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# IHA World Congress Bulletin

## A Daily Report of the IHA World Congress 2009

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### IHA 2009 WORLD CONGRESS HIGHLIGHTS: WEDNESDAY, 24 JUNE 2009

On Wednesday morning, participants gathered for the opening session of the International Hydropower Association (IHA) World Congress on Advancing Sustainable Hydropower, followed by a discussion on energy policy. In the afternoon, participants took part in panel-led discussions on water policy, and on linkages between hydropower and climate change.

#### OPENING SESSION

Refaat Abdel-Malek, President of IHA, chaired the opening session.

Katrín Júlíusdóttir, Minister of Energy, Industry and Tourism, Iceland, welcomed delegates and provided an overview of energy production in Iceland. She explained that only 20% of Iceland's energy needs are met by imported fuels, and said Iceland was focusing on transitioning entirely to hydropower and geothermal power. Júlíusdóttir described Iceland's framework programme for evaluating geothermal and hydropower use, noting the similarities to the proposed sustainability protocol being developed by the IHA.

Showing pictures of geothermal and hydropower generating stations across Iceland, Bjarni Bjarnason, Landsvirkjun Power, outlined Iceland's transition from fossil fuels to renewable energy sources. He noted that 80% of the country's power now comes from geothermal and hydropower, and explained Iceland's research into deep drilling technology for geothermal power. Bjarnason acknowledged concerns about industrial activities, but noted that energy-intensive activities such as aluminum production are more sustainable when powered by renewables.

Philippe Cochet, Hydro Equipment Association, described the role that hydropower can play within the broader energy mix, emphasizing that the global demand for energy will more than double by 2030. He said hydropower expansion will be most significant in developing countries, and that this can complement other, less predictable renewables such as solar and wind power. He noted that although hydropower reservoirs are associated with the release of methane, this varies by region and mainly occurs in tropical areas with shallow lakes.

Hilary Onok, Minister of Energy and Development, Uganda, discussed pathways to sustainability in hydropower development. Noting that Africa has adequate energy resources, he said these are currently underutilized. Regarding the potential use of hydropower in Africa, he said there are over 700 rivers in Africa of varying sizes, and that the Congo, Victoria Nile and other rivers could be developed for hydropower. Providing examples of attempts to sustainably manage water resources, he highlighted legislative issues, and engineering, environmental and social concerns as common challenges.

Participants discussed: the adoption of practices in the EU Water Directive by non-EU members such as Norway; hydropower project development in Uganda; and the economic viability and renewability of geothermal energy. In discussions about the length of time involved in hydropower project

development, one participant noted that it would be useful to identify where bottlenecks occur, and another urged delegates to look at the integrated project management process in the IHA's sustainability assessment protocol.

#### ENERGY POLICY

Kadri Nassiep, South African National Energy Research Institute, facilitated the panel discussion on Energy Policy, highlighting the impact of the financial crisis on the renewable energy sector. He said smaller projects are the most severely affected, but noted that hydro-technology is the most mature of conventional forms of renewable energy. He questioned why hydropower is not realizing its full potential and why pro-hydro policies are rare.

Christoph Frei, World Energy Council, underscored that the 15<sup>th</sup> Conference of the Parties to the UN Framework Convention on Climate Change (UNFCCC COP15) in Copenhagen in December is the most important energy conference of 2009, and discussed the increasing anticipated cost of carbon capture and storage (CCS) as well as the importance of energy conservation through increased efficiency. Frei also stressed energy-water linkages and that the need for water security may outweigh energy security concerns. He urged delegates to consider the risks to energy production from potential water pattern changes.

Robin Martin Kåss, Deputy Minister of Petroleum and Energy, Norway, identified the global financial crisis as the biggest challenge to renewable energy development, calling it a "potential show-stopper." He suggested recent energy price volatility has inhibited investors, particularly in developing countries, and suggested that investments in both renewable energy and distribution grid systems are necessary. Calling for political leadership, he proposed that governments work towards creating predictable regulatory and taxation systems to facilitate project planning and financing.

Stefan Opitz, GTZ, Germany, brought attention to energy services, access to energy, and energy security. Opitz outlined strategies for responding to these challenges, including risk reduction and diversification, promoting regional cooperation, creating enabling political, institutional, and legal frameworks, and strengthening capacity in developing countries. He stated that conventional hydropower will play an important role in meeting future energy needs, and emphasized the need to "tap the untapped potential" of energy efficiency.

Cedric Philibert, International Energy Agency, presented several future global energy scenarios, noting that small changes made now will have a significant impact by 2050. He described the "business-as-usual" scenario as unsustainable, with the largest emissions increases coming from the energy and transportation sectors. He said that emissions from the conversion of coal into liquid fuel will increase as conventional oil supplies are depleted, and said that global hydropower capacity can potentially quadruple.

Stefan Schurig, World Future Council, called for a transition to a carbon-absorbing economy, with a focus on reducing energy demand and increasing bio-sequestration through

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reforestation, as opposed to technological solutions such as CCS. He emphasized that in order for renewable technology to be economically competitive, the true costs of burning fossil fuels must be internalized. He highlighted the benefits of introducing a feed-in tariff that guarantees a minimum price per unit of renewable energy delivered, noting that renewable energy now meets 15% of Germany's total demand.

Christoph Winterbacher, Energy Globe, stressed that all of the proposed solutions will be required to switch to a renewable economy. He said the future challenge is to establish a balance between centralized and decentralized energy production. Winterbacher also highlighted the need for new market mechanisms to facilitate a shift to a new renewable energy economy, and the need to ensure supply security.

In the ensuing discussion, delegates discussed: the importance of UNFCCC COP15 for the renewable energy sector; the need to continue developing hydropower at the national level; renewable solutions to supplying power to remote areas to alleviate poverty; the challenge of securing financing for small-scale hydropower activities due to high transaction costs; the need for incentives for stronger investments; and the potential to upgrade existing hydropower plants.

### **WATER POLICY**

The session on Water Policy, facilitated by Ger Bergkamp, World Water Council, addressed the challenges and potential policy solutions needed to guide the development and operations of hydropower generation.

Luis Berga, President, International Commission on Large Dams, highlighted the intersection of the lack of access to water, sanitation, electricity, and food for many people in developing countries, noting that the absence of these contributes to ongoing poverty. Berga called for the adoption of Integrated Water Resources Management (IWRM) policies, energy efficiency activities, and increased water infrastructure and storage capacity, to develop a holistic strategy for addressing water and development.

Jian Hua Meng, WWF, described the causal chain linking the destruction of ecosystems with the services that they provide and with human livelihoods. He called for the conservation and restoration of ecosystem services, and emphasized the consideration of water quality, quantity and timing of flows. He said that the location of hydro projects must be carefully considered, with adequate attention paid to demand-side management.

Hendrick Larsen, DHI, noting that 40% of all water withdrawals in the US are for power generation, and encouraged reducing the water footprint of energy production. He noted that while wind power has the lowest water footprint of all energy types, that of biofuels is exceptionally high, and that hydropower lies between these two extremes. He said climate change and increased demand must be considered in future water scenarios, and encouraged cross-sectoral collaboration.

Haakon Thaulow, Norwegian Institute for Water Research, highlighted the need to balance hydropower demands and increased water storage with impacts on aquatic environments. He suggested solutions, including looking at hydropower in the context of river basins, as well as designated reservoirs for peak power production in Europe.

Peter Lee, International Commission on Irrigation and Drainage, stressed that food production is the biggest use of water. On potential ways to increase water storage, Lee stressed that agriculture can use non-potable water, and that food can be stored and traded more effectively than the water that is required to produce it. He called for integrated and smarter water, land, food and energy policies.

Alan Vaz Lopes, National Water Agency, Brazil, discussed the challenge of promoting sustainable and multiple uses of water resources, including the need to reconcile hydropower

expansion with other water infrastructure projects, such as navigation and flood control, and allocate water efficiently in order to meet energy demands, consumptive water uses and environmental flows.

Reza Ardakanian, UN-Water Decade Programme on Capacity Development, discussed the UN's interagency efforts to strengthen capacity development, including knowledge production, management, delivery, and evaluation. He stressed the importance of assessing capacity needs, activities and gaps, and developing knowledge-sharing tools. He also suggested that the integration of knowledge development must occur within universities, and called for interdisciplinary curriculum development.

In ensuing discussions, participants discussed the "water footprint" concept, and considered the amount of water used in food production and lost to evaporation from dam reservoirs. Participants also considered increasing the efficiency of current energy generation systems and the potential role of groundwater in meeting agricultural water needs. Panelists disagreed on taking supply- versus demand-side approaches to energy and water management, with one noting that end users must be involved in allocation and use decisions.

### **HYDROPOWER AND CLIMATE CHANGE**

Michael Fink, IHA, facilitated the session on hydropower and climate change.

Halldór Björnsson, Icelandic Meteorological Office, suggested that flexibility must be built into any coherent strategy for the energy sector, to be able to respond to uncertain conditions and to the "unknown unknowns" of unforeseen challenges from both environmental and social changes. He called for a range of policies, from "no-regret" to more difficult ones, and for the continuous monitoring and adaptation of strategies.

Sten Bergström, Swedish Meteorological and Hydrological Institute, commented that the climate is changing but society is changing more quickly, and said that flexibility must be a buzzword for planning. He suggested the use of multiple climate change scenarios, continuous dialogue with scientists, the incorporation of extra margins into planning and design, and the adoption of flexible technical solutions.

David MacKenzie Crean, Hydro Tasmania, identified reduced water flows and changes in the timing of inflows as significant challenges for the hydropower sector. He encouraged the monitoring of climate change effects and the modeling of potential impacts using long-term forecasting tools. Crean advised that the proportion of renewables in the broader energy mix be increased, and said strong government policy, increased international cooperation, and innovative financing from government and the private sector are needed.

Mark Smith, IUCN, described the Water and Nature Initiative and the development of a global network on environmental flows, encouraging the participation of the hydropower industry. He stressed that energy and water security are interdependent, and that basins must be managed to ensure resilience to climate change.

Oluf Ulseth, Statkraft, noted incentives provided by the EU's 2020 targets for the renewable energy sector, and the opportunities for both hydropower and new energy technologies. Ulseth stressed that hydro can only provide part of the solution, and encouraged the electrification of transportation, increased storage capacity, and the interconnection of grids.

In the subsequent discussion, participants addressed: region-specific effects of climate change on precipitation; multi-purpose dams; economic modelling of the value of natural infrastructure; and the relative merits of guidelines from the World Commission on Dams versus the IHA Sustainability Protocol.