

IN-SHP

*International Network
on Small Hydro Power*



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World Expo Special Edition

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NEWSLETTER

Message from the Director General



Prof. Liu Heng
Director General, IN-SHP

I am very happy to welcome you to a special edition of the IN-SHP e-Newsletter. This report contains all the details of our exciting recent event at the World Expo 2010 in Shanghai. The half day Workshop on Small Hydro Power was held on 25th May 2010 as part of UNIDO's "Greening Industries, Greening Cities" week. The setting was the big blue UN Pavilion, a venue well worthy of a visit for anyone visiting the Expo in the coming months.

The event attracted around 150 attendees and we were honoured to have some very distinguished speakers. Providing the Welcome Speech was Mr Yoshiteru Uramoto, Deputy Director General of UNIDO. UNIDO has kept a close relationship with the Centre and intends to continue to do so. He drew on his personal experience of seeing SHP in action in Africa, emphasizing that it means a lot to small communities there.

We were pleased to have Mr Hu Siyi, Vice Minister of the Chinese Ministry of Water Resources (MWR), give an overview of the importance of SHP development in China. He also noted the international role of IC-SHP and the positive feedback for our ongoing Light-Up Rural Africa (LURA) project. The excellent keynote speech was given by Mr Tian Zhongxing, Director General of the Rural Hydropower and Electrification Bureau of MWR in. He emphasized that China's hydropower sector is influential across the world

and has a significant role to play.

I was happy to have the opportunity to talk myself about how SHP promotes better lives, giving some hands-on examples of the job opportunities and local industry boosts that the SHP sector has created within China. The Mayor of Chenzhou City, Mr Xiang Lili, gave further details of the example of Chenzhou, where SHP has become a local economic pillar. The final session of the morning was a panel discussion where questions were opened to the floor. This rounded the event off with some stimulating debate; you can read the highlights on the final pages here.

I very much hope you enjoy reading about our event. We at IC-SHP would like to give sincere thanks to UNIDO, the Chinese Ministry of Water Resources and all of our speakers and attendees for making it such a success. We look forward to hosting similar activities in the future.



IC-SHP Workshop on Small Hydro Power UNIDO Week at the Shanghai Expo

On 25th May 2010, the International Centre on Small Hydro Power (IC-SHP) hosted a Workshop on Small Hydro Power at the Shanghai Expo. The half day event was part of UNIDO's "Greening Industries, Greening Cities" week and was held in the UN Pavilion.



Around 150 people attended the workshop, a highly successful event that enabled face-to-face dialogue between representatives of government agencies, international organizations and businesses. The schedule for the morning is shown in the Annex.

Welcome Speech

by Yoshiteru Uramoto, UNIDO Deputy DG



On behalf of UNIDO, Mr. Uramoto welcomed everyone to the Workshop on Small Hydro Power (SHP) at the UNIDO Week in Shanghai. He also expressed his sincere gratitude to IC-SHP for their dedication in making the event a success.

Mr. Uramoto commenced by talking about his personal experience of seeing SHP in action in

Africa. He emphasized that it means a lot to small communities in Africa: a miracle that can kick-start all types of ideas and activities. But despite this, he said, SHP development remains limited in Africa. China has given 300 million people the benefit of electricity through SHP. It is now time for other countries to experience the same.

Mr. Uramoto stated that SHP is a low cost, clean, renewable energy that causes minimal environmental impact. By supplying affordable and adequate electricity, particularly in developing countries, SHP leads to economic development and increases employment opportunities while improving local living standards. Due to these many advantages, governments globally are focusing on it as an energy source. China is a leader in SHP, with both abundant hydro resources and "indigenous" technology and equipment. China not only focuses on domestic development, it also supports SHP development in other countries – through technology transfer and related support activities. In



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1994, under the joint sponsorship of UNIDO, UNDP and the Chinese government, IC-SHP was established to promote SHP development worldwide through triangulated technical and economic cooperation among developing countries, developed countries and international organizations. Over the past 16 years, said Mr. Uramoto, UNIDO has kept a close relationship with the Center, using it to undertake SHP projects worldwide. UNIDO is now looking to develop additional triangulated cooperation strategies on SHP in developing countries, particularly in Africa, with IC-SHP as its partner.

Mr. Uramoto finished by saying that the UN pavilion – where the workshop was held – symbolized peace, harmony and prosperity. The workshop held within it would show the importance of SHP as a clean, renewable energy source, highlighting its significance in achieving sustainable socio-economic development. Finally, Mr. Uramoto gave UNIDO's sincere thanks to the Ministry of Water Resources for its support.

Speech by Mr. Hu Siyi, Vice Minister, Ministry of Water Resources (MWR)



Mr. Hu welcomed everyone on a day of beautiful weather and to a unique venue, the UN pavilion at the Expo. He outlined that SHP has been playing a very important role in economic development

around the world, and as part of the greening of global electricity.

He followed by saying that hydropower provides one fifth of the world's electricity; in 55 countries it accounts for over 50% of electricity generation, and over 90% in 25 countries. He noted that developed countries have developed most of their accessible resources but that there are still many opportunities in developing countries.

China has now over 45,000 small hydropower plants producing over 160 billion kWh per year. This is 30% of the country's total power generation. Electrification of rural areas has been increased from 40% to 99.6%; is important for rural electrification and rural economic development.

In terms of greenhouse gases (GHGs), Mr. Hu said that China will reduce GHGs per unit of GDP by 40% by 2020. SHP has an important contribution to make to this target. SHP development is also important for the Ministry for improving living standards in rural places, replacing wood fuel and improving conditions for farmers. The Ministry needs to provide electricity for 10 million farmers, based on an annual usage of 1,500 kWh per family. They will use SHP, particularly upgrading existing rural hydropower stations.

Mr. Hu went on to discuss the international role of IC-SHP, which has so far provided technical consultation to over 30 other countries. He said that its Light-Up Rural Africa (LURA) project has had very positive feedback from other UN departments and been warmly received by the African countries involved. The Chinese government aims to develop 100 SHP plants in Africa, spread policy knowledge, hold more training and use the International Network for SHP (IN-SHP) to strengthen information exchange between members.



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Finally, Mr Hu emphasized that the Ministry of Water Resources will continue to support SHP development and the work of IC-SHP.

Keynote Speech: SHP's New Missions

Presentation by Tian Zhongxing, DG of Rural Hydropower and Electrification Bureau of MWR



Following Vice Minister Hu's overview, Mr. Tian elaborated on the relationship between SHP and greening industry. He commenced by saying that China's hydropower sector is influential across the world. Furthermore, SHP accounts for 30% of China's hydropower output, totaling 45,000 SHP plants.

He went on to say that President Hu Jintao announced at COP15 in Copenhagen last year that China's strategic mission is economic progress and ecological development. China is still a developing country and its economic development is very important. In the next 10 to 20 years coal consumption will increase to 4 billion tonnes annually, yet GHG emissions need to be reduced by 40 to 45% per unit of GDP at the same time.

So, he said, energy control and GHG reduction is still a challenging task. It is therefore vital to develop SHP. China has a large amount of potential capacity available and a mature technology. SHP is cost effective – only 0.27yuan/kWh at its lowest –

and doesn't prohibit development. There is still room for further cost reduction to make it even more competitive. The energy return of SHP is also very high (input:output energy), second only to large hydropower. Other advantages include using SHP

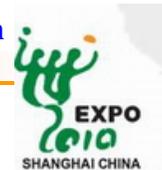
infrastructure to offset the drought in SE China and enhancing the ecological environment.

SHP must be build in an environmentally friendly way, however, Mr Tian then reminded. He mentioned some management problems in the past with over-development or development not in accordance with regulation. The authorities have now developed ways to overcome this. Four shifts are needed, he said:

- Transform away from over-development and free certification
- Transform away from emphasis on newly established projects to refurbishment
- Make sure profits go into local development and to local farmers
- Change from a power focus to an ecological improvement focus

Mr. Tian Zhongxing stated that the Chinese government aims to reconstruct 20,000 old hydropower stations, while improving planning, designated resources and emphasized regulations. They will involve small farmers with SHP development to ensure that it doesn't harm there interested.

He finished by saying that SHP is included in the Renewable Energy Law of China. He hopes that SHP will play a big role in reducing China's GHGs and also a big role internationally, through projects such as LURA.



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SHP and Promoting Better Lives Through Green Energy Application

Presentation by Prof. LIU Heng, Director General of IC-SHP



Professor Liu commenced by clarifying that the term SHP usually refers to hydropower plants from 5 to 15MW. He then outlined why it is such a popular technology:

- Technically straightforward
- Serves remote areas
- Economically acceptable
- Able to control environmental impacts

He noted that China is very successful in developing SHP rapidly to serve remote areas and that now other countries can learn from the example. Professor Liu went on to give some examples of the benefits that SHP has provided. In one county it has provided 52,000 job opportunities, with 47MW of installed capacity and increased economic growth for the area.

In another example from Guangxi province, SHP has enabled the development of cement, paper and iron ore industries. This has improved the living standards for rural people, as well as the ecological environment and creation of tourism opportunities.

In summary, he stated that SHP helps poor people out of poverty. Finally, he introduced the

International Centre on Small Hydro Power (IC-SHP).

Case Study: SHP Greening Chenzhou City Development

Presentation by Xiang Lili, Mayor of Chenzhou City, Deputy Secretary of Chenzhou Municipal Committee of the CPC



Mr. Xiang Lili presented the successful case study of SHP in Chenzhou City. He started by stating that their preferential policies for SHP development were based on 3 aspects:

- Ecological development ideology: The emphasis was put on replanting forest to improve water management, making more water available for SHP plants.
- Promoting industrial energy structure change: A shift from fuel to SHP was promoted. The local government made plans in conjunction with industry for green changeover, but sticking within the idea of 'reasonable' SHP development.
- Policies for SHP promotion: The local government took a leading role, making credits available for companies.



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Based on their approach, Mr Lili said that by 2000 Chenzhou had 1.09 GW of installed capacity, and in the 10 years to 2010 this was increased by a further 628MW. Since the 1990s Chenzhou City has

invested over 610 million yuan in the electricity infrastructure, reaching 220,000 households. This is at an average cost of 0.5yuan per kWh.

Mr. Xiang also stated that SHP has become a local economic pillar and that Chenzhou Power company is now internationally listed. But he concluded by saying that SHP relies on contribution and support from the relevant stakeholders. He sincerely hoped that Chenzhou City can work with IC-SHP and other institutions and also extends a warm invitation to Chenzhou for sightseeing and investment.

Panel Discussion & Wrap Up

- Xing Yuanyue, Deputy Director, Hydropower Bureau of Rural Electrification of MWR
- Cheng Xialei, Director General, Hangzhou Regional Center for Small Hydro Power
- Wang Hangwei, President of Board, Zhejiang Jinlun Electromechanical Co. Ltd
- Xiang Lili, Mayor of Chenzhou City



The final session was a panel discussion with questions from the floor.

Q1 from Joseph Martin, President of Board, Norcan Hydraulic Turbine Inc. Canada

What policies and incentives are there for refurbishment of old SHP plants in China?

A1 by Xing Yuanyue, Deputy Director, Hydropower Bureau of Rural Electrification of MWR

That's a good question. We have a lot of old SHP stations in China from the 70s and 80s. The Chinese government provides funds for improvements and upgrading. There is no policy for fixing tariffs, but we provide funds.

Q2 from Huang Wenbao, President of Board, Changsha Huaneng Automatic Control Group

As a local leader, in the past years we have received many criticisms for our SHP development. This has been some recent improvement, but we think that the government should give SHP more support.

A2 by Xing Yuanyue, Deputy Director, Hydropower Bureau of Rural Electrification of MWR

I think that the speeches of Vice Minister Hu and Mr. Zhongxing this morning gave the evidence of our support for SHP. In the past, there have been some negative impacts, but through hard work we are removing these. Through development of natural resources our country's future direction will be clean and renewable energy. With the highest economic return we attach much importance to hydropower, particularly SHP.

Our 12th 5 year plan will further increase government support for SHP. We are currently discussing the possibilities for preferential tax policies and SHP grids. The tax policy will increase investment support from industry.

Q3 from Zhu Xingjie, President of Board, IC-SHP Gansu Base



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The old power stations enjoyed independent networks to provide electricity, but recently those grids are being taken back by the government.

A3 by Xing Yuanyue, Deputy Director, Hydropower Bureau of Rural Electrification of MWR

Another good question. From 1998 we started national grid reform and central government bought some of those independent grids or started joint programmes. So there are increasingly fewer independent self-managed grids. Government encourages them to exist but this does pose some problems – they are not in the national grid reform programme, so may have old cables, less advanced grid management and so on.

Our guidance is that they will be further supported as a model. The state grid wants to eventually include all rural grids into their grid, so with more time, just another 10 years say, they will enjoy the same benefits.

Q4 from Xu Congxiao, Deputy Manager, Zhejiang Jinlun Electromechanical Co. Ltd

Our company exports to and from about 40 countries, but how can China incorporate international standards, e.g. from Germany and the USA, into our standards. The licenses and standards are all in Chinese. Can our industrial association or government departments translate our Chinese standards into English?

A4 by Cheng Xiaolei, Director General, Hangzhou Regional Center for Small Hydro Power (HRC)

This is a very timely question. China is increasing its efforts on this issue. Two years ago we did a research project that led to proposals to synergise our materials and standards with international ones. China's SHP has its own features and experiences. Using EU standards might hinder our development. For example, in Mongolia our equipment can be

used for 300,000 kW, but this is much lower if European standards are used. By not accepting our Chinese standards, the costs are increased considerably.

Translations of our standards are now being undertaken. Firstly, the English versions will be launched very soon. Secondly, the Chinese standards will be promoted in other countries, and thirdly, we will make the Chinese standards internationalized.

A4 by Wang Hangwei, President of Board, Zhejiang Jinlun Electromechanical Co. Ltd

Our company works around this problem. We collected lots of material on international standards and created comparison charts to compare them. We are a Chinese company so a lot of international companies don't know our standards. If partners prefer, we use other country's standards, but we must also always meet the Chinese standards. We will try our best to use IEC standards etc, but where this is not possible, we use the Chinese ones.

Q5 from Song Hui, Deputy General Manager, Changsha Huaneng Automatic Control Group

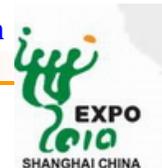
We have two grids in Chenzhou, national and SHP. From the government's perspective, what is the trend for the development of these two types of grids.

A5 by Xiang Lili, Mayor of Chenzhou City

Much will be done to promote both types of grid. The national grid is already good, and SHP grids will be further improved.

Q6 from Liu Heng, Director General, IC-SHP

Please can each panelist provide one sentence on the future of SHP?



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Xiang Lili: Chenzhou is a historical city and we hope that SHP will make it a better city.

Cheng Xialei: SHP is a rising industry, and I am sure that there are lots of opportunities ahead.

Xing Yuanyue: SHP will make many poor rural areas eliminate poverty.

Wang Hangwei: I hope that Chinese SHP companies can make their contribution to international SHP development.



H.E. Mr. Hu Siyi had a meeting with Dr. Uramoto and Ms. Sui from UNIDO before the workshop

Annex: Workshop Programme

| Chaired by Prof. LIU Heng, Director General of ICSHP | |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:30-10:40 | Welcome Speech by Mr. Yoshiteru Uramoto Deputy to the Director General, UNIDO |
| 10:40-10:50 | Speech by Mr. Hu Siyi Vice Minister, Ministry of Water Resources (MWR) |
| 10:50-11:10 | Keynote Speech: SHP's New Missions Presentation by Tian Zhongxing DG of Rural Hydropower and Electrification Bureau of MWR |
| 11:10-11:25 | SHP and Promoting Better Lives Through Green Energy Application Presentation by Prof. LIU Heng, Director General of IC-SHP |
| 11:40-11:55 | Case Study: SHP Greening Chenzhou City Development Presentation by Xiang Lili, Mayor of Chenzhou City, Deputy Secretary of Chenzhou Municipal Committee of the CPC |
| 11:55-12:30 | Panel Discussion & Wrap Up Xing Yuanyue, Deputy Director, Hydropower Bureau of Rural Electrification of MWR Cheng Xialei, Director General, Hangzhou Regional Center for Small Hydro Power Wang Hangwei, President of Board, Zhejiang Jinlun Electromechanical Co. Ltd Xiang Lili, Mayor of Chenzhou City |

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