



ADB's support to Water-Energy Nexus Analysis under the CAREC Water Pillar

Eighth meeting of the Task Force on the Water-Food-Energy-
Ecosystems Nexus

7-8 December 2023

Geneva, Switzerland

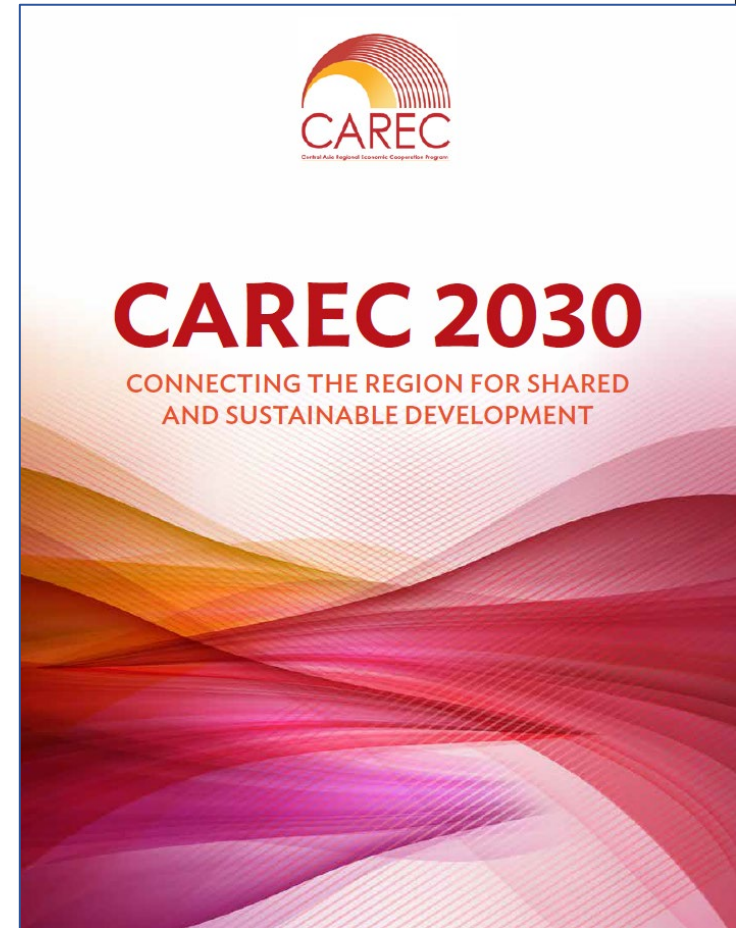
Kazuhiro Yoshida, Senior Water Resources Specialist

Asian Development Bank





1. 11 member countries
2. Focus on Regional Economic Cooperation
3. Organized around 5 clusters
 - (1) Economic and Financial Stability
 - (2) Trade, Tourism and Economic Corridors
 - (3) Infrastructure and Economic Connectivity
 - (4) Agriculture and **Water**
 - (5) Human Development
4. Overarching vision “Good Neighbors, Good Partners, and Good Prospects.”





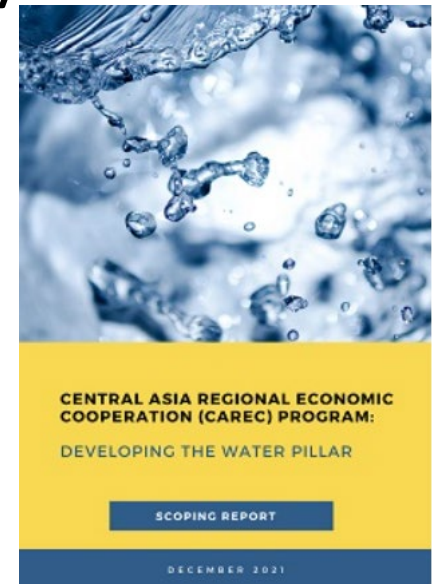
CAREC Water Pillar-towards implementation

“CAREC 2030 ..honest broker role, to promote discussion and dialogue on water issues to chart the way forward.”
CAREC Strategy 2030

- Initial focus on 5 Central Asian republics
– later expansion to all CAREC members.
- Framed Water Pillar

Vision:

‘a sustainable, climate resilient, productive and water secure region with shared benefits among States and communities.’



Water Pillar Framework

BLOCK 1

**Climate resilient and
productive water
systems**

BLOCK 2

**Sustainable water
resources and water
services**

BLOCK 3

**Nexus solutions and
cross sector learning**

Longlist of proposed projects in Interim Report

- 1.1 Climate adaptive management in a shared tributary
- 1.2 Regional benefits from climate resilient irrigation
- 1.3 Risk management for drought and heat stress

- 2.1 Efficient and sustainable water services models
- 2.2 Salinity management strategy
- 2.3 Promoting safe re-use of treated wastewater
- 2.4 Promoting benefits from nature-based solutions

- 3.1 Promoting jointly managed infrastructure
- 3.2 Renewable energy options in water systems
- 3.3 Human resource capacity for climate resilience

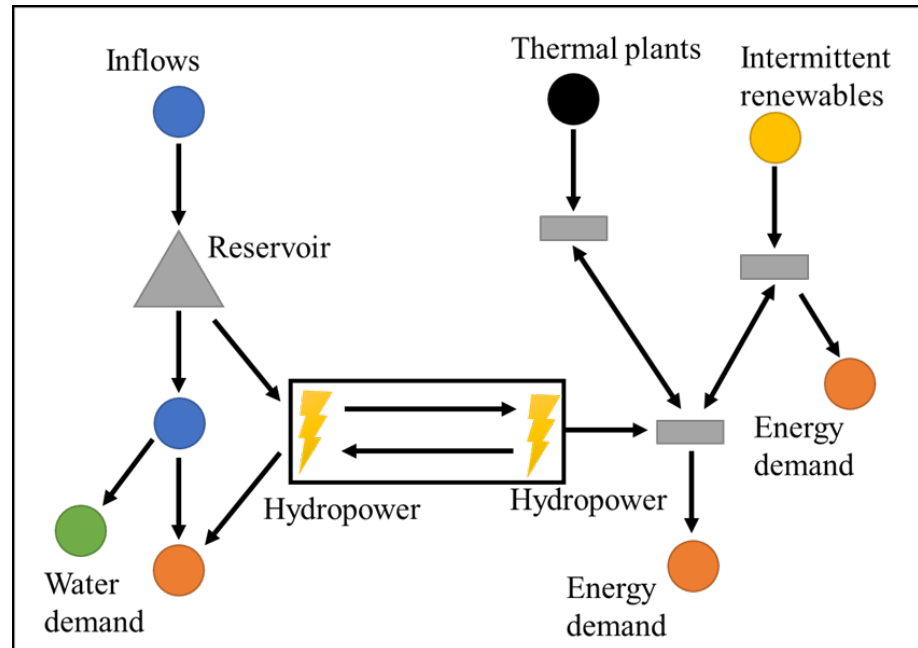
Integrated Water-Energy Modeling

Issue:

- current modelling tools do not reflect the spatial interconnectivity of water, energy, and environment
- missed potential for identifying additional benefits through a more integrated approach to development interventions

Response:

- integrated platform for linking water resource system model (*Pywr*), spatial power system model (*Pyenr*) and agricultural production model (*FAO*)
- uses open source simulation, and web-based collaborative user-software



Schematic representation of spatial water – energy model linkage



Investigating synergies between river and power systems in Central Asia (under discussion between pillars)

The objectives are to:

- Help Central Asia organizations understand and quantitatively investigate the interdependencies, constraints and demands of each sector.
- Determine the key synergies energy and water sector planners and managers could achieve, and identify the important regional trade-offs in water and energy system development, both for improving the existing systems and influencing future development strategies in each sector
- Quantify at strategic level the financial, service-level and carbon emission benefits that increased synergies between the energy and water sectors could generate.



Thank you for your attention.

