OCCASION

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Report on

Asia-Africa Regional Seminar
on
Small Hydro Power

Organised by
UNIDO Regional Centre for Small Hydro Power
International Network on Small Hydro Power, China
Energy Management Centre - Kerala

11-15 November 2003

Hotel Residency Tower
Thiruvananthapuram, Kerala, India
OBJECTIVES

RECOMMENDATIONS

&

RESOLUTIONS
Asia-Africa Regional Seminar on Small Hydro Power  
UNIDO Regional Centre for Small Hydro Power  
Trivandrum, Kerala, India  

11-15 November 2003

**OBJECTIVES**

<table>
<thead>
<tr>
<th>Objective 1</th>
<th>To exchange views on small hydropower development in Asia and Africa, and its potential for meeting the current and future rural electrification needs.</th>
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<tr>
<td>Objective 2</td>
<td>To study, through case histories, the various models of small hydro power development in the region.</td>
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<td>Objective 3</td>
<td>To examine the potential for development of Pico, Micro, Mini and Small Hydro power development in participating countries.</td>
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<td>Objective 4</td>
<td>To take note of the financing options and policies for small hydro power development in the region.</td>
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<td>Objective 5</td>
<td>To explore the opportunities for local user participation from concept to completion of small hydro projects.</td>
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<td>Objective 6</td>
<td>To identify Action Programmes in each of the participating countries and develop a strategy for accelerated development of small hydro power as a means of sustainable development with the involvement of UNIDO, UNDP and bilateral or multilateral agencies.</td>
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RECOMMENDATIONS AND RESOLUTIONS

This Seminar affirms and asserts the importance of small hydropower generation in view of its economic advantages, environment-friendliness, and impact on poverty alleviation, particularly for the impoverished populations of remote and rural areas of Africa and Asia.

(For definitions and explanations of ideas/concepts contained in these recommendations and resolutions, see Annex.)

1. The Seminar recommends the exchange of research reports and documents related to SHP development in developing countries, between stakeholders/all concerned. The participants call upon UNIDO to establish an electronic SHP database for this purpose for the easy dissemination of information, and serving as a source of/too kit for evidence based policy advocacy.

2. Participants strongly favour the IC-SHP, Hangzhou publishing a periodic e-journal, documenting the progress of SHP development in developing countries, with the help of UNIDO RCs, other relevant institutions and experts.

3. The Seminar resolves to identify and promote best practices in the various aspects of SHP development through UNIDO/IC-SHP/UNIDO Regional Centres and other relevant institutions and experts.

4. The participants note with interest the announcement of the International Seminar on SHP, to be held in Hangzhou, China, in April 2004, hosted by IN-SHP/IC-SHP/UNIDO and call for the organization of a similar seminar in 2004 in Abuja, Nigeria, where the next UNIDO RC for SHP will be established during the first quarter of 2004. The Meeting commends all countries to support and participate in these conferences.

5. The Seminar calls upon governments of developing countries to establish respective national focal points for small hydropower to participate actively with UNIDO, the IC-SHP and the regional centres on small hydropower.

6. The Seminar agreed that the participating countries should co-operate within and among regions on promotion of SHP.

7. The Seminar recognizes that investment and financial resources for the development of small hydropower resources is a major barrier for the utilization of the extensive hydropower resource potential. The participants suggested carrying out studies, meetings and other activities regarding the promotion of local and international financing for small hydropower projects.

8. A suggestion was made for the establishment of a "Capital Alliance for Small Hydro Power Promotion" (CASHPP), or some similar body, for the purpose of raising seed money to serve as seed or venture capital for SHP entrepreneurship aspirants, whether public, community or IPPs. In line with the Global Initiative on
Corporate Social Responsibility (CSR), this Seminar calls for such capital to be funded by a consortium of donors, including business corporations, for use in various purposes of SHP development.

9. This Seminar calls upon relevant government ministries to study the potential of the SHP sector in their countries, and to share plans with UNIDO for further dissemination and action.

10. The Seminar strongly recommends that community-based area-specific SHP projects be conceptualised by UNIDO, in cooperation with national counterparts, for the promotion of rural development, and relevant awareness and training programmes be organized. This is in line with UNIDO's role as a facilitator of community-based SHP projects.

Finally, this Seminar thanks the Organizers of the Workshop, the Government of Kerala and the Government of India, for their hospitality and invaluable services.
ANNEX

NOTES AND EXPLANATIONS

1. **Small hydropower** includes pico, micro, mini and small hydropower generation projects.

2. **Stakeholders/ all concerned** include multilateral organizations (such as UNIDO, UNIDO Regional Centres, UNDP, IN-SHP, IC-SHP); NGOs; IPPs; manufacturers of SHP machinery and equipment; academic institutions and government departments and agencies.

3. **Knowledge dissemination** includes inventory analysis of SHP potential needs, best practices, other resource documentation, eventually serving as a source of, or tool-kit for, evidence-based policy advocacy on SHP. The suggested e-journal should have detailed information of various SHP projects.

4. **Best practices** would include instances of enabling policy environment, local empowerment, impact on rural economic development, leveraging local resources with external sources.

5. Participants urged facilitation of informed discussion, not only of best practices, but also of case histories of unsuccessful ventures, for the purpose of informing interested parties, and prevention of repetition of negative experiences.

6. The participants favoured informed discussions with the official counterparts and focal points on the potential for developing small hydropower with the respective countries. It is noted that the Ministry of Renewable Energy be the preferred counterpart.

7. The Seminar discussed the need for African countries to collaborate on the promotion of small hydropower pilot projects being undertaken by UNIDO as well as the setting up of other sub-regional centres for the continent. The **Regional Centre in Abuja, Nigeria** should be considered as one of the channels of collaboration.

8. The countries of South Asia agreed on a series of regional activities on the promotion and development of small hydropower, which they would like to be further elaborated and implemented by the UNIDO Regional Centre in Trivandrum.

9. It was noted that valuable work had been done on this subject in China and that the International Centre was expanding its capacity in this field, also a UNIDO meeting is planned on this subject in 2004 in Nepal.

10. The proposed **capital fund** could be used for various purposes, including training and equity. It was suggested that access to equity or other support must be opened to project implementers. It was suggested funds should cover productive use, as well as energy component.
11. It was suggested that first generation entrepreneurs could be given seed money for project implementation. Seminar delegates suggested UNIDO conduct a study examining the details, modalities and implications of such a fund, to cover such issues as: guarantees for return, size of eligible projects, grants versus commercial borrowing, field-specific modalities etc.

12. Participants requested the compilation of a sharply focussed list of workable projects. They suggested that the country framework should be confined to capacity building, with the aid of IN-SHP and UNIDO Regional Centres. The Seminar recommends that a series of training workshops on various aspects of small hydropower planning, implementation and research be carried out on a regular basis at the UNIDO international and regional centres on SHP under the overall planning of UNIDO.

13. The Seminar noted the facilities available at IC-SHP, for training, as well as executive visits. It is noted that the duration of training is flexible.

14. The Seminar also took note of UNIDO pilot projects currently under implementation in Mozambique, Tanzania and Uganda. These projects will lead to the establishment of Community Development Centres/ Councils (CDCs) and Common Facility Centres (CFCs), with induction of ICT. The established CDCs by other UN organizations (such as UNICEF) may also be considered as implementing partners for future pilot projects. The Seminar takes note of UNIDO’s availability for further pilot project, upon official request from the relevant nodal national Ministry, usually the Ministry of Industry. The Seminar also notes that, while the request must come from such nodal ministry, implementation will usually be by UNIDO, along with local counterparts which UNIDO will locate, including private sector enterprises, NGOs etc.
PROGRAMME
Inauguration of the
UNIDO Regional Seminar for Small Hydro Power
At
10 AM on 11 November 2003, at
Residency Towers, Press Road, Trivandrum

Welcome & Overview of the Seminar
Mr. Alexander Varghese
UNIDO, Vienna

Presidential Address
Dr. Praveen Saxena
Director (SHP), MNES, Govt. of India

Inaugural Address
Hon'ble Sri. Kadavoor Sivadasan
Minister of Electricity, Govt. of Kerala

Felicitation
Prof. V. K. Damodaran
MD, INSHP, Hangzhou, China

Mr. M. G. Rajagopal
Director, Energy Management Centre, Kerala

Dr. Vinanchiarachi
UNIDO Country Director, Sudan

Mr. I. Hussain
Adviser (Power), North Eastern Council, Govt. of India

Mr. K. S. Sridharan
Chief General Manager, IREDA, New Delhi

Mr. R. Naraynan
Chairman, IEEE Kerala Section

Mr. P. N. Mohanan
Member, KSEB

Dr. V. U. Ratnayake
Special Adviser, Ministry of Energy
Government of Sri Lanka

Mr. Jossy Thomas
Industrial Dev. Officer, UNIDO Reg. Office, Nigeria

Vote of thanks
Mr. K. M. Dharesan Unnithan
Technical Director, UNIDO Regional Centre, Trivandrum
UNIDO Regional Centre for Small Hydro Power, Trivandrum

Asia-Africa Regional Seminar on Small Hydro Power
11 – 15 November 2003, The Residency Tower, Thiruvananthapuram

Programme

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<td>1145hrs – 13.00 hrs</td>
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<td>UNIDO Initiative on Rural Energy for Productive Use – Alexander Varghese, Energy and Cleaner production Branch, UNIDO, Vienna, Austria</td>
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<td>Session II</td>
<td>Role of the UNIDO IC-SHP in providing technical assistance to SHP promotion</td>
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<td>Prof. V. K. Damodaran, Managing Director, IN-SHP, Hangzhou, China</td>
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<td>Session III</td>
<td>About UNIDO-Regional Centre</td>
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<td>K M Dharesan Unnithan, Technical Director, UNIDO Regional Centre for Small Hydro Power, Thiruvananthapuram</td>
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<td>Session I</td>
<td>Small Hydro Power Programme in India</td>
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<td>Dr. P. Saxena, Director (SHP), MNES, New Delhi, India</td>
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<td>Small Hydro power Development- Potential and rural Electrification</td>
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<td>Arun Kumar, Alternate Hydro Energy Centre, Indian Institute of Technology, Roorkee, Roorkee 247 667</td>
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<td>Session III</td>
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<td>12.11.03</td>
<td>0930hrs - 1100 hrs</td>
<td>To promote the development of SHP for sustainable development: Lessons from the energy policy and practice of China&lt;br&gt;Prof. Tong Jiandong&lt;br&gt;Director General&lt;br&gt;IN-SHP, Hangzhou, China</td>
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<td>1100hrs - 1130 hrs</td>
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<td>1130 hrs - 13.00 hrs</td>
<td>Financing Private Small Hydropower Projects in Nepal - A case of Piluwakhola Small Hydropower Project&lt;br&gt;Guru Prasad Neupane</td>
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<td>1300hrs 1400 hrs</td>
<td>Lunch</td>
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<td>1400 hrs - 1730 hrs</td>
<td>Mr. Alem Jamir&lt;br&gt;North Eastern council&lt;br&gt;Agriculture production Commissioner&lt;br&gt;Government of Nagaland</td>
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<td>Ram Prasad Dhital&lt;br&gt;Alternative Energy Promotion Centre, NEPAL</td>
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<td>UNIDO's recent contributions to power sector in Sri Lanka&lt;br&gt;Dr. V U Ratnayake&lt;br&gt;National project Co-ordinator&lt;br&gt;Renewable Energy and Energy Capacity Building project&lt;br&gt;Sri Lanka</td>
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<td>15.11.03</td>
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Welcome
Prof. V. K. Damodaran
MD, INSHP, Hangzhou, China

Report and Recommendations of the Seminar and Status Report of the UNIDO Regional Centre
Sri. Alexander Varghese
UNIDO, Vienna

Presidential Address
Prof. Tong Jiandong
Director General
IC-SHP, Hangzhou, China

Address of the Chief Guest
Sri. V. Ramachandran
Vice-Chairman
State Planning Board, Kerala

Country Felicitation
Bangladesh
Nepal
Nigeria
Rwanda
Sri Lanka
Sudan
Tanzania
The Philippines
NEC
UNIDO - INDIA
World Bank

Vote of thanks
Mr. K. M. Dharesan Unnithan
Technical Director, UNIDO Regional Centre, Trivandrum
REPORT
Report on
the Asia-Africa Regional Seminar on Small Hydro Power
held at Hotel Residency Tower, Thiruvananthapuram,
Kerala India from 11-15th November 2003

God's Own Country, Kerala was the host for the Asia-Africa Regional Seminar on Small Hydro Power, organised by UNIDO Regional Centre & Energy Management Centre. The seminar was held from 11-15 of November 2003 at Hotel Residency Towers, Thiruvananthapuram, the capital city of Kerala State. The venue is very close to the Government Secretariat and important Government and other offices.

The participants are experts in the field of SHP from India, China, Bangladesh, Nepal, Nigeria, Rwanda, Sri Lanka, Sudan, Tanzania, Uganda and The Philippines. Almost all participants were arrived on 10th November 2003 and accommodation to them were provided in the Seminar venue hotel and near by hotels.

Inaugural Session

The Seminar was inaugurated by Sri. Kadavoor Sivadasan, Hon'ble Minister for Electricity, Government of Kerala, and at 10AM on 11th November 2003. Dr. Praveen Saxena, Director (SHP), Ministry of Non-Conventional Energy Sources (MNES), Govt of India presided over the function.

Sri. Kadavoor Sivadasan, Hon'ble Minister for Electricity, in the inaugural address pointed out that "The rising cost of thermal power, harmful carbon dioxide emission from diesel power plants and the negative environmental impacts like submergence of forests, demand renewed emphasis on small hydro power as the most feasible alternate power generation model. The Minister said that there are about 400 SHP sites identified in Kerala with a total installed capacity of 800 MW and annual power generation potential of 2000 MU.

Dr Praveen Saxena, Director (SHP), MNES, Govt of India, while delivering his presidential address stressed the need for utilization of local natural resources while attending rural power development programmes. He cautioned that such initiatives would not initially aim for a quantum shift in the lifestyle of rural people. Prof.V.K.Damodaran, MD, INSHP, Hangzhou, China; M. G. Rajagopal, Director, Energy Management Centre-Kerala; Dr. Vinanchiarachi, UNIDO Country Director, Sudan; Mr. Alem Jemir, Agriculture Production Commissioner, Nagaland; Mr. K. S. Sridharan, Chief General Manager, IREDA, New Delhi; Mr Karuppankutty, Chief Engineer (SHP) KSEB; Dr. V. U. Ratnayake, Special Advisor, Ministry of Energy, Government of Sri Lanka; Mr. Anil Arora, United Nations Development Programme, New Delhi and Mr Jossy Thomas, Industrial
Development Officer, UNIDO Regional Office, Nigeria addressed the gathering. Mr. Alexander Varghese Industrial Development Officer UNIDO, Vienna, while welcoming the participants explained the initiation of UNIDO in providing clean and green power to the rural communities in Asia and Africa. Shri. K. M. Dharesan Unnithan, Technical Director, UNIDO Regional Centre for Small Hydro Power proposed vote of thanks.

**Day - I (11-11-2003) Presentations**

After the inaugural session technical sessions were started. Mr. Alexander Varghese Industrial Development Officer UNIDO, Vienna, presented the first paper on the Cleaner Energy for Productive Use.

In his presentation he explained UNIDO's programme strategy on Rural energy focusing on combining generation and distribution of energy with complementary income generation activities for the rural people and creating community development centers powered by renewable energy. To promote global reach of cleaner energy service, UNIDO has been creating local and Regional Centres partnering with local institution. Also the need for sustainable development and achieving the goals of the Millennium Declaration of the UN, which include halving extreme poverty, ensuring environmental sustainability etc. Different innovative energy programmes were designed by United Nations Industrial Development Organisation (UNIDO).

The second presentation was by Prof. V. K. Damodaran, MD, International Network on Small Hydro Power, Hangzhou, China. In the deliberation he revealed that 82% of global hydro power is yet to be tapped. Undertaking the benefits of SHP and projecting the SHP business potential, he cited SHP development in China, who is now the world leader in this field. Though India commissioned its first hydro power plant in 1897, about 8 years ahead of China, subsequently China went ahead and made tremendous capacity addition in SHP, focusing on Cascade station concept, cluster development, mini grid concept, people's participation and recently on public-private participation. One of the secrets of success of SHP in China is its multipronged development approach of creating community development centers powered by SHP, developing fisheries, irrigation, tourism using the water storage and creating local level development.

The third presentation was done by Sri. K M Dharesan Unnithan. He narrated the evolution of UNIDO Regional Centre at Energy Management Centre with its concept development in 1998 and inauguration of the Centre during April 2003, in order to provide training and technical service for SHP development in Asia and Africa region.

In the after noon session Dr. Praveen Saxena, Director, Ministry of Non-Conventional Energy Sources, Government of India, gave an overview of SHP programme in India. He pointed out that the hydropower share in India has
declined from 44% in 1970 to 25% in 2003. In order to at least maintain this share of hydropower, Government of India has announced, in August 1998 Policy on Hydro Power Development and the Prime Minister has launched the 50000 MW hydropower feasibility initiatives on 24 May 2003. In India, hydro projects up to 25 MW have been categorized as SHP. India, as the only one country with an exclusive Ministry for Non-Conventional Energy Sources, is giving much emphasis on SHP development, particularly in the North-Eastern States and Himalayan region, where lies the maximum untapped potential. Ministry is giving good incentives such as financial assistance for surveys, investigation and DPR Preparation, Project subsidies and support for renovation and modernization.

The second session in the afternoon was presented by Mr. K. S. Sridharan, Chief General Manager, India Renewable Energy Development Agency (IREDA), New Delhi. He elaborated on various financing schemes of IREDA for promoting SHP development. IREDA has sometimes a total of 101 SHP projects as on 31 March 2003 with an aggregate capacity of 311 MW. Satisfied with the progress made in the first line of credit, the World Bank sanctioned a second line of credit to IREDA for a capacity addition of 200 MW.

A traditional cultural programme of Kerala, Kathakali, was arranged for the participants in the evening. The day concluded with the conference dinner.

Day-II (12-11-2003) Presentations

On 12-11-2003, the Second day of the Seminar, Prof. Tong Jiandong, Director General, IN-SHP, China, opened the morning session with the presentation of achievements made in China in SHP. He stated that Small Hydro Power has its own technology that cannot be derived from large hydro power technologies using the scaling down principle. With 42,221 Small Hydro Power stations with a total installed capacity of 28,489 MW generating about 95 billion units annually, China accounts for 39% of the worldwide SHP capacity built. The spectacular growth of SHP in China through several decades of planning and meticulous implementation is a miracle in the history of hydropower development worldwide. The construction of SHP based local grids to serve specific rural supply areas is a unique electricity supply system that China has developed, which has resulted in increasing the rate of expansion of local grids in rural areas and increasing the energy consumption of town and village enterprises and of the households. In view of the fact that cost of equipment forms a greater share of the total cost of SHP development, while in large hydro, where civil works generally takes a higher proportion, Chinese Government has promoted local manufacturing so as to reduce the overall cost of developing SHP stations. China has given more emphasis to reliability and standardization of equipment in addition to cost-effectiveness, even at a cost of 1 or 2% reduction in efficiency.
Sri Arun Kumar, Director, Alternate Hydro Energy Centre (AHEC), IIT Roorkee was the second paper presentor. He stated that, Small hydro power, the clean and environmental friendly most technically feasible decentralized energy generation option for rural electrification is not an economically viable alternative. To make SHP systems economically feasible, the power generation system has to be integrated with other development efforts like rural industrialization, Cottage industries, Fisheries, Irrigation, tourism, etc., as successfully implemented in China. With hardly 10% of the total identified SHP potential of 15000 MW only implemented so far in our country, there is a long way to go now. Although some 86% of all villages have electricity supply, only 31% of households have been able to afford the costs of connection to the grid as well as the internal connection and end-use equipment costs. In the afternoon session country papers were presented.

Cultural programme, Viz., Kuchuppuji Bharathanattiyam and Mohiniyattam, traditional South Indian dances were arranged in the evening.


Country papers were presented by Mr. Abdus Sattar Syed, Expert Fellow, Unnayan Parishod, Bangladesh; Mr. Guru Prasad Neupane, Arun Valley Hydro Power Co., Nepal; Dr. Nishantha Nayanakkara, Senior Lecturer, Department of Electrical Engineering, University of Moratuwa, Sri Lanka; Mr. Alem Jamir, Agriculture Production Commissioner, Government of Nagaland, India; Mr. Ram Prasad Dhital, Alternative Energy Promotion Centre, Nepal; Dr. V. U Ratnayake, National Project Co-ordinator, Renewable Energy and Energy Capacity Building Project, Sri Lanka; Dr. Priyantha Wijayathunge, Professor in Electrical Engineering, University of Moratawa, Sri Lanka; Mr. Alberto Dalusung from Preferred Energy Inc., Philippines; Dr. A. a. Esan, Director, Training and Manpower Development, Energy Commission of Nigeria, Mr. Moses Murengasi, Ministry of Energy & Mineral Development, Uganda; Dr. Jebamalai Vinanchiarachi, UNIDO Representative, Sudan; Mr. Mkumbo from Tanzania.

Mr. Sunil Khosle of World Bank was the moderator. He observed that Governments of many developing countries in Asia and Africa are now trying hard to ensure that the rural community is provided with energy services with the main objective of reducing migration to already congested urban areas and create local rural development. NGOs play a great role as a catalyst to promote small hydro power, advocating for its environmental friendliness, contrary to large hydro and thermal power.

Presentation by Vendors

Presentation by Vendors Viz. Bharath Heavy Electricals, India, Steel Industrials Kerala Ltd., Kerala, VA Tech, Faridabad, India were arranged on 13.11.03.
Day – IV (14-11-2003) Site Visit

A site visit was arranged on 14.11.03 for the participants, to an SHP station at Kallada in a hilly area nearly 110 KMs from Trivandrum. The place is known for its natural beauty. The SHP station was built in the irrigation dam and having capacity of 15 MW. After the visit at SHP station a back water trip was conducted from Kollam to Alumkadavu for the enjoyment of the participants.

Day – V (15-11-2003) Concluding Session and Valedictory function

On the fifth and concluding day of 15.11.03, the recommendations were finalized and the valedictory function was convened. The Chief Guest for the valedictory function was Mr V. Ramachandran, Vice Chairman, and Kerala State Planning Board. Prof. Tong Jiandong, Director General, IN-SHP, China delivered the presidential address. Participants from various countries expressed their views on the seminar and congratulated the organisers for the arrangements. Prof. V. K. Damodaran Managing Director, INSHP, China, welcomed the gathering. The report and recommendations of the seminar was presented by Mr. Alexander Varghese, Industrial Development Officer, UNIDO, Vienna. Sri. K. M. Dharesan Unnithan, Technical Director, UNDI Regional Centre proposed vote of thanks for each and every one.

The five day seminar was concluded with the National Anthem.
PRESS CUTTINGS
The seminar suggested the establishment of a 'Capital alliance for small hydro power promotion' for venture capital funding of such enterprises, whether promoted by public, community or independent entities.

The seminar recommended exchange of research reports and documents related to SHP development in developing countries and between stakeholders. Participants called upon UNIDO to establish an electronic SHP database for this purpose for easy dissemination of information as also for serving as a source of tool kit for evidence-based policy advocacy.

Participants strongly favoured the International Centre for Small Hydro Power (IC-SHP), Hangzhou, China, publishing a periodic e-journal, documenting the progress of SHP development in developing countries, with the help of UNIDO regional centres, other relevant institutions and experts.

The seminar called upon Governments of developing countries to establish respective national focal points for small hydro power, to participate actively with UNIDO, the IC-SHP and the regional centres. It was agreed that participating countries co-operate within and among regions on promotion of SHP.
Seminar on small hydel power from today

Our Bureau
Thiruvananthapuram, Nov. 10
THE Unido Regional Centre for Small Hydro Power here, in association with the Unido-sponsored International Centre on Small Hydro Power and International Network on Small Hydro Power based in Hang Zhou, China, and the Government of Kerala, is conducting a regional seminar on small hydro power (SHP) from Tuesday.

According to the spokesman, the seminar was specially catered to: exchange views on SHP development and its potential for meeting the current and future rural electrification needs; study the various models of SHP development in the region; examine the potential for development of Pico, Micro, Mini and SHP development; note of the financing options and policies for SHP development; explore possibilities for local user participation from concept to completion of SHPs; identify action programmes in each of the participating countries and develop a strategy for accelerated development of SHP as a means of sustainable development with involvement of Unido, UNDP and bilateral or multilateral agencies.

The Unido opened its first Regional Centre for Small Hydro Power in Thiruvananthapuram in April this year. This is a project financed by Unido, the Government of India and the Government of Kerala.
400 small hydel power projects possible in State: Minister

EXPRESS NEWS SERVICE

Thiruvananthapuram, Nov 11: As many as 400 small hydel power projects are possible in the State, according to Electricity Minister Kadavoor Sivadasan.

He was inaugurating a seminar on 'Small Hydel Power' organised by the regional centre of the United Nations Industrial Development Organisation here today. He said that the main problem being faced by the Kerala State Electricity Board was the loss suffered in transmission and distribution. About 33 percent of electricity was getting lost during transmission. The loss had been reduced to 28 percent at present, he said.

The Minister said that the target was to reduce this to 10 percent. He said that sources such as thermal power were not economically and ecologically feasible. He hoped that the State would be aided by the UNIDO in setting up small hydel power projects.

The inaugural session was presided over by Praveen Saxena, director (SHP), Ministry of Non-conventional Energy Sources. Alexander Varghese, United Nations Industrial Development Organisation, Vienna, Austria, co-ordinated the session.

V.K. Damodaran, Hangzhou, China, V.U. Ratnayake, special adviser, Ministry of Energy, Government of Sri Lanka, and Vinanchiarchi, UNIDO country director, Sudan, were among those who spoke.

The four-day international seminar is being attended by delegates from Bangladesh, Bhutan, China, Maldives, Nepal, Nigeria, Philippines, Sri Lanka, Sudan, Uganda, Rwanda and Tanzania.
Move to assess small hydropower potential in State

Our Bureau
Thiruvananthapuram, Nov. 12

THE Energy Management Centre (EMC), under the Department of Power of the State Government, is preparing a master plan for assessing the total small hydropower (SHP) potential in the State.

The exercise, first time in the country, is being undertaken with the help and guidance of UNIDO and the Ministry of Non-conventional Energy Sources of the Union Government.

The project aims at differentiating the feasible SHP sites in the State in terms of the availability of power and the need for power in the localities, including techno-economic viability. A major highlight of the project will be people’s participation. The feasibility study of the potential sites will be conducted with the help of the local bodies.

Another important objective of the master plan is to assess, support and develop the manufacturing capability for SHP machinery in Kerala, especially in the context of liberalisation and globalisation.

As a prelude to this, the State-owned Steel Industrials Ltd Kerala has joined hands with International Network on Small Hydropower for establishing a joint venture equipment manufacturing facility in the State.

A preliminary estimation of SHP resources in Kerala by EMC has revealed that about 2,000 million units per annum could be generated through an installed capacity of 600 mw at over 300 sites, besides several hundreds of locally servable micro projects of a few kilowatts capacity.

Apart from hydropower, the SHP Cell at EMC has been entrusted by the State Government with a consultancy assignment for formulating draft guidelines for the promotion of wind energy. This is in the context of the Government’s plan to come out with investor-friendly policy guidelines for promotion of wind energy by private investors.

Meanwhile, inaugurating a seminar on SHP organised by the regional centre of UNIDO here, the Industry Minister, Mr Kadavoor Sivadasan, said that as many as 400 small hydel projects could be established in the State.

He said the major problem faced by the State Electricity Board was the loss of nearly 33 per cent of power during transmission and distribution. The target was to reduce the loss to around ten per cent, he added.

He noted that thermal power was costly and the alternative was to develop hydel projects. He hoped that UNIDO would extend assistance for implementing small hydel projects in the State.
Standalone SHPs not viable, says expert

Our Bureau
Thiruvananthapuram, Nov. 12

SMALL Hydro Power (SHP), the clean, environmentally-friendly, technically feasible and decentralised energy generation option for rural electrification, is not an economically viable alternative, according to Mr Arun Kumar, Director of Alternate Hydro Energy Centre, IIT-Roorkee.

Speaking on the second day of the ongoing Afro-Asian regional seminar on SHP organised here by the UNIDO regional centre for small hydro power, Mr Kumar said the power generation system had to be integrated with other development efforts such as rural industrialisation, cottage industries, fisheries, irrigation and tourism, as successfully implemented in China, in order to make SHP systems economically feasible.

"With hardly 10 per cent of the total identified SHP potential of 15,000 MW implemented so far in our country, there is a long way to go now. Despite an estimated 86 per cent of all villages having electricity supply, only 31 per cent of the households are able to afford the costs of connection to the grid as well as the internal connection and end-use equipment costs," Mr Kumar said.

Mr Abdus Sattar Syed, a participant representing Bangladesh, presented a country paper. Bangladesh has a total installed capacity of 4,710 MW.

Since 1990, Nepal has been promoting private sector hydropower projects and during the monsoon season from June to November, the power supply is surplus, says Mr Guru Prasad Neyane, Executive Director, Arun Valley Hydropower Development Company, an IPP in Nepal.

The Nepal State Electricity utility is giving incentives to IPPs in terms of seasonal tariff for the dry and wet seasons. The average tariff the utility pays to IPPs is about (Nepal) Rs 4.40 per kWh and the utility sells to the consumer at (Nepal) Rs 6.80. The Government helps the IPPs in getting private land for power projects.

A case study was presented on a 3-MW SHP using turbo impulse turbine imported from Germany, the project IRR being 26.8 per cent. The standalone micro hydel schemes in Nepal which catered only to rural electrification, have a very low plant load factor of about 20 per cent.

This makes them less commercially viable. However, the grid-connected system does have good plant load factor (PLF) in the range 85-95 per cent, the presentation said.

Small hydro no miniature: SHP has its own technology that cannot be derived from large hydro power technologies using the scaling down principle, says Prof Tong Jian-dong, Director-General of International Network on SHP, based in China.

With 42,721 SHP stations having a total installed capacity of 28,489 MW and generating about 95 billion units annually, China accounts for 39 per cent of the worldwide built-up SHP capacity. The spectacular growth of SHP in China through several decades of planning and meticulous implementation is a miracle in the history of hydropower development worldwide.

The construction of SHP-based local grids to serve specific rural supply areas is a unique electricity supply system that China has developed, which has resulted in increasing the rate of expansion of local grids in rural areas and increasing the energy consumption of town and village enterprises and of the households.

In view of the fact that cost of equipment forms a greater share of the total cost of SHP development, the Chinese Government has promoted local manufacturing so as to reduce the overall cost of developing SHP stations. In large hydro projects, it is civil works that generally take a higher proportion of the costs.

China has given more emphasis to reliability and standardisation of equipment, in addition to cost-effectiveness, even at a cost of 1 or 2 per cent reduction in efficiency, says Mr Tong.
Seminar on Small Hydro Power

The Regional Centre for Small Hydro Power of the United Nations Industrial Development Organisation is organising a seminar on Small Hydro Power here from November 11 to 15. The seminar will provide the participants an opportunity to avail themselves of knowledge from the international faculty brought in by the Energy Management Centre, according to a statement from the Centre.
V. Ramachandran, Vice-Chairman of the State Planning Board, addressing the concluding session of the UNIDO regional seminar on small hydro-power in Thiruvananthapuram on Saturday.
Seminar on small hydro power ends

Thiruvananthapuram, Nov 15: The Asia-Africa seminar on Small Hydro Power (SHP) which concluded here today decided to explore possibilities for local-user participation in the setting up of SHP projects.

The seminar called upon various Governments in developing countries to establish national focal points for small hydro power and to participate actively with United Nations Industrial Development Organisation (UNIDO) and its regional centres.

The report and recommendations of the seminar was tabled by Alexander Varghese, UNIDO, Vienna. V.Ramachandran, vice-chairman, State Planning Board was the chief guest at the concluding session.

• ENS
11 November, 2003

Keralam

United Nations Industrial Development Organisation: The Electricity Minister, Kadambor Sivasasad, inaugurates, Asia-Africa regional seminar on small-scale hydel projects, The Residency Tower, 10 a.m.

The Hindu

Malayala Manorama
Mathurboomi et al. 11 November, 2003

മെന്മേരിയിലുള്ള எബിബിമാന്റെ

നാഗരികതാനിരുക്തി

2003 ൽ സമൂഹം എന്ന ഗോപുരത്തിൽ 'ഫൈനാന്‍സ്' സ്ഥാപനത്തിൽ പ്രവര്‍ഥനം ചെയ്തിരുന്നത്. മുമ്പ് നിര്‍ദേശനാ‍മൃഗം എന്ന പദാതാവ് ഇനം വിവിധ പ്രാദേശിക പരിപാലന സമൂഹത്തിലാണ് ഈ പ്രവര്‍ഥനം നടന്നത്. സാമൂഹ്യമായി ഓറഞ്ച് നിലയെ പിന്തുള്ള വിവിധ സംഘടനകള്‍ക്ക് പ്രവര്‍ഥനത്തിന് പ്രാധാന്യമുള്ളതാണ്. പ്രവര്‍ഥനം മുതൽ പോലോ, ഇങ്ങനെ സാമൂഹ്യമായി ഓറഞ്ച് നിലയെ പിന്തുള്ള വിവിധ സംഘടനകള്‍ക്ക് പ്രവര്‍ഥനത്തിന് പ്രാധാന്യമുള്ളതാണ്. പ്രവര്‍ഥനം മുതൽ പെട്ടി ഇൻ‌സാനിറ്റ് ഡെക്ക് എന്ന പതിവ് വിവിധ സംഘടനകള്‍ക്ക് പ്രവര്‍ഥനത്തിന് പ്രാധാന്യമുള്ളതാണ്.
400 എഡ്സ്റ്റ് അമ്മന്മറുത് പ്രസിദ്ധീകരിക്കുന്നത്: മലയാളം

400 Edge Hill അമ്മന്മറുത് പ്രസിദ്ധീകരിക്കുന്നത്

ഗുരുത്വാകർഷക: കേരളത്തിൽ 400 എഡ്സ്റ്റ് അമ്മന്മറുത് പ്രസിദ്ധീകരിക്കുന്നത്തെ നിർണയിച്ചിരിക്കുന്ന പ്രധാന പാഠ്യപുസ്തകമാണ്. ഇത് പ്രസിദ്ധീകരിക്കുന്നത് കേരളത്തിലെ സാമൂഹ്യ സേവന കർമ്മങ്ങൾക്കായി വെള്ളമണ്ണാലാണ്. 1000 എഡ്സ്റ്റ് അമ്മനകളാണ് പ്രസിദ്ധീകരിക്കുന്നത്. 200 എഡ്സ്റ്റ് അമ്മന്മറുത് പ്രസിദ്ധീകരിക്കുന്നത് 1000 എഡ്സ്റ്റ് അമ്മന്മറുത് പ്രസിദ്ധീകരിക്കുന്നത്.

400 Edge Hill അമ്മന്മറുത് പ്രസിദ്ധീകരിക്കുന്നത് മലയാളത്തിൽ പ്രസിദ്ധീകരിക്കുന്നത് മലയാളത്തിലെ വിദ്യാഭ്യാസത്തിന്റെ മുഖ്യ വിഭാഗങ്ങളാണ്. ഇത് പ്രസിദ്ധീകരിക്കുന്നത് മലയാളത്തിൽ പ്രസിദ്ധീകരിക്കുന്നത് കേരളത്തിലെ സാമൂഹ്യ സേവന കർമ്മങ്ങൾക്കായി വെള്ളമണ്ണാലാണ്. 1000 എഡ്സ്റ്റ് അമ്മനകളാണ് പ്രസിദ്ധീകരിക്കുന്നത്. 200 എഡ്സ്റ്റ് അമ്മന്മറുത് പ്രസിദ്ധീകരിക്കുന്നത് 1000 എഡ്സ്റ്റ് അമ്മന്മറുത് പ്രസിദ്ധീകരിക്കുന്നത്.
400 എണ്ണം ഹ്രഗോദാഹരണം മാറ്റിക്കൊണ്ടു
Deshabhimani  dt. 12 November 2003

നിരക്തനപ്രയോഗം സ്വാഭാവികസാന്നിധ്യം

d. പ്രവൃത്തിയെന്താണ്‌?

ബുദ്ധിക്കേശനില്‍ സ്വാഭാവികസാന്നിധ്യം പ്രകാരം പോലും എന്തുമായിക്കൊള്ളുന്നതെന്ന് പ്രതിമുദ്യം നിരക്തനപ്രയോഗം പ്രകാരം കാണാവുന്നതെന്ന് പ്രതിമുദ്യം പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യത്തിന് പറയുന്നു. പ്രതിമുദ്യത്തിന് പ്രതിമുദ്യ പ്രകാരം പോലും എന്തുമായിരിക്കാം എന്ന് പ്രതിമുദ്യ
কলকাতাতে 400 লোকের
স্থানায়িত প্রতিষ্ঠান

কেরালা হামল্লি । ১২ নভেম্বর ২০০৩

কলকাতাতে ৪০০ লোকের স্থানায়িত প্রতিষ্ঠানকে একদম হস্তাক্ষরে কলকাতার সরকারের আত্মসমর্পণের জন্য কলকাতার প্রতিষ্ঠানে আরও ২০০ লোকের স্থানায়িত প্রতিষ্ঠানের জন্য প্রতিষ্ঠানের সরকারের আত্মসমর্পণের জন্য কলকাতার প্রতিষ্ঠানের সরকারের আত্মসমর্পণের জন্য।

কলকাতার সরকারের আত্মসমর্পণের জন্য ৩৩ সম্প্রসারণের মাধ্যমে, ২৫ সম্প্রসারণের অনুকরণে কলকাতার সরকারের আত্মসমর্পণের জন্য। সম্প্রসারণের প্রাক্তন সহ অন্যান্য সম্প্রদায়ের মাধ্যমে সম্প্রসারণের জন্য।

নোট: এই দলগুলির সরকারের আত্মসমর্পণের জন্য ৩৩ সম্প্রদায়ের মাধ্যমে ২৫ সম্প্রদায়ের অনুকরণে।
400 എണ്ണാക്കി ആലോഹം വിറ്റിയ നിരവധി

മൊത്തം ചെയ്ത പഴയവും ചെറുമായ പൊതുമാനവും 400 എണ്ണാക്കി ആലോഹം വിറ്റിയ നിരവധി ഭാഷ മെമ്മോറിയൽ പ്ലാന്റിനെപ്പോലെ 2000 എണ്ണാക്കി ആലോഹം വിറ്റിയ നിരവധി പ്ലാന്റിനെപ്പോലെ

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12 November 2003

Mathukkhandri
United Nations Industrial Development Organisation: The Vice-Chairman of the Stat Planning Board, V. Ramachandran, inaugurates the valedictory meeting of the zonal seminar of Asian and African countries for the scope of small hydroelectric projects, Hotel Residency Tower, 11 a.m.

The Hindu

In media

Kerala Kaumudi

Malayala Manorama
മലയാളത്തിലെ വിവരണങ്ങൾ:
മലയാളുഗ്രന്ഥം: മലയാളമെഴുത്തുകാരനും അനുവദക്കാരനും അഭിനയക്കാരനും ചലച്ചിത്രലയാളിയും മൂന്ന് പ്രസിദ്ധീകരണങ്ങളിലെ പ്രത്യേക ഭാഗങ്ങളിലും നിലനിന്നിരുന്ന പ്രസിദ്ധീകരണം നിരുപക്ഷമായി നിരവധി പ്രവൃത്തികൾ കൊണ്ടാണ് നിര്‍ദ്ദേശമായി പ്രതിഫലിക്കപ്പെട്ടിരിക്കുന്നത്.

Malaayalam Manuscript dt. 16 November 2003

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LIST OF ABBREVIATIONS

1. UNIDO – United Nations Industrial Development Organization
2. UNIDO RC – UNIDO Regional Centre
3. IN-SHP – International Network for Small Hydropower
4. IC-SHP – International Centre for Small Hydropower
5. SHP – Small Hydropower
6. IPP – Independent Power Provider
7. CASHPP – Capital Alliance for Small Hydropower Providers
8. UNDP – United Nations Development Programme
10. CDCs – Community Development Centres/ Councils
11. CFCs – Common Facility Centres
12. ICT – Information and Communication Technology
13. NGO – Non Government Organization
14. CSR – Corporate Social Responsibility