Assessment of climate resilient hydropower

UNFCC SCF Forum September 6-7, 2017

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1. Introduction to IHA
2. Climate resilience criteria
3. Next steps

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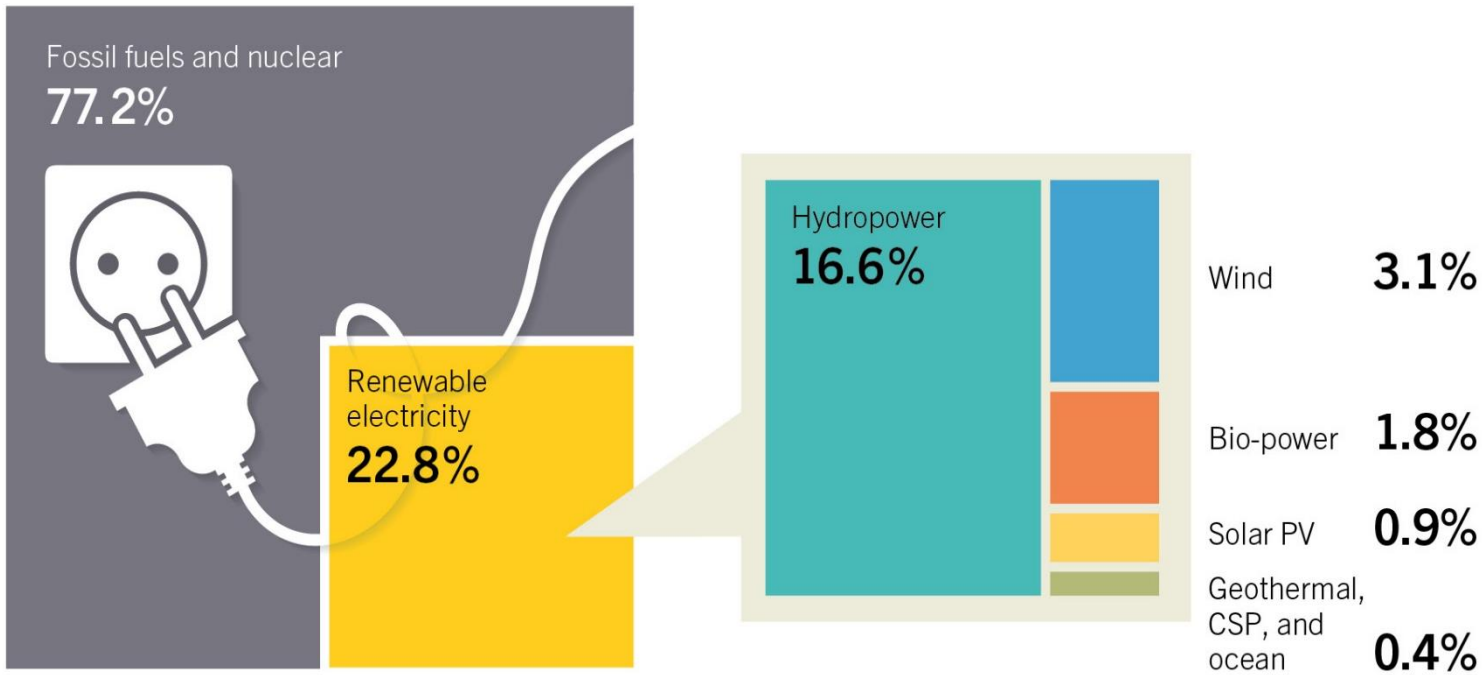
Outline



Based on renewable generating capacity in operation at year-end 2014.

Large range of low-carbon capacity available

- From kW to GW in a single project
- Option to export electricity in regional grids

Operational flexibility and efficiency

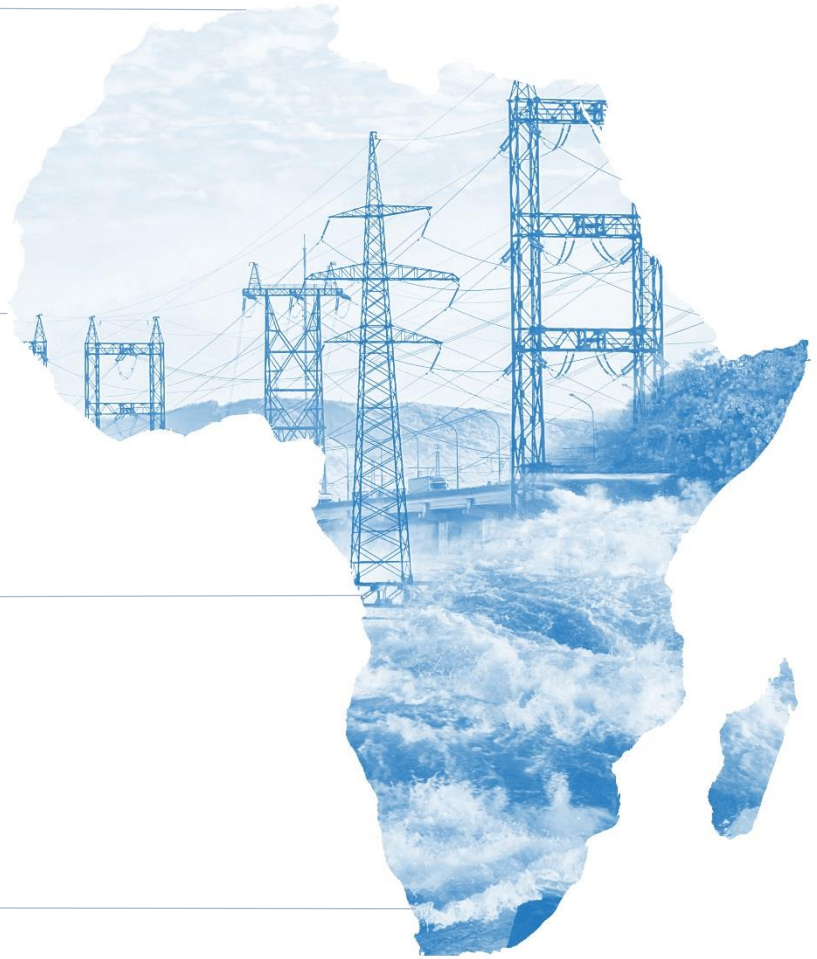
- Fast start-up and shut-down
- Highly efficient and adjustable output

Storage and back-up

- Rapid availability, can be used as a back-up
- Option to absorb surplus (pumped storage)

Multiple freshwater services

- Water supply, irrigation, navigation, tourism
- Climate-change adaptation (flood and drought mitigation)



IHA's work on climate change mitigation,adaptation and resilience

- **Emissions**: The hydropower sector has a tool to measure the impact of a reservoir on the carbon cycle in a river basin; the G-res tool, has been developed under a joint initiative between IHA and UNESCO.
- **Mitigation**: Hydropower is a renewable energy in its own right; in addition, storage projects enable other, variable renewables (solar and wind) – and larger storage means it has greater potential to enable more low carbon energy.
- **Resilience**: Any project evaluation needs to consider the climate-change risk to the services it is intended to provide. Guidelines for decision-making under uncertainty for new and modernization projects are under development.
- **Adaptation**: Ability to store and regulate water flow may provide adaptation services, to protect against increased flood/drought frequency and intensity.

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Climate Resilience Guidelines

IHA is working together with World Bank and EBRD to develop hydropower-specific guidelines for climate resilience

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Criteria for assessment of climate resilience

- **Analysis** – What is the potential impact of climate change at the site; identified through reasonable modelling?
- **Scenarios** – have findings of analysis been translated into scenarios at the site. Has a reasonable set of climate-change scenarios been developed and applied to project design?
- **Risk assessment** – Have the scenarios been used to stress-test the project to identify vulnerabilities to safety (structural and societal) and the business model?
- **Define Adaptation Strategies or Solutions** – What structural and functional measures are in place (or planned) to avoid or reduce the identified risks, based on their likelihood-impact weighting.

Climate bonds

Timeline for hydropower criteria

- Criteria are first being developed as eligibility criteria for Climate Bonds Initiative
- Draft criteria to be published by mid-2017 which will be open for consultation with industry.
- The working group will revisit the criteria following feedback from industry and other stakeholders.
- The Climate Bond Standards Board will then review the criteria before they can be used by the market – likely 2018.

hydropower.org

Find out more about hydropower worldwide

Questions

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Extras

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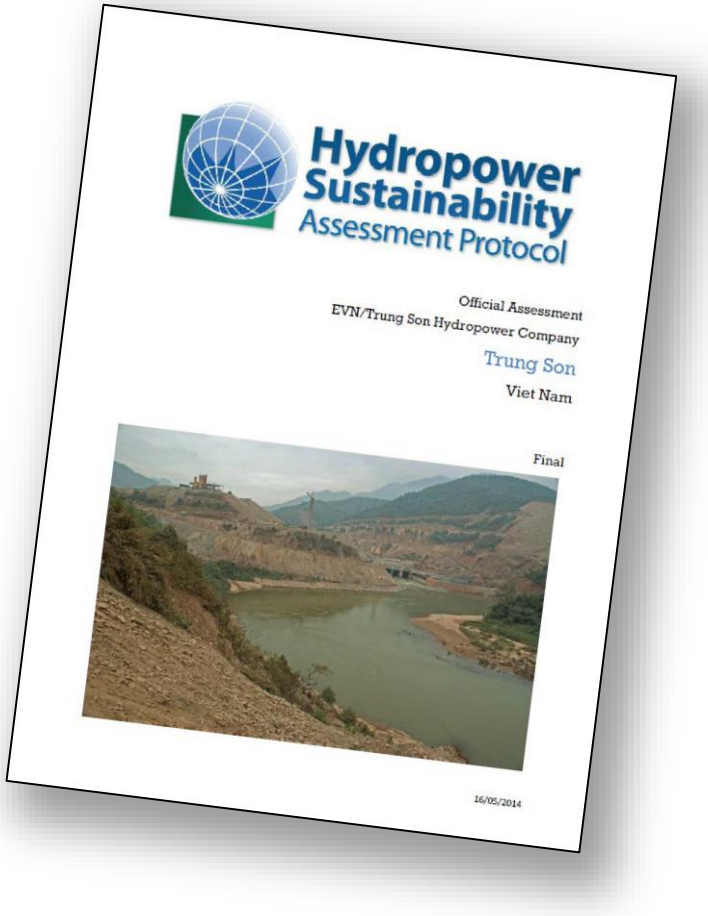
The Protocol

What is it?

- A definition of sustainability in hydropower, covering 25 sustainability topics
- An assessment methodology for measuring performance at all stages and types of project development
- Governed by a multi-stakeholder council, with formal terms and conditions
- Official assessments can only be undertaken by Accredited Assessors to ensure quality and consistency

Added value

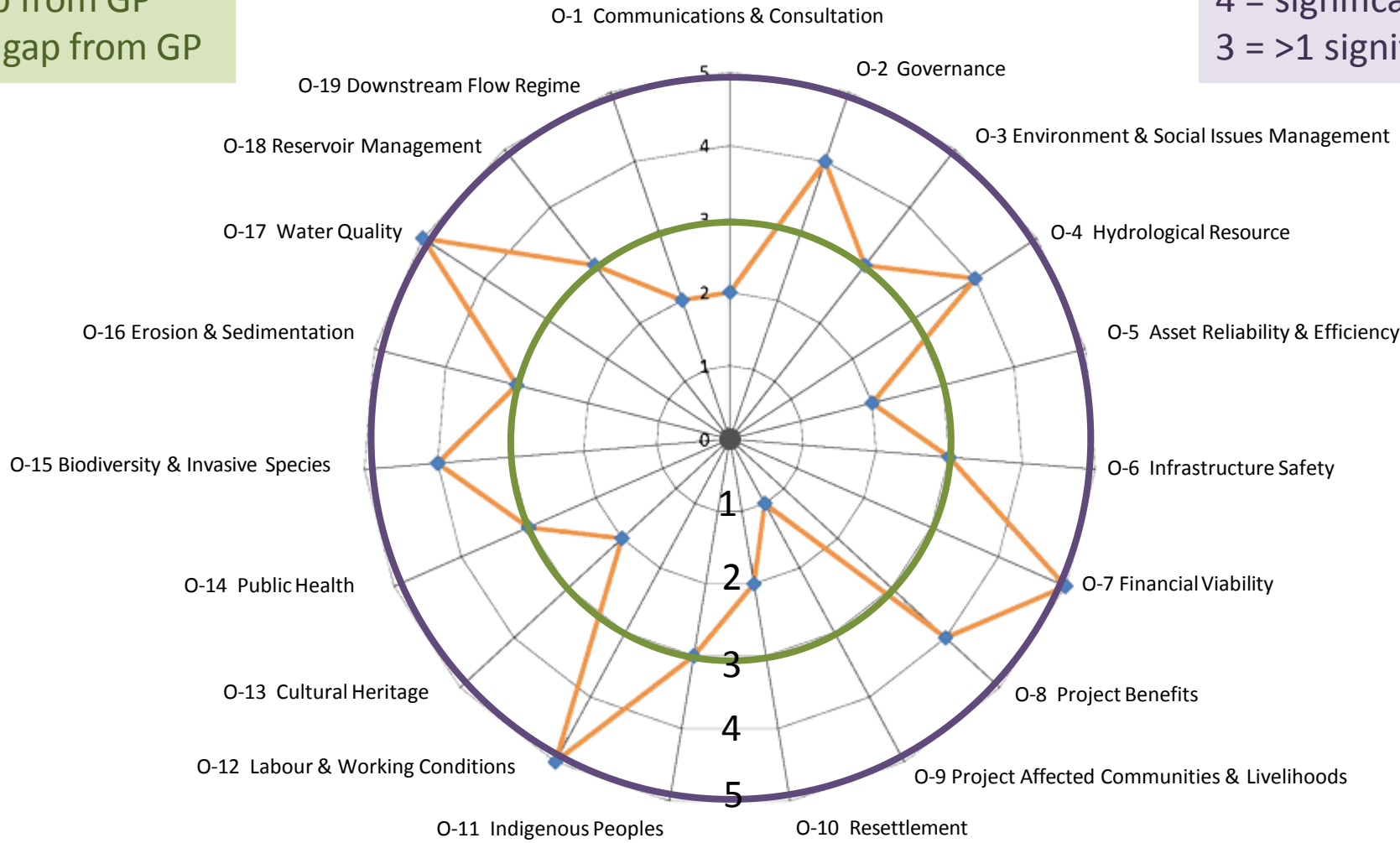
- Independent review of sustainability issues
- Comparison with international practice
- Management of sustainability issues
- Communication with stakeholders
- Facilitating access to finance and markets



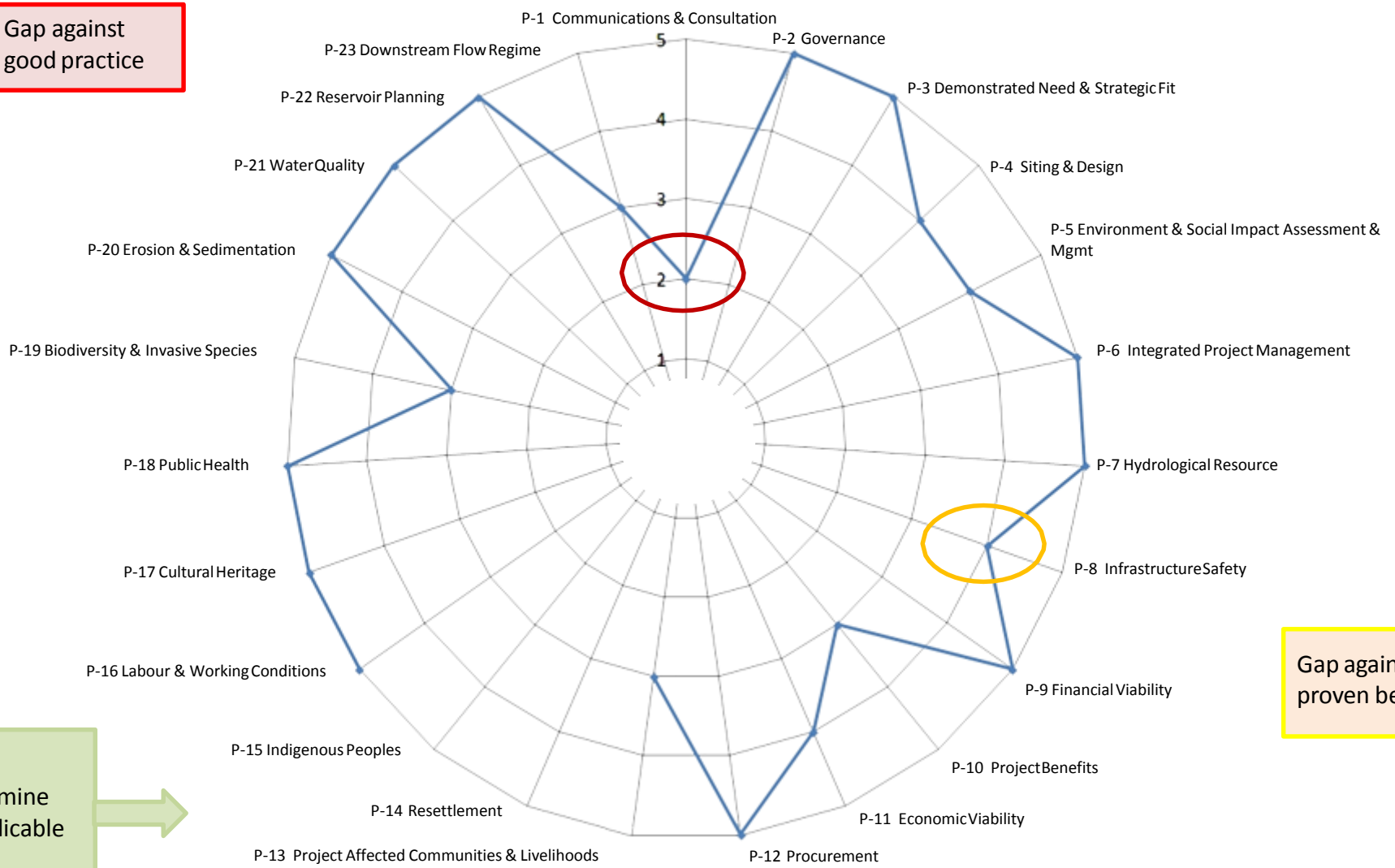
Scoring allows clear presentation of results

3 = Good practice (GP)
2 = significant gap from GP
1 = >1 significant gap from GP

5 = Proven best practice (PBP)
4 = significant gap from PBP
3 = >1 significant gap from PBP



Gap against good practice

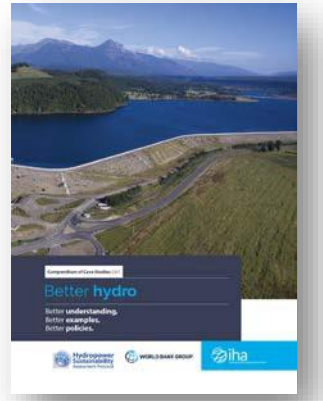


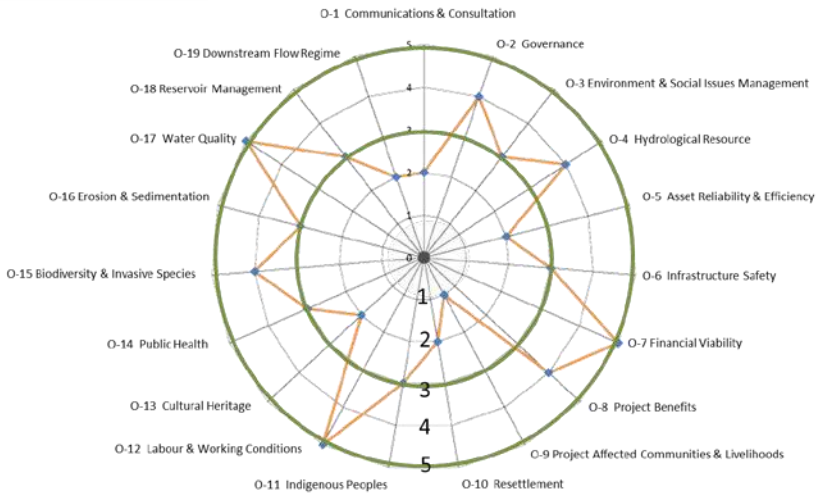
Gap against proven best practice

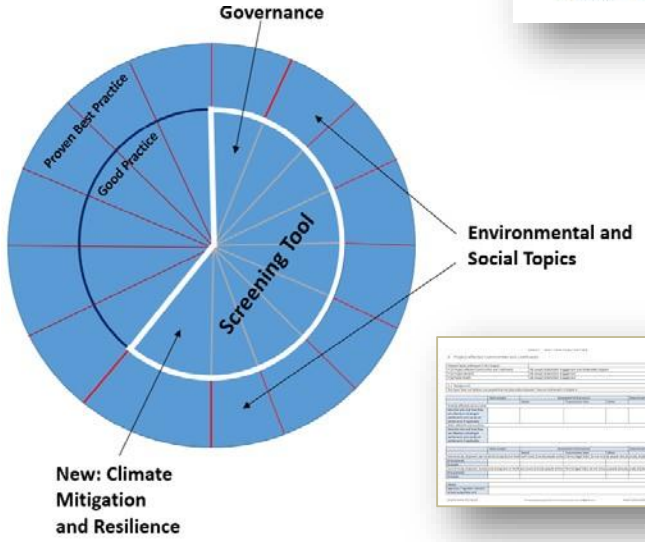
Topics which meet conditions that determine that they are not applicable are not assessed.

Evolving sustainability practice

Hydropower
International Industry
Good Practice
Guidelines







Next steps:

- International Industry **Good Practice Guidelines** (as separate document)
- Hydropower Sustainability **Environmental, Social and Governance** derivative tool
- Improved process for **Assessor Accreditation**, worldwide
- Continued refinement of the Protocol, including **climate-change mitigation and resilience**

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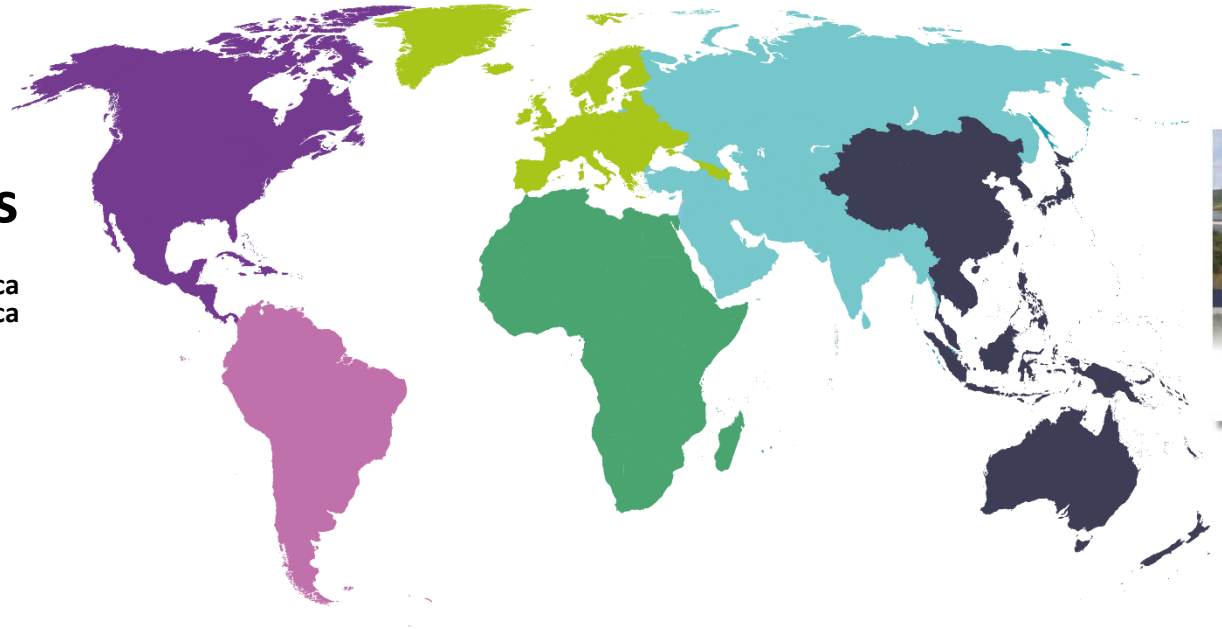
Knowledge building

6 regions

- North America
- South America
- Africa
- Europe
- Asia 1
- Asia 2



10 topics

- Modernisation
- Operation & maintenance
- Climate resilience
- Climate mitigation
- Sediment management
- Water footprint
- Regional development
- Clean energy systems
- Finance & investment
- Benefits