## RSAT GAP Analysis presentation

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| **Topic 7.1: Multiple water use optimization and efficiency** |
| 1. **River basin planning:**
* Baseline data exists on water availability, demand and consumptive and non-consumptive water use, including navigation and fisheries.
* A hydrological model has been developed for the basin and addresses different water use scenarios.
* The effect of climate change on future water availability and flows is assessed.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Energy / power sector planning and regulation**
* Multiple use projects are prioritized in government options assessment, optimization and ranking studies.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Hydropower Projects**
* Hydropower feasibility studies are consultative and seek to enhance design and operational opportunities for multiple-use where feasible.
* Hydropower projects co-ordinate with other agencies and water users in the operations stage to achieve agreed multiple-use objectives.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Regulatory and Governance:**
* A water use framework exists in domestic legislation and international agreements that sets limits, rules and procedures for consumptive and non-consumptive water use in the basin.
* Monitoring of water use is conducted. Regulatory mechanisms exist for the resolution of water allocation conflicts.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| **Topic 7.2: Reservoir planning and management** |
| 1. **River basin planning:**
* Government water and energy agencies conduct integrated planning to set operational limits for hydropower operations such as, full supply levels, drawdown limits and water release requirements, to integrate with power generation requirements.
* Reservoir planning, impoundment and operations are conducted within agreed water management limits and thresholds for the basin.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**   |
| 1. **Energy / power sector planning and regulation**
* Projects selected for development aim to minimise the area flooded per unit of energy.
* Schemes make best use of storage characteristics and operations to meet current and future electrical load patterns and other water demands in the basin.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Hydropower Projects**
* Reservoirs are designed to avoid, mitigate and off-set impacts including loss of forest resources, population displacement and greenhouse gas emissions.
* Reservoir filling plans addresses biomass removal, the timing of environmental and social plans and downstream impacts.
* Reservoir filling and operational procedures are in place to address reservoir management issues.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Regulatory and Governance:**
* Project agreements and regulations provide clear institutional arrangements for reservoir ownership, access and management responsibility.
* Roles and responsibilities are allocated and there is a coordinated approach to managing compliance with reservoir management, operating rules, storage and release commitments.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| **Topic 7.3: Coordinated hydropower operation** |
| 1. **River basin planning:**
* There is allocation of responsibility and institutional arrangements in place for coordinated water management and power generation in the basin amongst multiple projects.
* Hydropower operations coordinate with other water users in the basin.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Energy / power sector planning and regulation**
* Coordination of the power system, including hydropower cascades, makes optimal use of hydropower capability (peaking, load following) and achieves balanced and equitable water use at the sub-basin level.
* Project level agreements include provision for coordination of operations amongst projects in a cascade or sub-basin and consistent design and operational mitigation measures.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Hydropower Projects**
* Projects coordinate their operations to achieve basin objectives, efficient water use and optimize electricity generation.
* Design and operational environmental mitigation measures are consistent and coordinated between projects to optimize outcomes.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Regulatory and Governance:**
* Regulatory framework for hydropower includes provision for multiple projects in a cascade to coordinate at all project stages for optimal electricity generation, and efficient resource use.
* Transboundary mechanisms exist for coordination and cooperation for hydropower operations on international rivers
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| **Topic 7.4: Downstream and environmental flows** |
| 1. **River basin planning:**
* Environmental flows assessment has been conducted for all river reaches affected or potentially affected by hydropower operations to establish criteria and thresholds for environmental and downstream flows. It includes assessment of wetlands and floodplains. It is consultative and informed by scientific baseline data.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Energy / power sector planning and regulation**
* Water management constraints on electricity dispatch are embedded in electricity dispatch and off-taker agreements.
* Compliance is monitored and publicly disclosed.
* Project agreements include design and operational performance criteria to deliver agreed environmental and downstream flows.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Hydropower Projects**
* Projects conduct environmental and downstream flow assessments in feasibility stage to inform project design and operations.
* Project design and operation rules address commitments made for environmental flows and downstream water releases.
* Hydropower projects comply with environmental and downstream flow commitments.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Regulatory and Governance:**
* International agreements, national laws and basin plans relating to water allocation include provision for environmental flows.
* ESIA regulations and guidelines include provision for environmental flow assessment.
* Where commitments are made for environmental and downstream flows, their effectiveness is monitored at agreed sites..
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| **Topic 7.5: Flood and drought management** |
| 1. **River basin planning:**
* A basin flood and drought management plan includes flood monitoring and forecasting systems and planning for flood and drought response.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Energy / power sector planning and regulation**
* Project agreements and electricity dispatch arrangements include provision for design and operational flood and drought response measures.
* Agreements include provision for flood management to be prioritized over power generation in emergency situations.
 | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Hydropower Projects**
* Operating rules, project design, management plans include flood and drought mitigation measures that comply with statutory plans and are implemented.
* Response to flood and drought is coordinated amongst projects in a cascade..

  | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |
| 1. **Regulatory and Governance:**
* National and provincial governments have flood and drought plans and policies in place, including allocation of roles and responsibilities.
* Plans are implemented and enforced and the response to drought and flood events is managed in a coordinated manner in the basin.

  | **Evidence of strengths and areas where criteria are fully met:**  |
| **Summary of key gaps:**  |