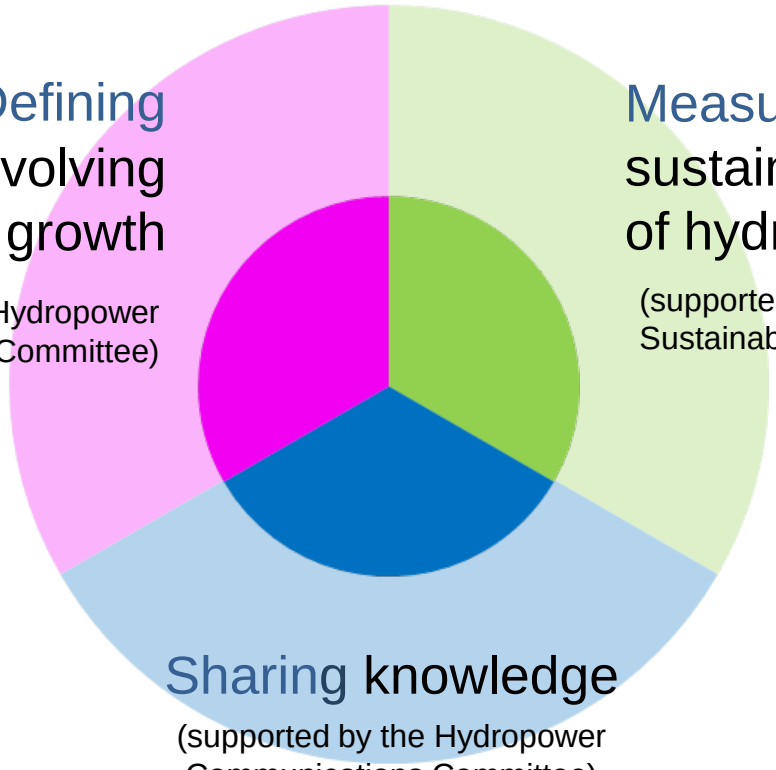
Hydropower: Transboundary Cooperation and Climate Change Adaptation

- Introduction to IHA
- Overview of hydropower;
- Hydropower and climate change;
- Transboundary cooperation; and,
- Hydropower sustainability.

Tracy Lane, Programme Director
International Hydropower Association

IHA's activities

Advancing Sustainable Hydropower:



Defining hydropower's evolving role in green growth

(supported by the Hydropower Development Strategy Committee)

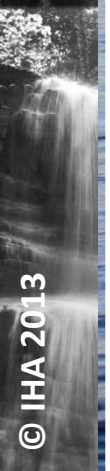
Measuring the sustainability performance of hydropower

(supported by the Hydropower Sustainability Strategy Committee)

Sharing knowledge

(supported by the Hydropower Communications Committee)

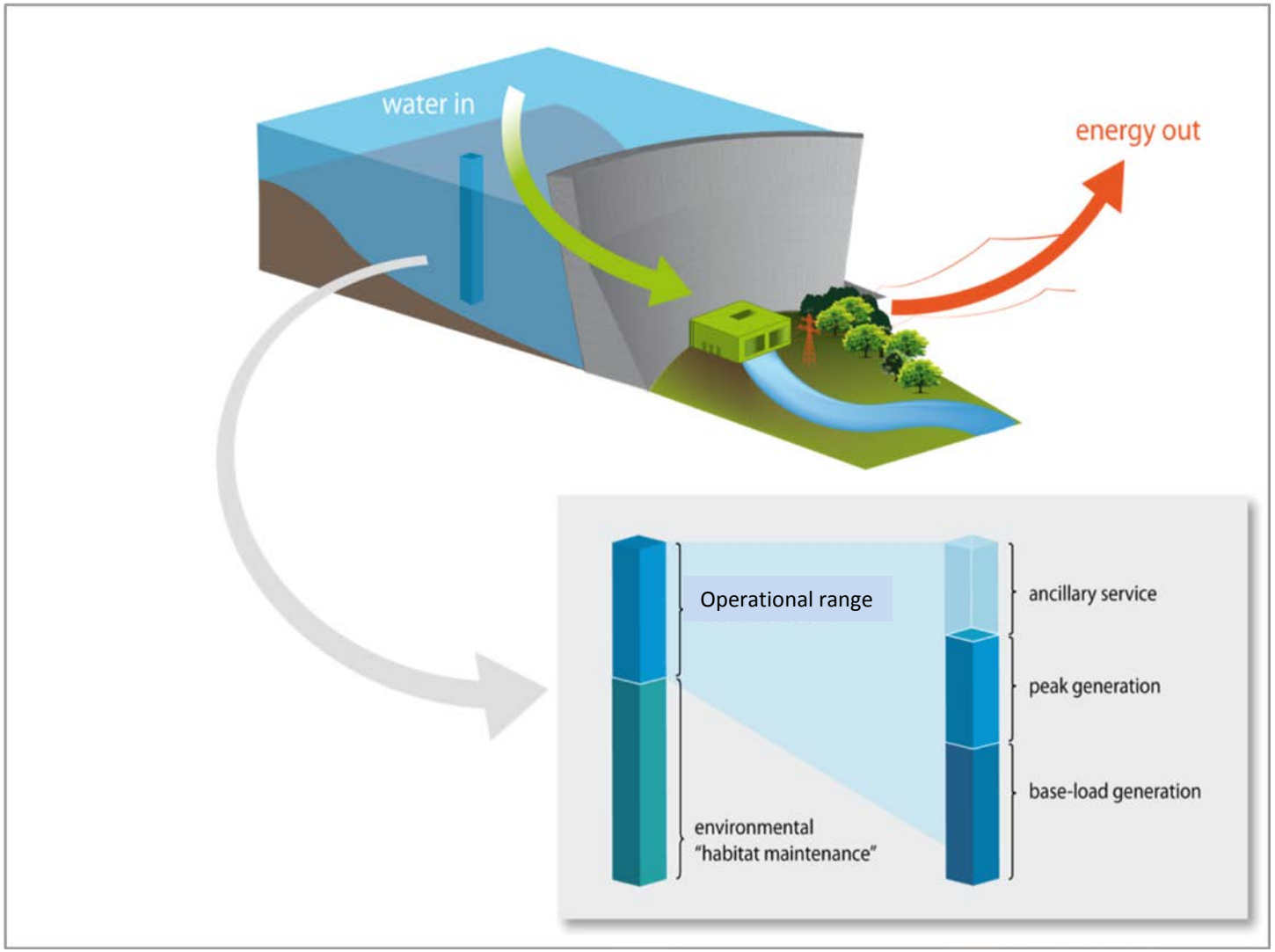




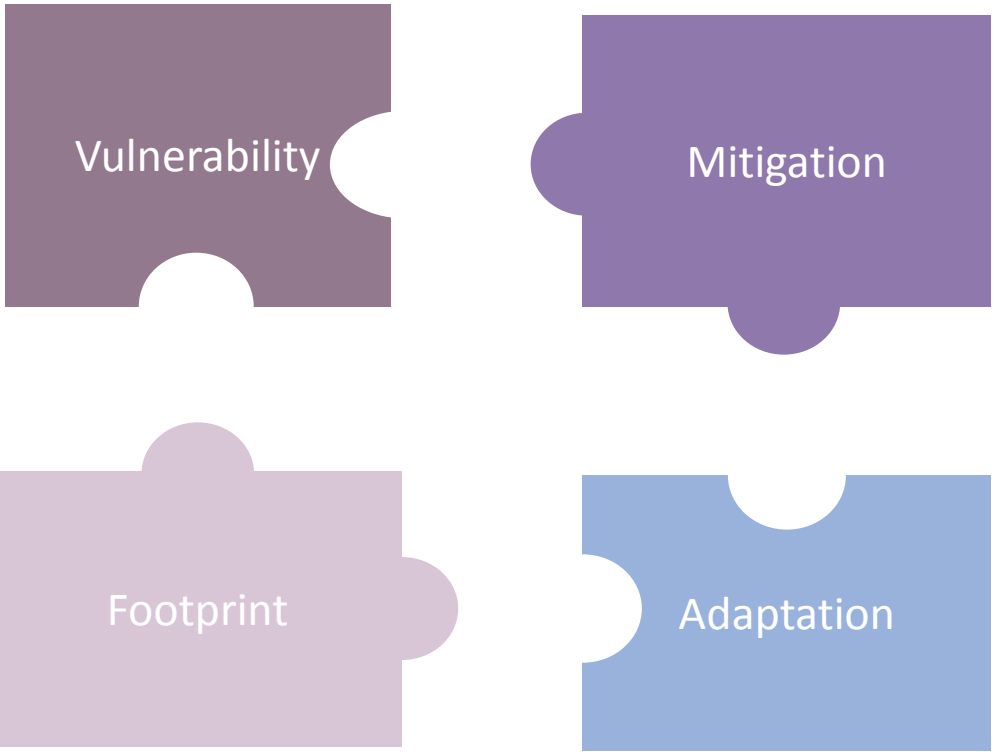
Multiple roles for hydropower in water and energy


- Electricity for heat, power and transport
- Energy storage
- Water storage for
  - Flood protection/drought adaptation
  - Irrigation
  - Water supply and Sanitation
  - Navigation
  - Downstream flow regime
  - etc.


A Multi-purpose Asset



Climate Change: 4 dimensions for hydropower



Hydropower and trans-boundary cooperation: 3 themes

Trans-boundary cooperation

River-basin perspectives	Regional Interconnections	Bringing markets to the resource
• Strategic development • Flood control • Water security • Multi-purpose use of the resource	• Economies of scale • Improved system reliability and affordability • Environmental benefits (greater efficiency) • Improved relations between countries	• Opportunity for economic development • Catalyst for developing energy resources for local population

- Optimum use of the resource
- Benefit sharing

Case study: Arrow Lakes

Project Statistics:

- Capacity: 185 MW
- Location: Columbia River – British Columbia, Canada
- Typology: Run-of-river
- Reservoir built in 1968, hydropower added in 2002

Key Takeaways:

- Vast majority of water management infrastructure does not have a hydropower component.
- Hydropower can contribute to costs of infrastructure, even if added retrospectively.
- Technology advancements made retrofitting of hydropower possible.

Case study: Three Gorges

Project Statistics:

- Capacity: 22.5 GW
- Generation (2012): 98,100 GWh
- Location: Yangtze River – Hubei Province, China
- First operations in 2003, full operation in 2012
- Primary purpose: flood control. Co-benefits: hydropower and navigation.

Photo: China Three Gorges Corporation

Key Takeaways:

- Built to decrease the risk of flooding during peak rainfall season, and store and distribute water during the dry periods.
- Likelihood of flood severity and frequency expected to increase (record floods in 2012).
- Prior to yearly flood season, reservoir is drawn down to enable absorption of floodwaters, which are then gradually released.
- Hydropower improved the economics of the project.

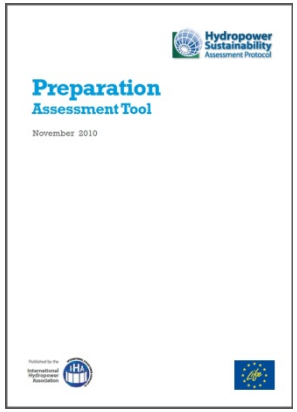
Hydropower Sustainability Assessment Protocol - Aspects Covered

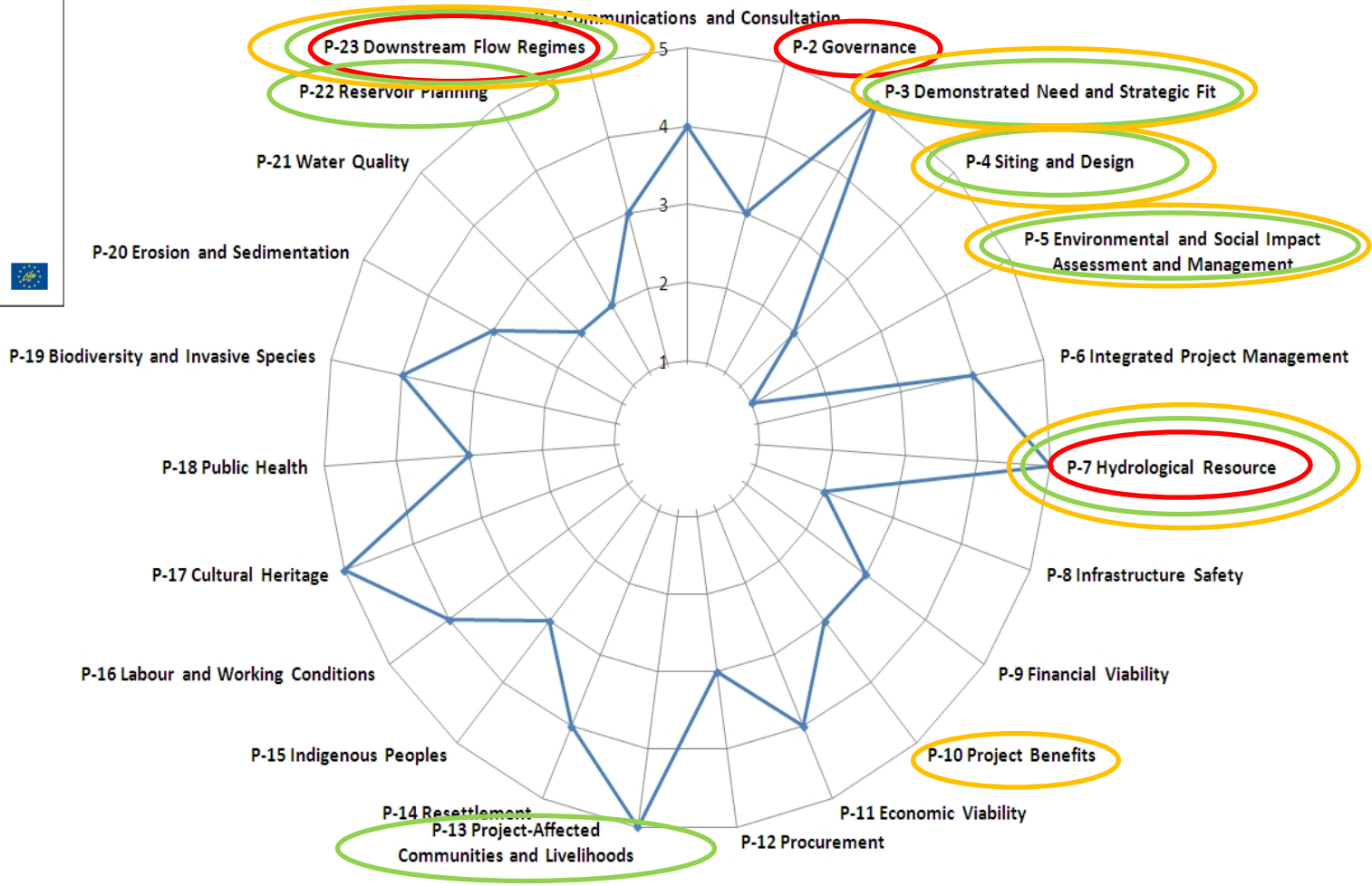
TECHNICAL	ENVIRONMENTAL	SOCIAL	ECONOMIC AND FINANCIAL	INTEGRATED
Siting and design	Downstream flows	Project affected communities and livelihoods	Economic viability	Demonstrated need and strategic fit
Hydrological resource	Erosion and sedimentation	Resettlement	Financial viability	Communications and consultation
Reservoir planning, filling and management	Water quality	Indigenous peoples	Project benefits	Governance
Infrastructure safety	Biodiversity and invasive species	Cultural heritage	Procurement	Integrated project management
Asset reliability and efficiency	Waste, noise and air quality	Public health		Environmental and social issues management

Cross-cutting Issues

- **Climate change**
- Corruption
- Human rights
- Gender
- Grievance Mechanisms
- **Integrated Water Resource Management**
- Legacy Issues
- **Multi-purpose Projects**
- **Trans-boundary Issues**
- Transparency

Protocol Assessment Results: Sustainability Profile





Thank you