There is growing recognition that system-scale (or basin) planning is critical for successful hydropower development. This can help optimise not only energy systems, but also broader environmental, social, water and climate change outcomes.

A strategic river basin approach for site selection, with a comprehensive needs and options assessment, has demonstrated that balance can be found between improved performance of environmental, social, economic and financial factors. Furthermore, basin-scale planning contributes to minimising cumulative and transboundary effects and planning mitigation measures more effectively.

This session addressed ways to optimise strategic planning at the basin level and demonstrate that basin-scale planning generates more economic gains, as well as environmental and social protections, compared to business as usual, project-by-project, planning.

Participants discussed the financial and economic benefits and costs or difficulties as a result of basin-scale planning and presented their experiences of achieving a range of objectives from this kind of planning. The session examined the added value of strategic basin planning, and looked at international case studies of successful initiatives, and the implications for hydropower.

Speakers
- David Harrison, senior advisor, Global Water, The Nature Conservancy
- Guo Xuyuan, chief infrastructure engineer, Yalong River Hydropower Development Co.
- Maria Koenig, GIZ advisor to Mekong River Commission
- Fekahmed Negash, executive director, Eastern Nile Technical Regional Office
- Jeff Opperman, global freshwater lead scientist, WWF
- Öli Sveinsson, executive vice president of R&D, Landsvirkjun
- Jean-Michel Devernay, independent expert (moderator)
David Harrison’s presentation focused on ‘The Power of Rivers: A Business Case’, developed by The Nature Conservancy in partnership with McGill University, The University of Manchester and PSR—which proposes a ‘Hydropower by Design’ (HbD) approach through system-level planning. This concept entails a comprehensive and system-scale approach to hydropower planning and management that fully integrates other sectors from the earliest stages, with the aim of promoting sustainability and optimising the delivery of benefits.

The ‘Hydropower by Design’ approach was described as a way to not only improve social and environmental outcomes of hydropower projects, but also as a tool to reduce business risk and provide a broader set of water management benefits, such as irrigation, navigation, fisheries and water supply.

HbD was introduced as a framework to promote a more inclusive and integrated approach to selecting and developing projects among decision-makers, planners and investors. The approach includes mitigation, offsets and restoration. Thorough data collection and transparent stakeholder engagement are also key to the HbD approach.

An early-stage system-scale approach was deemed both feasible and implementable. Participants discussed how it could avoid poorly-sited projects that create conflict with values, environmental and social objectives and thus avoid costly delays, suspensions and possible cancellations.

The Power of Rivers report includes a review of case studies and also analyses examples such as the experience of implementing the Hydropower by Design approach in the Magdalena basin in Colombia.
The panel discussion highlighted a number of issues. It was agreed that basin planning should be optimised to take into account existing and future planned projects. These could include other renewable energy sources, such as solar and wind, besides hydropower.

The cost of pre-project mitigation measures is very low compared to the total cost of the project, and avoids the risk of costly delays.

Jeff Opperman stressed that the ‘right dam, built right’ approach could increase the performance of any project the Hydropower Sustainability Assessment Protocol. Nonetheless, the project would also have to fit well in the basin system.

Óli Sveinsson emphasised that the cost of pre-project mitigation measures was very low compared to the total cost of the project, and could avoid the risk of costly delays.

Fekahmed Negash brought up the challenge of bringing stakeholders together at implementation level. Guo Xuyuan mentioned the case of China where the government is responsible for basin planning. It was agreed that developers should systematically consult with affected people.

Following up on this, Maria Koenig highlighted the need to build trust between stakeholders. For example, in the case of the Mekong River Commission, there is a track record of long-term stakeholder engagement, including collaborations with organisations such as WWF and The Nature Conservancy.
However, Koenig emphasised that river basin master plans should not consider only engineered solutions but also social and environmental aspects.

**Key outcomes**

System-level planning that addresses multiple purposes, and is carried out at an early stage of project development, can deliver broad economic benefits across a wide range of services.

This type of planning results in financially-sound projects, with improved risk management. It is both feasible and practical to implement such planning using existing tools, demonstrating that the approach does not have to be time-consuming or overly complex.

**What next?**

IHA’s strategic priority for the topic of ‘river basin planning’ will be to develop a white paper or set of recommendations for sustainable and strategic development of hydropower projects, in particular those in transboundary basins.

The white paper or set of recommendations will be developed in cooperation with the relevant IHA knowledge networks and expert group, by researching and reporting on industry good practices on hydropower development at a river basin scale.