Australian Government
Department of Foreign Affairs and Trade

SUMERNET

SEI Stockholm Environment Institute

Sweden Sverige

# Mekong Environmental Resilience Week

13 September 2023

# Sustainable and Resilient Water-Energy-Climate Nexus in the Lower Mekong: Critical Knowledge Gaps


Dr. Thanapon Piman

Water Cluster Lead/Senior Research Fellow, SEI Asia


Eastin Grand Hotel Sathorn
Bangkok, Thailand

# Water-Energy-Climate Nexus in the Mekong

## Climate

| Increasing temperature | Extreme and uncertainty | Sea level rise |
|---|---|---|

Climate regulation, carbon sink

Impact on supply and demand, alteration of hydrological cycle

Greenhouse gas emissions, carbon capture and storage

Impact on supply and demand

Environmental safeguard
At risk communities
Gender Equality, Disability and Social Inclusion

## Water

| Water productivity & security | Flood and drought | Sediments, fisheries and ecosystems |
|---|---|---|

Energy production, cooling system

Impact upstream regulation on downstream

Pumping, distribution, irrigation, desalination

Impact on flows and ecosystem

## Energy

| Hydropower | Clean and renewable energy | Fossil fuel |
|---|---|---|

# Existing knowledge


2014 → 2021

# Critical knowledge gap (1)

How to **enhance renewable energy transitions for the poorest, marginalized, and climate-vulnerable groups**, including women and children, people living with disabilities.

But while reducing water insecurity in a changing climate?

# Critical knowledge gap (2)

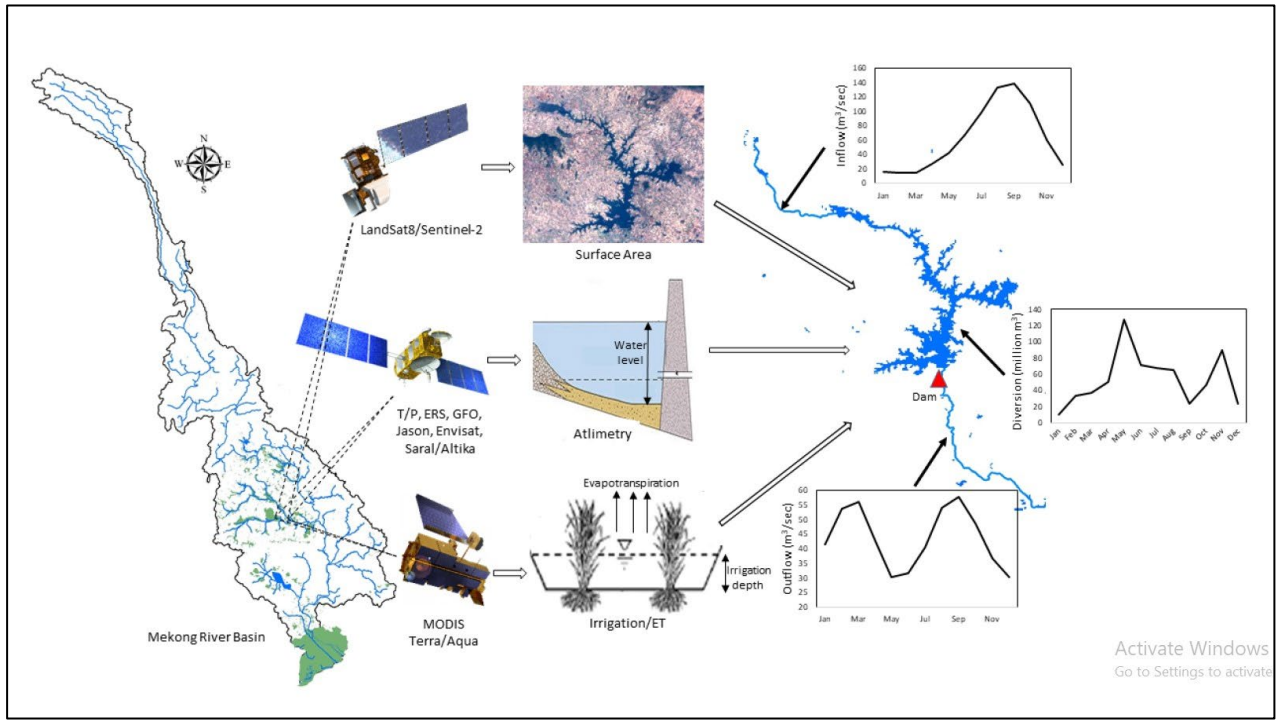
Ways to **balance infrastructure and nature-based water storage management options** for multiple purposes (water supply, energy production, fisheries, ecotourism, etc.) to **enhance equitable benefit sharing and reduce climate risks.**


Sirindhorn Dam, Thailand


Tram Chim National Park , Viet Nam

# Critical knowledge gap (3)

How to use **new technologies, including Artificial Intelligence (AI), Remote Sensing (RS), and the Internet of Things (IoT)**, to improve warning and notification systems for climate-vulnerable communities and water/energy operators during extreme weather events, unusual water flows, floods, and drought?




Ali, S.A.; Sridhar, V. Deriving the Reservoir Conditions for Better Water Resource Management Using Satellite-Based Earth Observations in the Lower Mekong River Basin. *Remote Sens.* **2019**, *11*, 2872. https://doi.org/10.3390/rs11232872

# Critical knowledge gap (4)

**Governing long-term climate change adaptation measures** to equitably enhance climate resilience of water and energy systems for all, especially climate-vulnerable communities and socially marginalized or at-risk groups.

# Critical knowledge gap (5)

**Enhancing the effectiveness of knowledge-based policy influence organizations (KBPOIs)** in generating evidence, engaging with and influencing policy, and addressing challenges arising from WEC and their interlinkages, including equity.

# Critical knowledge gap (6)

**Ways to mainstream Gender Equality, Disability, and Social Inclusion (GEDSI) into the WEC nexus policies** and related coordination mechanisms for more inclusive and equitable planning and management.

*How can we integrate the WEC nexus into the region's policies for climate action towards just and equitable outcomes?*

Australian Government
Department of Foreign Affairs and Trade

SUMERNET

SEI Stockholm Environment Institute

Sweden Sverige

# Thank you!