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HYDRO SRI LANKA

FINAL PROGRAMME

Hydro Sri Lanka

International Conference on Small Hydropower

Kandy, Sri Lanka

22-24 October 2007

www.hydrosrilanka.org

Organizers:



Central Engineering
Consultancy Bureau



International Centre
for Hydropower



Alternate Hydro Energy Centre
Indian Institute of Technology, Roorkee

WELCOME



It gives me great pleasure to extend, on behalf of the Government of the Democratic Socialist Republic of Sri Lanka, a warm welcome to the participants of HYDRO SRI LANKA, the first ever International Conference on small hydro to be held in Kandy, Sri Lanka.

Co-organizers of the event, namely, the International Centre for Hydropower (ICH) of Norway, the Central Engineering Consultancy Bureau (CECB) of Sri Lanka and the Alternative Hydro Energy Center (AHEC) of India have contributed much effort to make the event informative, thought-provoking and enjoyable.

Sri Lanka has a proud heritage of water resource development for irrigation purposes, dating back over 2000 years. Most of the ancient irrigation systems are functioning to this day. On innumerable occasions, when new structures were located using latest technologies and construction begun, engineers have found that our ancestors had already been there before them. Our forefathers, through skillful use of scientific knowledge and immense amount of labor, have transformed arid lands into vast areas of prosperity, at a time when agriculture in Europe was most primitive. I sincerely hope that delegates would find time in their busy schedule to visit at least one of our ancient irrigation schemes.

Hydropower Development, introduced during our colonial period, is a natural extension to this rich tradition.

HYDRO SRI LANKA is being held at a time when we all are concerned about climate change, and are keen on achieving sustainable development and low-carbon economies. Small hydro can, and will, make a significant contribution towards reaching such goals. The HYDRO SRI LANKA conference focuses on matters which are currently relevant, such as environmental issues, power purchase agreements and financing models. It also includes papers on many traditional technical issues related to hydropower development. Thus, it is a program packed with in-depth analysis on a wide spectrum of topics.

HYDRO SRI LANKA is being held at the salubrious and picturesque ancient hill-capital, Kandy. Its many historical sites have made it a popular tourist destination. Besides, due to its location in the central hills, many hydro-development sites are in close vicinity.

I am looking forward to the pleasure of welcoming you at the ceremonial opening of HYDRO SRI LANKA on 21 October 2007.

Hon. Minister Chamal Rajapakse
Minister of Irrigation and Water Management

CONFERENCE PLAN

Sunday 21 October	Monday 22 October	Tuesday 23 October	Wednesday 24 October	
Pre-conference workshop on small hydro pricing	Guest lecture		Guest lecture	
	A	B	A	B
	COFFEE BREAK AND EXHIBITION			
	A	C	A	C
	Prof. Lysne's Award Closing remarks			
	LUNCH AND EXHIBITION			
	A	C	Technical visit (optional)	Start conference tour
	COFFEE BREAK			
B	C			
Registration				
Opening ceremony	Cultural show	Garden party		
Dinner				

A: Technical aspects

B: Environmental aspects

C: Policy issues, investor interests and operational aspects

TECHNICAL PROGRAMME

SUNDAY 21 OCTOBER

1400-1800 Registration at Hotel Topaz

0900-1430 Pre-conference workshop on Pricing of Small Hydro Energy at Hotel Topaz

1830-2000 Inauguration ceremony at Earl's Regency Hotel
Chair: N. Rupasinghe, CECB, Sri Lanka

Welcome speech
N. Rupasinghe, CECB, Sri Lanka

Addresses by Guests of Honour
Prof. S. C. Saxena, Director, IIT Roorkee, India
Hon. T. Hattrem, Norwegian Ambassador to Sri Lanka
Hon. John Senavirathne, Minister of Power and Energy, Sri Lanka
Hon. Maithreepala Sirisena, Minister of Mahaweli Development, Sri Lanka
Hon. Chamal Rajapakse, Minister of Irrigation and Water management, Sri Lanka

2000-2030 Keynote speech
Small hydropower – caught between laws and regulations
Prof. B. Pelikan, President of European Small Hydro Association

2030-2040 Vote of thanks
Prof. S. B. Weerakoon, University of Peradeniya, Sri Lanka

2040-2145 Cultural show and dinner at Earl's Regency Hotel

MONDAY 22 OCTOBER

0830-0900 Plenary session
Chair: S. C. Saxena, IIT Roorkee, India

Guest lecture:
Hydropower development in the green power and competitive era
Prof. Tong Jiandong, IN-SHP, China

0900-1030 Parallel session Topic A: Technical aspects

Hydrocyclones: Alternative devices for sediment handling in ROR projects
H. P. Pandit, Institute of Engineering, NEPAL

Hydrological study of hydropower and downstream water release
B. Z. Birhanu, S. Mkhandi, F. W. Mtaló, R. K. Kachroo, University of Dar es Salaam, TANZANIA

Automation of small hydropower station
R. Gupta, S. N. Singh, S. K. Singal, AHEC, IIT Roorkee, INDIA

Real time digital simulator for small hydropower plants
J. D. Sharma, A. Kumar, M. K. Singhal, AHEC, IIT Roorkee, INDIA

0900-1030 Parallel session Topic B: Environmental aspects

Chair: T. S. Jørgensen, ICH, Norway

Environmental flows for hydropower projects – A case study
P. Kumar, U. C. Chaube, S. K. Mishra, IIT Roorkee, INDIA

Environmental issues and mitigation measures, downstream releases and related issues – An advantage of hydropower generation
S. Shrestha, Butwal Power Company Ltd., NEPAL

Environmental impacts of Khudi small hydropower project on the fishery of the Khudi river during operation phase
M. P. Devkota, Tribhuvan University, NEPAL

Significance of a small dam project in the sustainable environmental management of the Sorau cross border community of Adamawa state of Nigeria
E. M. Shaibu-Imodagbe, Ahmadu Bello University, I. U. Emoabino, Ecosystem Consult Nigeria Ltd., NIGERIA

1030-1100 Coffee break and exhibition

1100-1230 Parallel session Topic A: Technical aspects

Analysis of water and sediment flow in desilting basin of a run-of-river hydroelectric project
T. P. Singh, J. Chandrashekhara, A. K. Agrawal, Central Water Commission, INDIA

Alternative design of a Francis turbine for sand laden water
H. P. Neopane, O. G. Dahlhaug, NTNU, NORWAY, B. Thapa, Kathmandu University, NEPAL

Concept paper for a research on optimum sediment handling in run-of-river hydropower plants

M. B. Bishwakarma, NTNU, NORWAY/ Hydro Lab, NEPAL

Effect of the entrance zone on the trapping efficiency of desilting tanks in run-of-river hydropower plants

S. B. Weerakoon, U. S. Rathnayake, Univ. of Peradeniya, SRI LANKA

1100-1230 Parallel session Topic C: Policy issues, investor interests and operational aspects

Exploiting hydro power potential to maintain energy and water securities in Kerala

K. S. Nair, Centre for Earth Research and Environment Management, INDIA

Adding value at existing hydropower dams in Tanzania: A conceptual analysis for establishing a dam based mini hydropower plant utilizing Lower Kihansi dam environmental bypass flows

L. B. Kassana, Tanesco, TANZANIA

Grid-connected small hydropower (SHP) development: Regulatory issues and challenges

J. L. Bajaj, TERI, INDIA, N. Mukherjee, A. V. Kulkarni, Univ. of Twente, THE NETHERLANDS

Safety management of existing dams

K. R. Arachchi, Sydney Catchment Authority, AUSTRALIA

1230-1330 Lunch

1330-1500 Parallel session Topic A: Technical aspects

Chair: S. B. Weerakoon, Univ. of Peradeniya, Sri Lanka

Selection of freeboard in headrace canals of small hydropower schemes

A. M. Samarakoon Banda, Eco Power, SRI LANKA

Simultaneous multi-point velocity measurement using propeller current meters for discharge evaluation in small hydropower stations

B. K. Gandhi, H. K. Verma, Indian Inst. of Technology Roorkee, INDIA

Tail water recycling for higher efficiency in hydropower – Case study of Kainji-Jebba hydropower dams in Nigeria

I. U. Emoabino, Eco-systems Consult Ltd, A. A. Waheed, O. A. Bamgboye, National Water Resources Institute, NIGERIA

Geomorphological parameters: Are they indicators for installation of a hydropower site?

S. Sarkar, H. G. Gundekar, Indian Inst. of Technology Roorkee, INDIA

1330-1500 Parallel session Topic C: Policy issues, investor interests and operational aspects

Chair: B. Thapa, Kathmandu University, Nepal

Small hydro power projects and CDM benefits – A case study of Obudu Plateau 1 MW small hydro project, Nigeria

E. E. Erokoru, Citizens for Environmental Safety, NIGERIA

Kirloskar Brothers in small hydro

S. Mali, J. T. Kshirsagar, Y. S. Rana, Kirloskar Brothers Ltd., INDIA

Distributed power generation – The small hydro option

S. Chandrasekhar, Boruka Power Corp. Ltd., INDIA

Analytical approach for cost estimation of low head small hydro power schemes

S. K. Singhal, R. P. Saini, AHEC, IIT Roorkee, INDIA

1500-1530 Coffee break and exhibition

1530-1730 Parallel session Topic B: Environmental aspects

Importance of public participation in project implementation: Upper Kotmale hydropower project in Sri Lanka

H. K. Nandalal, University of Peradeniya, SRI LANKA

Social and environmental impacts of a mini-hydro project on the Ma Oya Basin in Sri Lanka

B. Thoradeniya, M. Ranasinghe, N. T. S. Wijesekera, University of Moratuwa, SRI LANKA

Environmental impacts of small hydro power projects

M. P. Sharma, AHEC, IIT Roorkee, INDIA

Study of the dams in the different rivers of Nepal showed more severe impact in upstream compared to downstream

B.R.Jha, S. Subodh, Kathmandu University, NEPAL, W. Herwig, S. Michael, Universität für Bodenkultur, AUSTRIA

1530-1730 Parallel session Topic C: Policy issues, investor interests and operational aspects

Developing small and mini hydro as a tool for sustainable development
P. Kumar, NHPC Ltd., INDIA

Development of pioneer small hydropower plant on the Chirchick-Bozsuv canal in Uzbekistan
I. U. Buranov, O. N. Leshenko, JSC Hydroproject, S. V. Khamidov, PJSC Uzbekenergo, UZBEKISTAN

Small scale hydro power generation in Punjab, India
B. Singh, PEDDA, INDIA

Private participation and state policies in developing small hydro as alternate source of energy in developing countries
S. M. Sinha, AGM, UPRO, INDIA

Private sector investment in the development of Nepal's hydropower
S. K. Sharma, Himal Hydro and General Construction Ltd., NEPAL

TUESDAY 23 OCTOBER

0830-0900 Plenary session
Chair: B. Pelikan, ESHA, Austria

Guest lecture:
Small hydropower development in the context of climate change
Prof. S. Herath, United Nations University, Japan

0900-1030 Parallel session Topic B: Environmental aspects

Aleo small hydropower project, Aleo, Manali
A. K. Goel, Aleo Manali Hydro power Pvt Ltd, INDIA

Malawi aquatic weeds management at hydro power plants
W. W. Liabunya, ESCOM Ltd., MALAWI

Impacts of water resources development projects with special reference to dams and reservoirs
S. K. Sharma, A. Kaushik, C. P. Kaushik, Guru Jambheshwar University of Science and Technology, A. Sharma, Water and Power Consultancy Pvt. Ltd., INDIA

Environmental impacts of mini hydropower projects in Sri Lanka
B. W. H. A. Rupasinghe, S. N. de Silva, Royal College, SRI LANKA

0900-1030 Parallel session topic A: Technical aspects

Chair: D. P. Sangroula, Tribhuvan University, Nepal

Recent renovation and modernization technologies for existing hydro turbine

B. Prabhakar, G. K. Pathariya, Madhav Inst. of Technology and Science, INDIA

Headworks of Sunkoshi small hydropower project – A model for headworks in steep and highly sediment loaded small rivers

H. S. Shrestha, Sanima Hydropower (P) Ltd, T. P. Paudel, Sunkoshi Small Hydropower Project, NEPAL

Enhancement of chaotic time series prediction with real-time noise reduction

D. S. K. Karunasingha, Univ. Of Peradeniya, SRI LANKA, Shie-Yui Liang, National Univ. of SINGAPORE

Study of combined effect of sand erosion and cavitation in hydraulic turbines

B. Thapa, P. Upadhyay, Kathmandu University, P. Chaudhary, Chilime Hydropower Company, NEPAL, O. G. Dahlhaug, NTNU, NORWAY

1030-1100 Coffee break and exhibition

1100-1230 Parallel session Topic A: Technical aspects

Performance evaluation of existing mini hydro power projects of Uttarakand – A case study

J. Prasad, H. J. S. Prasad, GB Pant University, INDIA

Micro hydro turbine test facility at the NERDC

T. A. Wickramasinghe, M. Narayana, National Engineering Research & Development Centre, SRI LANKA

Performance testing and evaluation of small hydropower plants

H. K. Verma, A. Kumar, AHEC, IIT Roorkee, INDIA

Water mills for multipurpose applications

R. P. Saini, A. Kumar, AHEC, IIT Roorkee, INDIA

1100-1230 Parallel session Topic C: Policy issues, investor interests and operational aspects

Small hydro development opportunities and present status in Nepal
H. K. Ghimire, Nepal Electricity Authority, NEPAL

Employment generation through small hydro projects in the Himalayan states
S. K. Sharma, SBA Hydro Systems (P) Ltd., V. Bhardwaj, Indusree Power (P) Ltd., INDIA

Indian initiative to develop standards, guidelines and manuals for small hydropower
A. Kumar, H. K. Verma, AHEC, IIT Roorkee, INDIA

Steps to enhance private investment in hydro sector
D. K. Mittal, G. H. Pharlia, IL&FS IDC Ltd., INDIA

1230-1330 Lunch and exhibition

1330 Technical visit (optional)

WEDNESDAY 24 OCTOBER

0830-1115 Parallel session Topic A: Technical aspects

Chair: P. Ratnayake, Eco Power, Sri Lanka

Computer aided planning for civil works of canal based hydro projects
M. K. Singhal, A. Singh, AHEC, IIT Roorkee, S. P. Singh, IIT Roorkee, P. Rawat, Uttaranchal Jal Vidyut Nigam, INDIA

Coastal destroy due to river bend and drift of sedimentation due to piers
S. M. Mosaddadd, Islamic Azad University of Shoushtar, M. Akhyani, Islamic Azad University of Shahrood, IRAN

Electrical systems of a grid connected 2 MW mini hydropower project at Siripagama
G. R. C. B. Gamlath, CEB, A. Arulampalam, Univ. of Peradenyia, I. H. D. Sumanaratne, SRI LANKA

Comparison of the two methods to measure the water currents
K. Badalyan, National Academy of Sciences, ARMENIA, I. Giginyak, National Academy of Sciences, BELARUS, O. Surova, Inst. of Biology of the Southern Seas, UKRAINE

Sediment management for sustainability of storage projects in Himalayas. A case study of the Kulekhani reservoir in Nepal
D. P. Sangroula, Tribhuvan University, NEPAL

Assessing the potential for internal erosion in glacial moraine core embankment dams
H. Rönnqvist, Vattenfall Power Consultant AB, SWEDEN

Hydraulic design of headrace and tailrace channel for a low-head hydro power plant using partial analysis
M. Karthikeyan, B. V. Mudgal, G. Ravikumar, K. Karunakaran, Anna University, INDIA

0830-1115 Parallel session Topic C: Policy issues, investor interests and operational aspects

Chair: H. K. Verma, AHEC, IIT Roorkee, India

Gariuai mini HEP; The first hydroelectric plant in a new country
J. Høiseth, Norconsult/NORPLAN J.V., NORWAY, K. K. Ximenes, Ministry of Natural Resources, Minerals and Energy Policy, TIMOR-LESTE

Ocean energy – A certain kind of hydropower
B. Pelikan, University of Natural Resources and Applied Life Sciences, AUSTRIA

Outsourcing of project management of small hydropower projects
V. P. S. Chauhan, Kalpan Hydro Company, A. K. Bhargava, SVS Engineering Services Pvt. Ltd., INDIA

Small hydro development in India
P. Saxena, Ministry of New and Renewable Energy, INDIA

Hydro power potential in Uttarakhand
M. C. Joshi, Govt. of Uttarakhand, INDIA

Community owned small hydro projects – An off-grid solution
A. K. Tyagi, UREDA, INDIA

Revitalizing small hydropower in Nepal
R. C. Arya, Nepal Yearbook, NEPAL

New approach for hydraulic design of Francis runner based on empirical correlations
A. Nourbakhsh, O. S. Razavi, H. Khodabakhsh, A. Mehrabadi, Univ. of Tehran, IRAN

1115-1130 Coffee break and exhibition

1130-1230 Plenary and closing session

Chair: H. K. Verma, AHEC, IIT Roorkee, India

Winner of Professor D. K. Lysne's Award for best thesis at the Norwegian University of Science and Technology's Hydropower Development Master Programme:

Sediment monitoring; testing of an erosion sensor

A. Subedi, Butwal Power Company, Nepal

Closing speech

Hon. Vilas Muttemwar, Minister for New and Renewable Energy, India

Closing remarks

N. Rupasinghe, CECB, Sri Lanka

1230-1330 Lunch

TECHNICAL TOUR

A half day optional technical tour is offered. This tour is also well suited for accompanying persons. An air-conditioned luxury coach will leave the conference hotel after lunch on 23 October for Pinnewala Elephant Orphanage. After a cup of tea we will visit the elephant orphanage, which is harboring more than 50 abandoned animals. This government operated facility is probably the best opportunity to see elephants en masse; running loose on the orphanage's open field they make an imposing sight. On our way back we will visit a mini hydro site at Nilambe, and we will arrive Kandy in good time before the social programme of the evening. Price per person: EUR 22.

SOCIAL PROGRAMME

Monday 22 October: Cultural show

At 19:00 the participants will enjoy a cultural show at Hotel Topaz with Sri Lankan music and dance. Following the show we are served a traditional Sri Lankan buffet dinner. These events are included in the registration fee for participants and accompanying persons.

Tuesday 23 October: Garden party

At 19:00 we gather to a barbeque and garden party at the swimming pool of the conference hotels, with a breath-taking view of Kandy at night. The event is included in the registration fee for participants and accompanying persons.

ACCOMPANYING PERSONS PROGRAMME

All necessary information is found with the ticket of the accompanying persons. Accompanying persons meet at 0900 in the lobby of Hotel Topaz on Monday 22 October.

A free shuttle bus service will be set up between the hotels and the city centre every hour.

Post-conference tour

All necessary information is found with the ticket of the tour participants. Tour participants meet at 1400 in the lobby of Hotel Topaz on 24 October.

GENERAL INFORMATION

SECRETARIAT AND REGISTRATION

The secretariat is located in the lobby of Hotel Topaz on Sunday, otherwise outside the conference halls in Hotel Tourmaline. Opening hours:

Sunday 21 October:	1400-1800
Monday 22 October:	0800-1700
Tuesday 23 October:	0830-1700
Wednesday 24 October:	0830-1330

LOCATION

Plenary and parallel sessions take place in the conference halls at Hotel Tourmaline (next door to Hotel Topaz).

CONFERENCE BADGES

For identification purpose, please carry your badge during the entire conference. The Organizing Committee and the technical assistants will carry coloured badges.

MESSAGES

Messages will be displayed on a bulletin board at the secretariat. The following phone and fax numbers can be used to leave messages for the delegates during the conference:

Phone:	+94 81 4473551-5
Fax:	+94 81 232326-8
Email:	topazgem@sltnet.lk/anurab@mclareshotels.lk

CONFERENCE ORGANIZING COMMITTEE

Mr N. Rupasinghe, CECB (chairman)
Mr T. S. Jørgensen, ICH (co-chairman)
Mr A. Kumar, AHEC (co-chairman)
Mr S. R. K. Aruppola, MASL
Mr A. Fernando, CEB
Mr O. Hillestad, ABB
Mr I. Gallage, CEB
Mr. A. Galketiya, CECB
Mr. G.R.A.S. Gunathilake, CECB
Mr R. Pitigala, Lanka Transformers
Mr W. M. S. C. Piyadasa, CECB
Mr P. Ratnayake, Eco Power
Dr R. P. Saini, AHEC
Mr S. de Silva, DFCC
Mr S. K. Singal, AHEC
Mr A. Tonstad, SN Power
Prof. S. B. Weerakoon, University of Peradeniya

Sponsors:



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