

DETAILED REPORT & RECOMMENDATIONS

SEMINAR: 2nd GLOBAL HYDROPOWER FORUM & INTERNATIONAL TRAINING ON SHP

**Hangzhou, China
18 April to 29 May, 2006**

1. Introduction

The Seminar was attended by delegates from 54 countries (including 15 countries from Africa). The following were the countries represented at the Seminar from Africa: 1. Burundi 2. Cameroon 3. Ghana 4. Kenya 5. Lesotho 6. Liberia 7. Malawi 8. Mozambique 9. Namibia 10. Nigeria 11. Sierra Leone 12. Sudan 13. Togo 14. Uganda 15. Zimbabwe. These delegates were assisted for international travel by UNIDO. Free accommodation, local transportation and food, as well as waiver of training fees and field visit charges were provided by the IN-SHP/Govt. of P. R. China.

2. Objectives

- i) To provide exposure to participants on issues related to SHP development in general and in their own home countries in particular through special explanatory sessions.
- ii) To provide support to African participants to prepare country specific programmes for consideration by UNIDO for implementation.
- iii) To make presentations on IN-SHP's activities on SHP promotion in Sub-Saharan Africa and on SHP issues common in the region.

3. Substantive inputs (set by UNIDO)

Issues and problems related to the design and implementation of SHP systems in African countries, rural energy for productive use and local community participation for faster implementation of rural energy projects.

4. Expected Outcome (set by UNIDO)

Faster implementation of SHP in Sub-Saharan African countries

Training Strategy and the Results obtained

Strategy:

Participate in the Hydropower Forum for 4 days having delegates from 54 countries; have ground realities understood thro' advance field visits and finally come for lectures and handholding for demo project preparation.

Achievements:

1. Through participation in the 2nd Global Forum on Hydropower and interaction with 39 other country representatives, including those from China, the UNIDO delegates from 15 African countries were given to understand the place of SHP in the energy scenario of a country and what role renewable energy can play in the socio-economic development of a nation.
2. While the Forum proceedings contained a number of papers on SHP in developing countries including those from Asia, Latin America and Oceania, the papers containing issues related to SHP from African delegates were also included in the proceedings and this gave opportunities for both sides to understand issues clearly and in addition, evoked the attention of many developed country and international organization representatives to take note of the SHP opportunities in Africa and the need to help the continent. Some international agencies agreed to take up some of the problems for finding solutions.
3. The field visits were organised for full two days length (itinerary attached) with overnight stay between the visits of two days before the class room sessions, so that the participants could get clarified on what they saw and what they heard during the 6 days of interactions and visits. Field visits offered better interaction on scenarios of other countries.
4. Every country team could meet the Director General along with the Managing Director (Tech.) of IN-SHP/UNIDO ICSHP to review SHP activities under UNIDO banner currently ongoing or to work out plans for early implementation of demonstration projects in countries having no such initiative yet.
5. Individually, all delegates had a number of after-session meetings with the UNIDO representative Mr. Alexander Varghese to discuss SHP in the respective countries.
6. Through these meetings, the Government of China have noted the situation in the concerned countries and have considered the requests of the African countries to have at least one small micro hydro power demonstration project (around 30 kW max.) immediately in each country, with the financial & equipment assistance of PR China, technical support of UNIDO and expertise from IN-SHP/ICSHP. The PR China Embassies in the respective countries will be actively involved in this exercise.
7. Each participant was given one copy each of the following books, in addition to relevant presentations on CDs: 1. Small Hydro Power – China's Practice (in English, colour illustrated, 2005 Edition) authored by Prof. Tong Jiandong and edited by Prof. V. K. Damodaran & Mr. Wei Jianghui 2. Small Hydro Power Turbines (in English) authored by Prof. Tong Jiandong. This would help in follow up preparations in the respective countries and for knowing, how income generating activities could be coupled with RE projects for better efficiency, economy and social benefits.

8. At the Conference, Prof. Tong Jiandong announced the donation by PR China of one 26 kW turbine-generator unit with controls, on the previous request of Mr. Alexander Varghese of UNIDO, to a project in a very remote area near the Impenetrable National Park for the endangered Mountain Gorillas in Bwindi, Uganda. This project is planned to be completed in 3 months.
9. All the participants were introduced to the Technical Director (Dr. A. A. Esan) and his team of the UNIDO Regional Centre on SHP in Abuja, Nigeria for Africa and to the Technical Director (Er. K. M. D. Unnithan) of the UNIDO RC in Trivandrum, India for South Asia. Discussions with them could evolve strategies for co-operation in training, skill development, project document preparation and implementation, within the African continent.
10. All the participants were introduced to the activities of IN-SHP Sub-Centre for Africa in Harare, Zimbabwe, and ways of integrating activities under the umbrellas of UNIDO-RC and IN-SHP SC were considered. The reach of UNIDO-RC is expected to be extended through such co-operative ventures.
11. All the country groups were apprised of the procedure for realizing the Chinese offer of aid for micro hydro demonstration, if they feel the country needs such an exercise. The stages were explained as follows: -
 i) A request for donation from the country is to be sent to the Ministry of Commerce, PR China in Beijing through the respective Diplomatic Mission of China in that country, stating that the minimal cost of civil construction and other supports will be borne by the country itself. ii) A copy of this request is to be sent to the Director General of UNIDO ICSHP/IN-SHP in Hangzhou, China. iii) It is desirable that the request be also sent to UNIDO, Vienna. iv) The heads of diplomatic missions and the DG of INSHP would make recommendations to the Ministry of Commerce to include the projects for Chinese government assistance. v) All the relevant technical parameters of the selected site should be sent to ICSHP with survey details as soon as possible. vi) On hearing from the MOC of China, ICSHP will arrange for the equipment and other support required. The implementation is expected to be completed within one year in most cases. vii) It is suggested that sites of capacity 30 kW or below should be selected for inclusion under this programme. This scheme is exclusively for Africa.
12. With the presence of many African countries thro' the efforts of UNIDO and their presentations attracting attention of the whole Hydropower Forum, the Hangzhou Declaration contained two paragraphs on SHP in Africa (annexed) and the need for added emphasis on its promotion in the continent with international agencies also involved in it.
13. As UNIDO PTC-ECP Branch has already involved itself jointly with the ICSHP/IN-SHP technical assistance in some sites in selected countries in Africa, and most of them are in an advanced stage of implementation, it was felt that the countries seeking assistance may be grouped under two heads as at 14 and 15 below.

14. Where prior studies have gone, sites finalised, equipment arrived in the country/on order, implementation in progress etc: [i. Ghana, ii. Mali, iii. Mozambique, iv. Nigeria, v. Tanzania, vi. Uganda and vii. Zimbabwe] the implementation will commence or get completed immediately.
15. Where no preparatory work involving ICSHP/UNIDO/PR China has gone, a second batch of implementation will cover those countries, but decision for Chinese assistance will be taken together. The Countries like i. Burundi, ii. Cameroon, iii. Kenya* iv. Lesotho, v. Liberia, vi. Malawi, vii. Namibia, viii. Sierra Leone, ix. Sudan*, x. Togo (* *means some studies have been made, but sites are yet to be finalized*) fall in this category.
16. CANMET, Canada agreed to give free of cost, the new software developed by them to design small hydro power projects to the interested African countries.
17. Most country representatives requested that ICSHP or UNIDO Vienna may write to the nodal points in the respective countries, sensitizing them on opportunities through SHP and offering to assist them on preparation of policies that are conducive to faster SHP development.
18. Some of the Regulators from Africa appreciated the need for keeping these tiny projects outside the purview of their rigid procedures for project approval.
19. All those who were trained, received certificates to that effect at the end of the training from Prof. Tong Jiandong.
20. During discussions at the training sessions, it was confirmed that a case of fabricating a micro hydro turbine (100 kW) at the Numerical Control Machining Complex at Nairobi, Kenya is noteworthy. But, this organization has no capability in designing turbines. Through technology transfer (possibly from China), it would be possible to fabricate SHP components including a limited number of models of turbines within Africa itself, and this could give an impetus to SHP promotion in Africa. UNIDO and ICSHP can arrange for technology transfer and the UNIDO RC in Abuja could be the facilitator. A case of pico-hydro turbine fabrication in Evboro-II in Nigeria (3 kW) by a local youth, though needs further technical refinement, is again a praiseworthy effort. UNIDO Consultant Prof. V. K. Damodaran has first hand knowledge of both these initiatives during other missions to Africa and endorsed the view of the African participants.
21. The Country presentations pointed out the potential for refurbishment of SHP stations (old, not run, incomplete in advanced stages, destroyed in war etc) in several countries of Africa. This, if followed up through the efforts of RC in Abuja could offer to those countries a reasonable return on their past investment and requiring only a very low cost investment today to get substantial quantities of electrical energy for rural reconstruction. ICSHP can offer technical services.
22. The suggestion to have capacity building for detailed surveys for SHP projects in Africa and prepare Master Plans for SHP development for each country (as initiated by Zimbabwe) was welcomed by the participating countries.

Other meetings

1. The Federal Offices Coordinator of Ministry of Environment and Natural Resources, Mexico, Mr. Rene Bolio Halloran met Prof. Tong Jiandong, Prof. V. K. Damodaran and Mr. Alexander Varghese, to explore the possibilities of establishing a Regional Centre of UNIDO for SHP for Latin America in the capital of Mexico and offered all support from his government. Ms. Erika Imhof, Development Project Officer at IN-SHP headquarters (from Argentina) agreed to follow up with Mexican government on this.
2. Dr. Mohamed El-Gazzar, Executive Chairman of Hydro Power Plants Executive Authority of Egypt proposed to hold the next Coordination Committee meeting of IN-SHP at Aswan, Egypt and expected that a special programme on SHP for Africa/Regional Africa could be organised along with the event in 2007 to promote SHP in Africa.
3. The Technical Director of UNIDO-RC, Trivandrum offered to organise a 10 day training programme for Asia and Africa, with an international faculty towards the end of the current year in Kerala, India.
4. The Technical Director of UNIDO-RC, Abuja announced their intention to hold a SHP Training Seminar along with the formal launching of the RC towards the end of second quarter of 2006.

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SUMMARY OF PROCEEDINGS OF THE 2nd GLOBAL FORUM ON HYDROPOWER FOR TODAY 22-25 April 2006: Hangzhou, China

Presented at the Closing Session on 25 April 2006

Prepared by: Prof. V. K. Damodaran, MD, IN-SHP

The Second Global Forum on 'Hydropower for Today' is concluding successfully today at the conference hall of the International Network on Small Hydro Power (IN-SHP). The Forum had 203 delegates from 54 countries and 37 presentations were made.

The delegates discussed a variety of issues related to hydropower development and were given insights into some interesting new technology developments like the updraft free exit flow turbine and the software package for designing small hydro stations locally.

Further, the presentations at the Forum brought out clearly the regional/country status of hydropower development and the policy structures prevailing in the countries represented, highlighting success, failures and lessons learned with the impacts of policies in focus. Many developing country presentations were concerned about speedier development of small hydropower and why policies which are conducive to such a development are not in place.

Hydropower for rural development, for fighting poverty and broadly for meeting millennium development goals, as well as their application under the CDM and carbon trading scenario were discussed.

Upgrading of traditionally built hydropower plants and refurbishing old projects were identified as an immediate task for hydropower for today, in addition to taking up more hydropower projects – small and large - which would meet the ecological requirements.

The Forum also identified new opportunities for refurbishing of hydropower stations through the Energy Service Company (ESCO) concept as well as under the Clean Development Mechanism.

Creating and maintaining energy markets in developing countries, especially in the rural communities, as well as Public Private Partnership (PPP) in hydropower (including small hydropower) were considered as necessary and viable.

The papers presented extended further to a variety of other technical and managerial issues specific to hydropower, such as sediment management, voltage stability, combining energy efficiency efforts, legal issues covering a broad spectrum of hydropower activities and power sector reforms.

All the Chairpersons, Co-Chairpersons, Authors and the institutions and the respective governments involved, as well as the organizers viz. the International Centre on SHP (ICSHP), United Nations Industrial Development Organization (UNIDO), International Centre for Hydropower (ICH, Norway), the International Energy Agency (IEA), CANMET Energy Technology Centre – Canada and the China International Center for Economic & Technical Exchange (CICETE) have done an excellent job in getting so many countries and other stakeholders to participate and to have a wide spectrum of issues discussed at the Forum.

Hang Zhou Declaration on Global Hydropower Development

Adopted by the Second Global Forum on “Hydropower for Today”

Held at Hang Zhou, P. R. China, from 22 to 25 April 2006

Preamble

Hydro Power, currently having a global share of 15% of all electricity produced, is facing challenges for further development due to rigorous licensing requirements. In an era of Green Power and competitive environment, this renewable energy source, which is as a result of a natural phenomenon, rather than a finite resource like coal, oil or gas, deserves to be utilized increasingly under consolidated planning and management by the governments, with due consideration to issues of social equity.

Declaration

1. The participants to the Second Global Forum on Hydropower for Today acknowledge the efforts of Peoples Republic of China in the sustained development of hydropower including small hydropower, and appreciate the joint initiatives in co-organizing this discussion forum by the International Center on Small Hydro Power (ICSHP), United Nations Industrial Development Organization (UNIDO),

International Centre for Hydropower (ICH), Hydropower Agreement of International Energy Agency (IEA), CANMET Energy Technology Centre (Canada) and the China International Center for Economic & Technical Exchange (CICETE).

2. The Forum recognizes the need to integrate hydropower development with other demands on water resources such as drinking water supply, irrigation, flood prevention, pollution abatement, tourism, environmental protection, regional biodiversity maintenance, and other local economic development needs and requests all concerned to develop innovative methods for realizing this opportunity.
3. The Forum appreciates the need for development of hydropower potential in moderation and the need to have an effective governmental framework to achieve these objectives, as it is governments that should draw up national plans for hydro-energy generation and mandate the amount of river runoff that must be maintained free and to build capacity to manage this critical resource for the benefit of society as a whole.
4. The Forum also recognizes the roles of international agencies in promoting global hydropower development and calls for developing multilateral channel cooperation, and to optimize and ensure maximal use of water resources for the common benefit, through new and revised policies that reflect issues of ecological balance and social equity.
5. The Forum takes note of the fact that the hydro power project inputs are based on impact of submergence and river re-direction as well as on the potential carbon dioxide emissions, and this is inadequate. The Forum recommends that all hydro projects should be covered under the CDM and reasonable mitigation of the impacts built into the project budgets. However, higher compensation will upset the project viability and it is recommended that the international agencies involved in promoting hydro power agree on sustainable guidelines and come up with reasonable cost structures for evaluating the impacts and benefits of hydropower projects, so they can be constructed at reasonable cost.
6. In view of the very low percentage of electrification in Africa and the abundance of hydro resources in the African continent, the Forum considers it appropriate to focus more on environmentally-friendly and economically-viable hydropower development in Africa during the next decade to help in global reduction of GHG emissions.
7. The Forum further calls upon all agencies related to hydropower, to support the promotion of replicable and sustainable models of small hydropower projects, backing income generating activities, non-formal education and training in skills in rural areas of developing countries, and especially in sub-Saharan Africa.

This Second Forum on Hydropower for Today has re-kindled the hope of promoting further, the development of hydropower globally on a new note of high environment compliance and increased social responsibility and pledges itself to the realization of increased role for hydropower in the energy scenario of the World.