rs 45 per hour for irrigation service. But it is not the case throughout the year, and at present energy service companies or the banks do not understand this flexibility and expect equal instalments which farmers cannot pay. They can pay twice or thrice a year, and there are very few mechanisms currently available in the country which basically addresses the user. Therefore users are to be put first while providing the services, and they will be ready to pay if services are provided as per their expectations. Second important issue is that energy service leads to economic growth in that area not just siphoning money out of the system. Experiences with biomass say that biomass economy is a great simulator and people have used it. But new mechanisms have destroyed biomass economy in villages. In India, there are places like Bihar and Jharkhand, where biomass economy can be simulated but nobody is interested in financing. RE fixation has limited the options, and if one looks at the entire part of the system then all mechanisms, whether financial or institutional, are available to support that. But the donor agencies or banks are focusing on the RE component only and not on the entire system. Therefore, a systematic approach is needed. There are three challenges to be met. The first is financing. There are programmes where one has to show that the project is bankable in a seven-year or five-year time frame. But if one takes the time horizon as 20 or 25 years then this would certainly not be a problem. Hence, for financing, time horizon is an important parameter. Second important issue is demystification. It is the people who really know better as to what is good for them. If they are integrated and given a choice then one may come up with a fantastic solution. For example, in Bihar, it was thought that the people need electricity for lighting but it was their fourth priority. The other important thing is institutional mechanism. If one looks at biomass then there are two programmes: village electrification programme and wasteland development programme. The wasteland development programme tries to make investment in resurrecting the wasteland to bring them back into agriculture, which could have been more suited for biomass. All these have to be considered to gain systemic efficiencies.

Dr Veena Joshi

The government has a programme of access to certain number of days of employment, which is the last mile access from the government's point of view for its people. But it is certainly not. One has to characterize the reality and set the goals. Not in terms of MDGs but in terms of people, their strength, and their knowledge. When RE technologies are considered, for a number of reasons decentralized biomass options have lost every time. The same happened in 1994 when the PV programme was introduced. And today when we are trying to install PV for decentralized system, PV panels are not available. That is the reality, and the scale does not work when one goes to last mile access. REEEP and IEA can play a very important role in capacity building as they bear very good regional potential. We have to build our capacities. The speakers have talked about finding new solutions. For the same, others will participate only when they have equal stake or equal responsibility. The platform should be designed in such a way so that people like a panchayat president can participate in events like this. For example, a Panchayat Academy in Tamil Nadu is led by a chemical engineer who left science and technology in order to become the panchayat president. He said he wanted to do some work on energy because as the president he would like to pay the bill to the electricity board and not departmental transfer. He had organized collaboration with a large company in Chennai, and wanted to be an ancillary and it was done. The last word is of course reality is whole,

it is not an MDG, it is not about technology, and it is not just energy. And as a human being one needs support for growing skills. One needs some work and if today's work does not lead to additional work in the last mile access then perhaps its chances are staying on being sustainable.

Prof. Mohan Munasinghe

We started in the 1960s with growth and development orientation focusing much more energy from conventional sources. Everything was centralized and government driven. In the mid 1970s the energy crisis was discovered, and then in 1980s environmental issues came up and the focus shifted on renewables. Things like energy efficiency, demand management, energy conservation, decentralized sources, and pricing policy focusing on the poor came up. It was still somewhat government driven. Now we have shifted to a sustainable development type of paradigm, and are looking for sustainable energy development in particular. But one should also think about social capital and community-level glue that binds one society to another, and how energy services can build on that. We will have to balance between centralized sources and distributors, urban and rural, electrification and energy, and the role of private sector and government, and this balance should be very specific. Urban community being very crowded seems to be more vulnerable, and hence mega cities are not really the ideal paradigm for the developing world to follow.

Discussions

Issues like capacity building and making knowledge available for people were raised. Another issue was why, in India, does not one think about biomass technology rather than PV, since biomass is readily available. One participant from South Africa raised the issue about the potential of African countries benefitting from the achievement with regards to rural electrification. Issue of sustainability of biomass plant was raised as subsidy is given for first production and not maintained when it comes for repairs, etc. The villager must be able to sustain himself. The panellists responded to these issues. There is need for transfer of knowledge or experience on RE development in India into Africa. But there is a lot to be learnt in the opposite direction also. Dr Arun Kumar pointed out that we have to know, and really bank on the strengths of the community. We have to put the user, and the community first. Ms Akanksha Chaurey discussed the technology-related issues, and pointed out that technological robustness is one of major parameters, which lead to the choice of RE technology to be used. The chairperson, after thanking TERI, the panellists, and participants, closed the session.