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MEKONG THOUGHT LEADERSHIP AND THINK TANKS NETWORK (MTT) PROGRAM FLAGSHIP STUDIES AND RAPID RESPONSE PROJECTS (2023-2025)

Mekong Thought Leadership and Think Tanks Network (MTT) Program

Flagship Studies and Rapid Response

Projects (2023-2025)

Disclaimer

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FLAGSHIP STUDIES

MEKONG THOUGHT LEADERSHIP AND THINK TANKS NETWORK PROGRAM (MTT)

FLAGSHIP STUDIES

Flagship studies are one of the critical activities of the MTT Program aiming to enhance evidence-based understanding of the Water-Energy-Climate (WEC) nexus, including through the lens of gender and social equity. The work motivates the application of this knowledge to practical, robust, and equitable policy solutions to persistent and emerging issues and challenges.

Special attention is given to the potential to enhance the practices and strategies of KBPIOs in generating and sharing knowledge and supporting collaboration with other stakeholders.

As flagship research in the program, these studies are intended to demonstrate the value of a holistic perspective on water, energy, and climate issues, their interconnections, and the likely benefits from new or enhanced knowledge-to-policy processes in the Mekong countries. As such, the studies are expected to take at least an interdisciplinary approach (drawing on and linking relevant social and technical sciences) and ideally a transdisciplinary approach (interdisciplinary, plus engaging both scientific and nonscience forms of knowledge and actors).

The MTT Program supports 4 Flagship studies, as described below.

MTT FLAGSHIP STUDIES LOCATIONS

01 Solutions and Opportunities in Managing Water Storage to Reduce Transboundary Water-Related Disaster Risks and to Address Multiple Water Demands

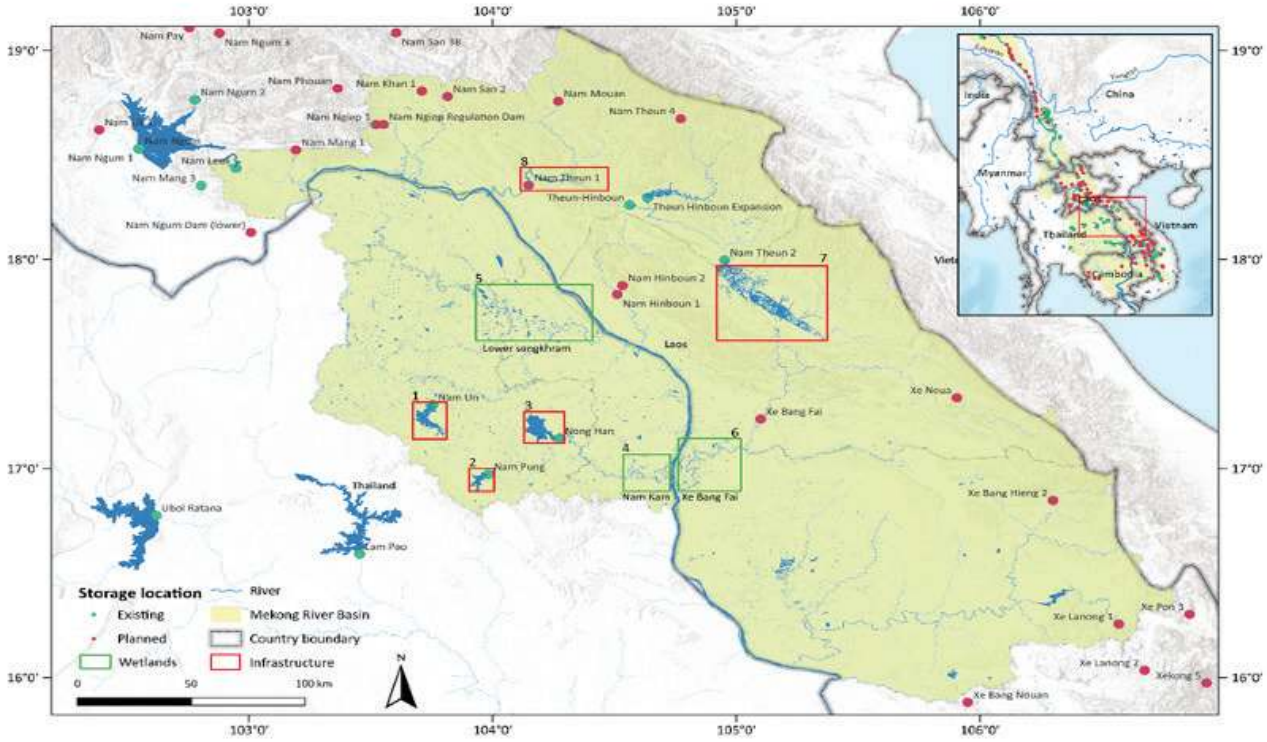
Short project name: SOS

Countries: Thailand, Lao PDR
Sectors: Water, Energy, Climate
Consortium:

- Stockholm Environment Insititute (SEI) Asia
- Thailand Environment Institute (TEI)
- Mahasarakham University (MSU)
- National University of Laos (NUOL)
- Lao Women's Union (LWU)

Contact: Dr. Thanapon Piman (thanapon.piman@sei.org)

Study area of SOS MTT Flagship Study



This project aims to develop inclusive and sustainable water storage solutions that optimize disaster risk reduction and diversify benefits for water, energy, and food security for vulnerable communities while promoting transboundary cooperation and governance. Water storage is crucial for socio-economic development and ecosystem sustainability in the Mekong Region. Over the past two decades, infrastructure water storage, particularly hydropower reservoirs, has significantly increased. However, these reservoirs primarily focus on energy production due to power purchase agreements, raising

concerns about coordination and equitable benefit sharing. Conversely, water storage in wetlands and floodplains has drastically decreased, leading to a loss of ecosystem services and increased risks for local, vulnerable, and marginalized groups who depend on these natural systems.

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The project seeks to assess the impact of national and regional policies on water storage management, synthesize best practices, and identify key factors influencing benefit sharing among stakeholders, particularly vulnerable and marginalized groups, using a Gender Equality and Social Inclusion (GEDSI) lens. By co-developing solutions and investment opportunities, the project aims to enhance the capacity of water storage management for multi-water demands and transboundary flood and drought risk reduction. It also intends to co-develop pathways that ensure equitable benefit sharing and build the capacity of communities, operators, and policymakers on effective water storage management and GEDSI principles. The research seeks to influence policy processes and offers innovative approaches by integrating grey (human-made) and green (natural) storage systems. This approach aims to transition storage systems from single-purpose to multipurpose use, thereby enhancing storage potential in the Mekong Region. The project will also develop methodologies to quantify wetland storage and build on existing studies and frameworks.

The research addresses key questions on best practices in water storage systems for multi-benefit and transboundary flood and drought risk reduction, factors influencing equitable benefit sharing, practical solutions and investment opportunities for water storage systems in Thailand and Lao PDR, and capacity strengthening of communities and policymakers. The project employs a co-design and co-production of knowledge approach, involving stakeholders in data collection, analysis, and capacity-building activities. Solutions will be identified and prioritized through stakeholder meetings and policy dialogues and evaluated using advanced remote sensing models and hydrological simulations. The findings will be disseminated through stakeholder networks and published in peer-reviewed journals.

The SOS project aims to foster sustainable water storage management in the Mekong Region by focusing on equitable benefit sharing and enhancing stakeholders' capacity. The inclusive knowledge co-production process ensures the research builds upon existing information and accelerates progress, providing nuanced and impactful outcomes. Ultimately, the project seeks to develop adaptive water storage solutions that counter climate-induced disaster risks and manage multiple water demands, benefiting vulnerable and marginalized communities and contributing to regional and national decision-making processes.

02 Urban Heat Resilience: Bridging Science, Policy, and Sustainable Design

Short project name: Urban Heat

Countries: Thailand, Vietnam
Sectors: Energy, Climate
Consortium:

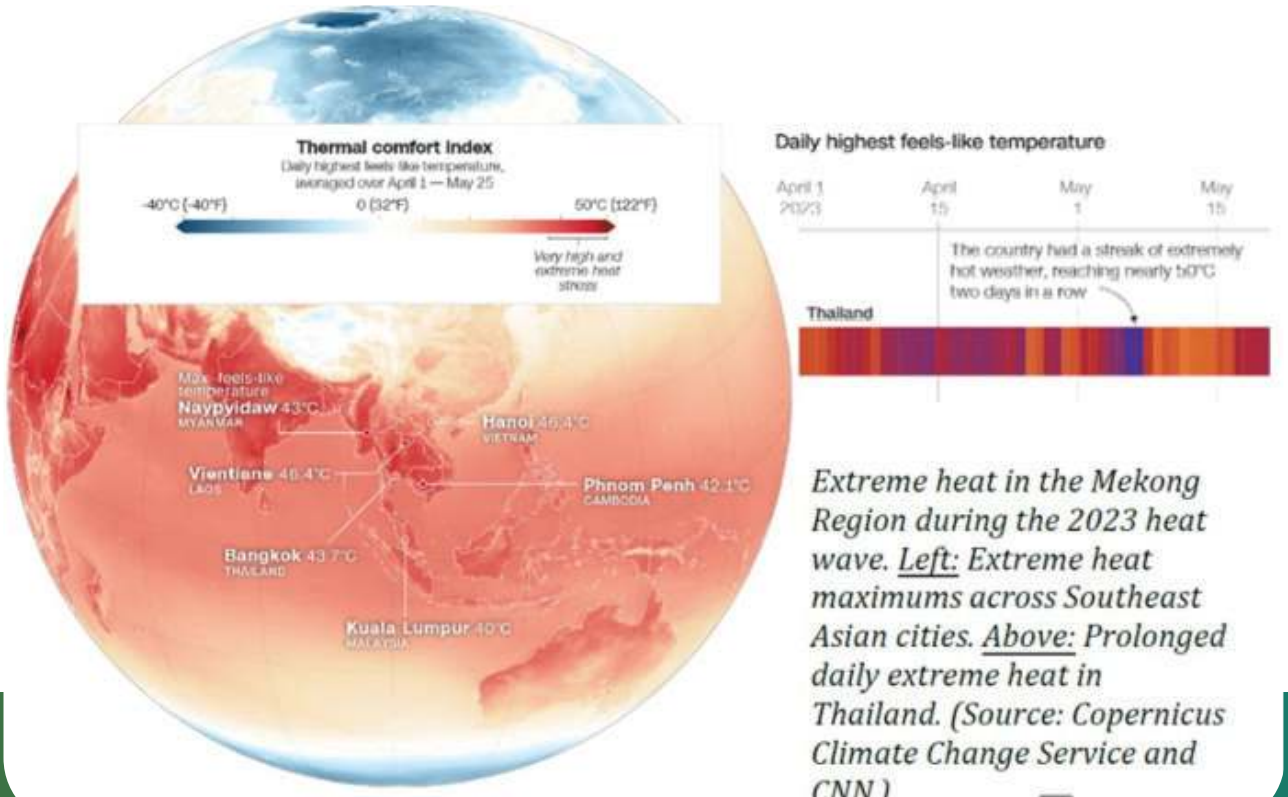
- Asian Disaster Preparedness Center (ADPC)
- Thailand Environment Institute (TEI)
- B-Kode
- Alluvium Group

Contact: Dr. Senaka Basnayake (senaka_basnayake@adpc.net)

Urban Heat Resilience Flagship Study addresses the impact of urban heat on vulnerable communities in Southeast Asia, particularly in Thailand and Vietnam, which experienced an unprecedented heat wave in 2023. The urban heat island (UHI) effect exacerbates rising temperatures in cities, disproportionately affecting the urban poor who live in low-quality, overcrowded housing with limited access to cooling. The project aims to develop urban policies, plans, and infrastructure that address urban heat impacts, promote nature-based solutions, and ensure gender, disability, and social inclusion (GEDSI).

GEDSI considerations and stakeholder engagement are central to the project, ensuring that all activities are planned with input from GEDSI specialists. The research methodology includes mapping areas where marginalized and vulnerable communities reside in Bangkok, identifying urban heat "hotspots" through modeling and vulnerability assessments, and prioritizing these areas for intervention. Field visits to these hotspots will involve testing and validation of assessment results, focus group discussions with GEDSI groups to understand the impacts of urban heat on their health and livelihoods, and exploring potential solutions, particularly nature-based solutions, to mitigate these impacts. Policy stakeholders will be invited to these visits to understand the issues firsthand.

The project will produce a peer-reviewed journal article and communication and capacity-building products, such as policy briefs and fact sheets, to disseminate key findings. A website will host project deliverables and provide an overview of key issues and opportunities. An inclusive decision support framework will be developed to guide policies in urban heat management, focusing on vulnerable city dwellers in the Mekong Region. The research will also identify common factors contributing to urban heat in Mekong cities, the challenges and opportunities associated with implementing nature-based solutions, and policy pathways for improved urban heat resilience. Follow-up support for policy change will ensure ongoing engagement with policymakers to enact the project's recommendations.



Extreme heat in the Mekong Region during the 2023 heat wave. Left: Extreme heat maximums across Southeast Asian cities. Above: Prolonged daily extreme heat in Thailand. (Source: Copernicus Climate Change Service and CNN)

Rapid urbanization in the Mekong Region has led to significant population growth and inadequate infrastructural development, exacerbating the vulnerability of marginalized communities to urban heat. The research will demonstrate the nexus between water, energy, and climate by highlighting how climate change accelerates urban heat and the role of cooling systems and urban natural assets in mitigating this heat. By engaging closely with vulnerable groups, the project aims to understand their needs and promote adopting nature-based solutions. GEDSI considerations will be integrated across all phases and tasks, ensuring that the research supports equity, inclusiveness, and benefits for all, especially marginalized and vulnerable communities.

Results from the research will inform the Thai National Cooling Action Plan and support heat-sensitive housing development and green space conversion in Bangkok. Findings will be shared with regional counterparts, including in Vietnam, influencing city and provincial development plans. The comprehensive approach, combining scientific research with policy engagement and GEDSI strategies, aims to build urban heat resilience and improve the well-being of vulnerable communities in Southeast Asia.

03 Sustaining the Shared Groundwater Resources of the Transboundary Cambodia-Vietnam Mekong River Delta Aquifer Under Climate Change Impacts Through Strategic Gender Equality, Disability, and Social Inclusion (GEDSI) Tools and Suitable Nature-Based Solutions (NbS)

Short project name: SAGA

Countries: Cambodia, Vietnam
Sectors: Water, Energy, Climate
Consortium:

- Asian Institute of Technology (AIT)
- Institute of Technology of Cambodia (ITC)
- Vietnam Women's Academy (VWA)
- Institute for Water Resources Engineering and Environment Technology (IWAT), Thuy Loi University (TLU)
- Ho Chi Minh City University of Technology (HCMUT), Vietnam National University Ho Chi Minh City (VNU-HCM)

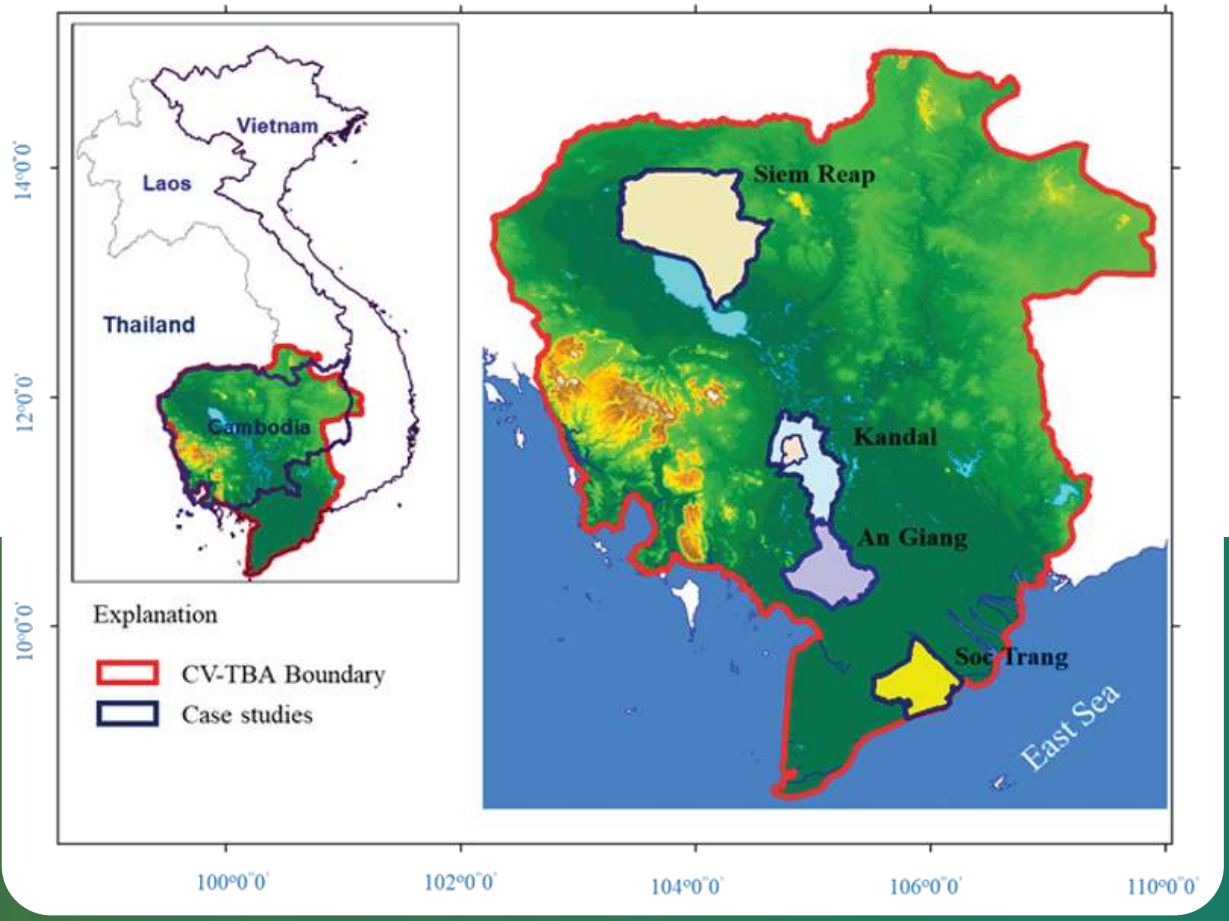
Contact: Dr. M. S. Babel (msbabel@ait.asia)

Cambodia-Vietnam Mekong River Delta Aquifer (CV-TBA), a crucial transboundary aquifer shared by Cambodia and Vietnam, supports millions of livelihoods and is vital for socio-economic development. Project SAGA aims to enhance community resilience to climate change by integrating energy, food, and water domains. By promoting optimal energy use for groundwater pumping and exploring renewable options, the project reduces costs and aligns with environmental conservation goals. SAGA encourages adaptive agriculture and strategic water management, guiding communities to shift crop patterns for climate resilience. Sustainable groundwater management is crucial for buffering against climate-induced water scarcity and ensuring resilience to droughts and irregular rainfall.

Women and vulnerable groups are underrepresented in groundwater resource governance. Analytical work is needed to understand GEDSI issues, power dynamics, and barriers to participation in water resource management. SAGA develops a GEDSI plan for sustainable groundwater management, addressing these issues and promoting inclusive, equitable, and effective transboundary groundwater planning and management. Through science-policy dialogues, the project engages local communities, governments, NGOs, and academia. GEDSI is promoted through gender-responsive and socially inclusive policies and programs, protecting the rights of marginalized groups and persons with disabilities. Indigenous knowledge is integrated to enhance NbS design and policy relevance.

The project assesses energy requirements for groundwater extraction, promotes energy-efficient practices, explores renewable energy options, and considers climate projections and adaptation measures in groundwater management. Collaborative training events are planned in Cambodia, Vietnam, and Thailand. Early career researchers will receive hands-on training, and a Massive Open Online Course (MOOC) will be hosted to disseminate knowledge. The project integrates a GEDSI lens throughout its cycle, promoting active participation of women, people with disabilities, and socially marginalized groups. SAGA upholds the right to safe and accessible drinking water, working to ensure equitable access for all. The project will explore human rights-based approaches by referring to national and international laws and treaties.

Study area of SAGA Project



The policy impacts of Project SAGA are multifaceted, targeting various governance levels. At the grassroots level, it empowers local authorities to craft effective water resource management plans, mitigating overexploitation and contamination of the CV-TBA. At the subnational and national levels, the knowledge generated will influence the revision and enhancement of groundwater management policies and regulations in Vietnam and Cambodia. Specifically, the project aims to inform water supply planning for the Mekong Delta to 2030 and beyond, aligning with Vietnam's National Strategy on Climate Change and Cambodia's National Water Resources Policy. Identifying groundwater recharge areas will enable swift action to establish safeguarded zones and propose NbS to fortify groundwater resources and preserve groundwater-dependent ecosystems. The lessons and solutions from this project can also be scaled up to other transboundary aquifers within the Mekong Region, contributing to broader regional resilience efforts.

04 Resettlement, Transformation, and Eco-Adaptation Typology for Cities (and Communities) Amidst Rising Seas in the Lower Mekong

Short project name: ReTrEAT-Cities

Countries: Cambodia, Thailand, Vietnam

Sectors: Energy, Climate

Consortium:

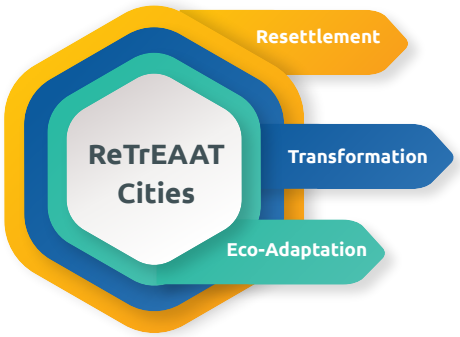
- Asian Institute of Technology (AIT)
- Bureau of National and Regional Planning Department of Public Works Thailand
- Center of Rural Development, University of Social Sciences and Humanities (USSH)
- Vietnam National University (VNU)
- Royal University of Phnom Penh (RUPP)
- Faculty of Social Administration, Thammasat University (TU)

Contact: Dr. Malay Pramanik (malay@ait.asia)

Southeast Asia's major cities, including Bangkok and Ho Chi Minh City, face the imminent threat of inundation by 2100 due to sea level rise (SLR) intensified by climate change and unplanned urban development. Protecting these 50 million residents is paramount, but the vulnerability is exacerbated by rapid subsidence. Managed retreat emerges as a proactive strategy to address large-scale climate-induced displacements, but it has often produced problematic social consequences and relied on top-down planning models. Our project, ReTrEAT-Cities (Resettlement, Transformation, Eco-Adaptation Typology for Cities), empowers vulnerable coastal communities with 'participatory energy-neutral coastal retreat planning,' focusing on ReTrEAT (Resettlement, Transformation, Eco-Adaptation Typology). This approach integrates energy-efficient infrastructure, housing, and transportation service design for job creation and local economic growth, providing a holistic model for water-energy security and climate adaptation. Gender equality and inclusive community-centric approaches are priorities, serving as models for regional initiatives and policy development for lower Mekong countries.

The project methodology involves a series of systematically designed work packages (WP) based on project deliverables. Each country's partners will engage in every deliverable, prioritizing their respective countries' needs through participatory budgeting with inclusive, scenario-based, equitable bottom-up approaches involving local communities, individuals, and grassroots organizations in the decision-making process. The project begins with conducting baseline and projected SLR scenarios using satellite altimetry and tide gauge records, excluding land subsidence data from LiDAR. Future scenarios are projected using downscaling and bias correction based on the shared socio-economic pathways (SSP 5&2,4.5, 8.5) of the IPCC Sixth Assessment. Exposure analysis under SLR scenarios will identify high-risk zones and exposure to critical infrastructure and vulnerable communities using high-resolution satellite images, digital elevation models (DEM), and deep learning to assess risk levels.

RetrEAT Cities approach for empowering vulnerable coastal communities to craft and implement novel participatory energy-neutral coastal retreat planning



Response

- Removal of community & infrastructure from at risk locations
- Immediate risk reduction & improvement in wellbeing
- Driven by State agents (top-down decision making)
- Pays less attention to equity and justice

Strategies

- Structural change at the community level & resettlement programs
- Livelihood improvement, infrastructure access, social & place based ties
- Cultural preservation, education, community resilience
- Residents responsibility in the selection of resettlement sites, housing design, & construction

Adaptation

- Restoring & revitalizing ecosystems
- Resettlement of people and/or infrastructure
- Abandonment of coastal defense infrastructure
- Vacated land turned into green spaces, gardens, recreational for community
- Restore degraded ecosystems, & yielding ecological benefits

- Resettlement could also be community-driven
- Equitable access to land, housing, or livelihoods

- Enhanced community capabilities
- Preserving and improving social, cultural, ecological, economic, health and psychological well-being
- Address gender inequality, community decision-making based on structure and power relations

- Benefits of restorative spaces are not always evenly spread across populations
- Projects may spur green or Eco- gentrification

Participatory energy-neutral coastal retreat planning is an innovative approach to creating sustainable, environmentally friendly, and socially inclusive solutions for communities and infrastructure facing the challenges of climate-induced sea-level rise. The project integrates energy-efficient technologies and renewable energy sources into infrastructure and resettlement strategies, minimizing the ecological footprint of the retreat. This involves designing energy-efficient buildings and infrastructure in new coastal communities, promoting renewable energy sources, and training locals in installation for job creation and local economic growth. Additionally, energy-efficient transportation is integrated into retreat planning, offering a holistic model for water-energy security and climate adaptation in Eco-Adaptation. The project prioritizes gender equality, involving women in decision-making and addressing their unique needs, promoting inclusive community-centric approaches that serve as a model for regional initiatives, and informing policies on the water-energy-climate (WEC) nexus.

The policy impacts of ReTrEAT-Cities are multifaceted, targeting various governance levels. At the local level, it empowers coastal communities to craft effective retreat plans, mitigating the social and economic disruptions of forced displacements. The project informs local governments about integrating sea-level rise scenarios into city development, backed by evidence of the economic benefits of resilient coastal communities. This knowledge drives resource allocation and policy reforms prioritizing climate adaptation. Nationally, the project contributes to policy processes addressing sea-level rise and climate adaptation, guiding the development of sustainable urban development policies that discourage high-risk coastal ventures. Regionally, ReTrEAT-Cities fosters collaborative discussions on climate adaptation and resilience, advocating for proactive, community-centered, and evidence-based coastal resilience strategies across all governance levels. The project aims to influence policy reforms that promote sustainable urban development and empower local communities through knowledge co-production, integrating climate adaptation and resilience into existing policies, ultimately contributing to the enduring sustainability of coastal communities in the Lower Mekong Countries.

RAPID RESPONSE PROJECTS

MEKONG THOUGHT LEADERSHIP AND THINK TANKS NETWORK PROGRAM (MTT)

RAPID RESPONSE PROJECTS

Rapid response projects are one of the critical knowledge-generating activities of the MTT Program. These are more flexible than the flagship projects and aim to support focused interdisciplinary research that seeks practical solutions to urgent or emerging challenges in the water-energy-climate nexus. The rapid response projects target an improved understanding of how climate resilience of specific water and energy systems, equity, and their interlinkages may be enhanced. **The Rapid Response Grants operationalize this through reinterpreting, integrating, sharing, and using existing policy-relevant research to engage governments, the public, and stakeholders, in practical solutions.**

The MTT Program supports 7 Rapid response projects, as described below.

MTT RAPID RESPONSE PROJECTS LOCATIONS

01 Gender-sensitizing for the Design and Operation of Water-Energy-Climate Change Infrastructures in Soc Trang Province, Mekong Delta, Vietnam

Short project name: GS4Infra

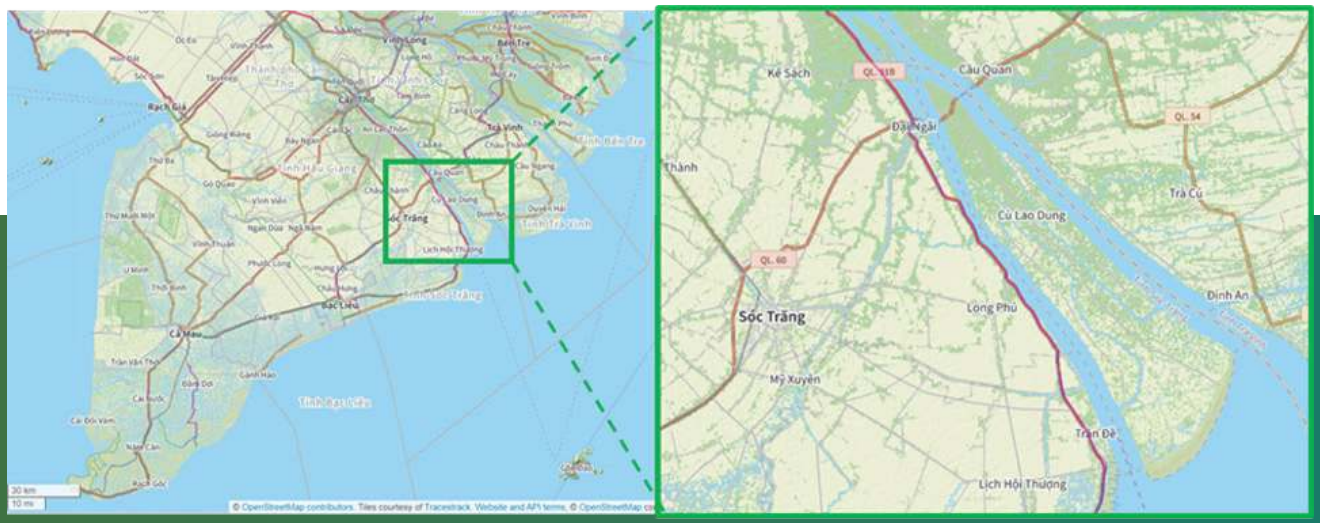
Countries: Vietnam
Sectors: Water, Energy, Climate
Consortium:

- School of Business, University of Economics Ho Chi Minh City (UEH)
- Gender cluster at Gender Action Research Network Can Tho University
- New Amsterdam Consulting
- Department of Agricultural and Rural Development (DARD) of Soc Trang Province Vietnam

Contact: Ms. Nguyen Thi Thu Thuy (thuyntt@ueh.edu.vn)

The GS4Infra rapid response project focuses on two communes in Cù Lao Dung district, located in the Bassac River, a tributary of the Mekong, which face challenges from climate change and upstream hydropower development. Previous studies revealed that the design and operation of water, energy, and climate (WEC) infrastructures in these areas primarily ignored gender sensitivities. This has led to suboptimal performance of the WEC systems and exacerbated gender-related vulnerabilities, particularly affecting women and marginalized groups. The project aims to address these issues by developing a comprehensive understanding and solutions to incorporate gender-sensitive approaches in WEC infrastructure design and operation.

Soc Trăng Province and the Cù Lao Dung District as GS4Infra project research area.



The project aims to improve women's participation in local planning and decision-making processes related to WEC infrastructures. By involving women's unions and female entrepreneurs in project activities, GS4Infra will demonstrate the benefits of inclusive participation, encouraging policymakers to institutionalize these practices. The project will revise design guidelines for dikes, irrigation canals, and sluice gates to incorporate gender-sensitive criteria, adapt existing policies to address the needs of women and marginalized groups and strengthen institutional support for gender-sensitive practices through capacity-building initiatives and continuous engagement with local authorities.

GS4Infra will gather comprehensive data on how current infrastructures impact women differently and use this information to form the basis for policy recommendations. A crucial aspect of the project is the collaborative approach to developing solutions. GS4Infra will work closely with local stakeholders, including women's unions, female-headed households, and ethnic minority groups, to co-develop practical recommendations. This participatory approach ensures that the solutions are context-specific and have local buy-in, increasing the likelihood of successful implementation.

GS4Infra will produce several key deliverables aimed at influencing policy. The project report on gender-sensitizing WEC infrastructures will detail the findings and provide concrete recommendations for incorporating gender sensitivities into the design and operation of WEC infrastructures. Training modules will be developed to educate local policymakers, engineers, and community leaders on the importance of gender-sensitive approaches and how to implement them effectively. The project will organize policy dialogues to engage with key decision-makers and present policy briefs that distill the research findings into actionable insights.

The project expects significant impacts by integrating gender sensitivities into WEC infrastructures, improving sustainability and resilience. It aims to address the needs and interests of women, including various female groups, in policy guidelines and infrastructure design. The project seeks to understand and support women's participation in local development and decision-making processes by involving women's unions and local actors. GS4Infra will ensure conflict sensitivity and adhere to ethical guidelines, prioritizing the safety and well-being of all involved. The project embraces an intersectional approach, recognizing the complexity of gender and social equality issues and aiming to address individual and structural inequalities in a nuanced manner.

GS4Infra will share good practices from other communities that have successfully integrated gender-sensitive approaches into their WEC infrastructure projects. This knowledge transfer will help local policymakers understand the benefits and practicalities of these approaches, fostering a more supportive policy environment. The project will adhere to the Do No Harm framework and SUMERNET ethics guidelines, ensuring that all interventions are conflict-sensitive and ethically sound. Ultimately, GS4Infra aims to create a lasting policy impact by embedding gender sensitivities into the structural planning and operational norms of WEC infrastructures. This will lead to more resilient and sustainable infrastructures that better serve the entire population, particularly women and marginalized groups, setting a precedent for similar initiatives in other regions.

02 Addressing Water Scarcity through Groundwater Use: Development of Solar-Powered Groundwater Treatment System for Remote Areas of Cambodia

Short project name: Solar Groundwater Treatment System

Countries: Cambodia
Sectors: Water, Energy
Consortium:

- Chulalongkorn University
- YoungEco/YEA Catalyst
- Ministry of Public Works and Transport
- Wonders of the Mekong - IFReDI

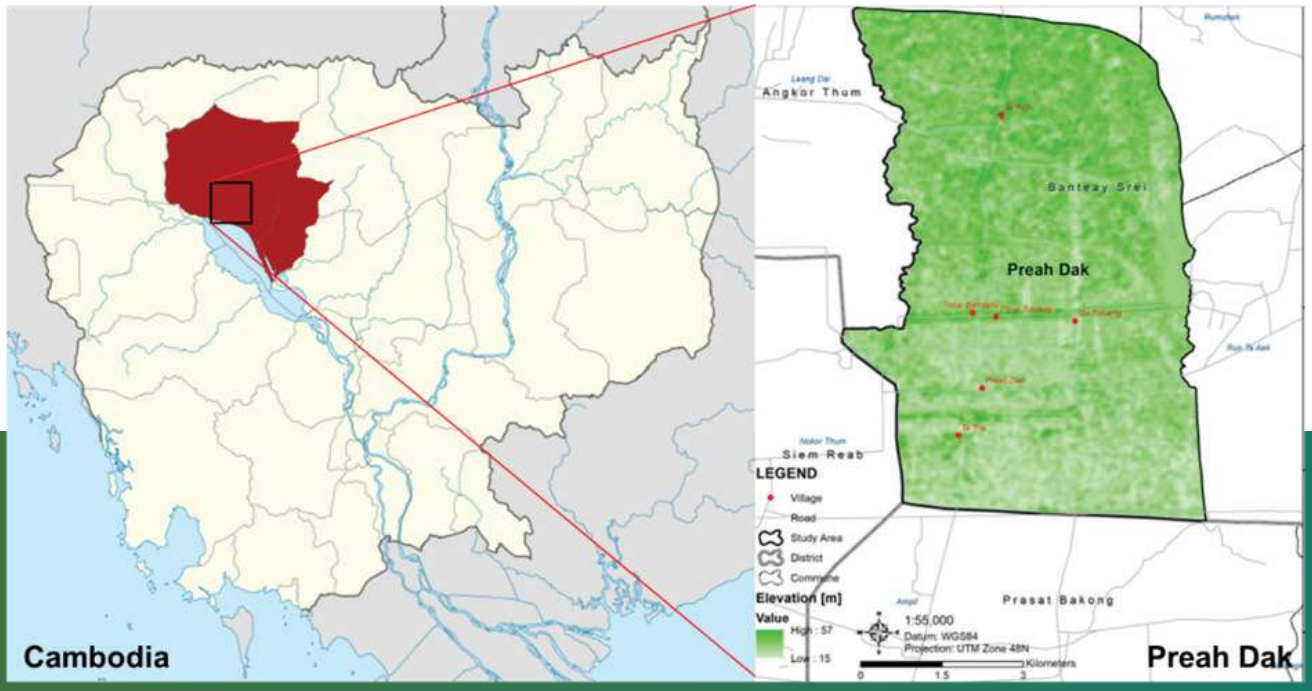
Contact: Dr. Saret Bun (saret_bun@yahoo.com)

Water scarcity is a severe global issue, and groundwater is a critical resource in regions like Cambodia, where surface water is not readily available. However, groundwater in Southeast Asia, including Cambodia, is often contaminated. Therefore, proper water treatment is essential. This project combines membrane filtration and UV disinfection, supported by solar panels and batteries, to create an effective mobile water treatment system. Field testing and laboratory validation will ensure the system's feasibility in remote settings. Therefore, the project aims to improve groundwater quality and provide a sustainable solution for rural and semi-urban areas in Cambodia and beyond, and addressing this has become a prominent research topic in the twenty-first century. This project aims to mitigate water scarcity by developing a solar-powered groundwater treatment system for a rural area in Cambodia. The primary objectives are conducting a preliminary assessment of groundwater quality and understanding local social perspectives, optimizing the groundwater treatment process regarding performance and power consumption, and evaluating the prototype system's operation in a real community setting.

The project is structured in three stages: evaluating and optimizing groundwater treatment, evaluating and optimizing surface water treatment, and estimating power consumption while fabricating the combined system. Quantitative data from previous research on groundwater quality and household water use in rural Cambodia will be used to optimize the treatment and supply system. Groundwater treatment will use membrane filtration to target pollutants such as iron, arsenic, fluoride, manganese, and turbidity. UV disinfection will follow to remove living organisms from highly turbid water. The optimal treatment processes will be combined into a solar-powered system fabricated as a compact, mobile unit.

Previous projects indicate that groundwater constitutes 93% of the domestic water source for households in Preah Dak commune, Cambodia, with iron contamination being a significant issue. Groundwater in this region often contains high levels of iron, arsenic, manganese, and fluoride, making it unsuitable for domestic use without proper treatment. Given the lack of a piped water supply and the reliance on untreated groundwater, developing a sustainable groundwater treatment system powered by solar energy is crucial. This system will address water scarcity and adapt to climate change.

Preah Dak commune, Siem Reap province, Cambodia



The project addresses gender equality, disability, and social inclusion (GEDSI) by improving sanitation for both genders, reducing the traditional daily workload of women, enhancing education opportunities for girls, and ensuring accessible clean water for people with disabilities. It promotes social inclusion by providing equal access to quality, sustainable, and low-cost water. The project upholds human rights by ensuring access to safe drinking water and sanitation and equal rights to use groundwater. Benefits include safe, low-cost, and sustainable water for people; renewable energy and sustainable water sources for the environment; and contributions to several Sustainable Development Goals (SDGs) such as no poverty, good health and well-being, clean water and sanitation, affordable and clean energy, industry, innovation and infrastructure, sustainable cities and communities, and climate action.

This project directly aligns with several key national policies and international frameworks. It supports the Royal Government of Cambodia's goal of achieving 100% coverage of rural sanitation services, universal urban water supply by 2025, and universal access to clean water by 2030. By improving access to clean water and enhancing WASH services, the project contributes to these targets and aligns with the Cambodian Water and Sanitation Policy. Additionally, it supports the government's climate change adaptation strategies by providing a renewable energy-powered solution that can withstand environmental changes.

03 Assessing the Communities' Resilience to Climate Change: Water-Energy-Climate Nexus: A Case Study in Mekong Sub-Region's Marginalized Communities in Stung Treng Province, Cambodia

Short project name: Communities Resilience

Countries: Cambodia
Sectors: Water, Climate
Consortium:

- My Village (MVi)
- Romport Indigenous Collective Land Titling (CLT) Kroeng Indigenous Community)
- Tunsorng Indigenous Community Land Titling (Kouy Indigenous Community)

Contact: Dr. Lonn Pichdara (myvillage@mvicambodia.org)

Stung Treng province in Cambodia faces several climate-related challenges, including rising temperatures, changes in rainfall patterns, floods, and droughts. These changes have significantly damaged homes, infrastructure, crops, and fisheries, leading to food shortages and diminished livelihoods for vulnerable communities. The construction of hydropower dams, such as the Sesan River dam, has also disrupted the natural hydrological regime of the Mekong River, impacting water levels and flow patterns. Indigenous communities, in particular, have faced additional vulnerabilities in coping with the effects of natural disasters.

The impacts of climate change on the five villages in Stung Treng province include experiences of floods and droughts, which have particularly affected community assets. All five villages have encountered flood events, while two faced drought conditions. However, the local administration's budget is limited in addressing these impacts of climate change. Previous research on climate change vulnerability in Stung Treng identified gaps in understanding the differential effects of climate change on various social groups, the lack of a water-energy-climate change nexus approach, and the absence of inclusivity and gendered approaches. These gaps hinder a comprehensive understanding of the issue and the development of effective strategies to address climate change impacts.

The long-term goal is to increase marginalized communities' resilience to climate change through equitable use of energy, water, and climate resources. The project aims to foster collaboration among ministries in addressing climate change impacts across sectors, such as water, energy, and climate change, by building local communities' resilience and ensuring local planning includes a 'community resilience with water-energy-climate nexus' approach. This includes increasing the budget and response capacity for addressing climate change for marginalized communities, including women, GLBTs, people with disabilities, and poor people.

Two research objectives are expected to be achieved: (1) to amplify the voices of marginalized people (women, youths, people with disabilities, GLBTs, people from poor families, indigenous peoples, widowers, and older people) on climate change impacts to decision-makers and policymakers at sub-national and national levels; and (2) to increase understanding of marginalized communities' resilience to climate change using a water-energy-climate nexus approach, providing identified solutions to decision-makers and policymakers at sub-national and national levels.

The project will document the vulnerabilities and resilience of marginalized communities to climate change, with solution recommendations, through research and engagement with decision-makers. This involves engaging marginalized people in the research process, including tool development, data collection, dissemination, and consultative workshops. Additionally, the project will involve marginalized people in policy dialogues on community resilience, using the water-energy-climate nexus approach and local planning workshops, culminating in policy brief submissions to ministries.

The specific target users of this research are marginalized communities, NGOs, commune administrations, district administrations, provincial administrations, and ministries. Marginalized and vulnerable communities and NGOs will use the research findings to inform local community planning and advocate for increased budget allocations to address climate change impacts, focusing on the water-energy-climate nexus. Commune administrations will use the findings to inform regional planning for more responsible approaches to addressing climate change impacts. District administrations will utilize the research findings to enhance local planning efforts to address climate change impacts. Provincial administration and provincial departments, such as the Department of Environment and the Department of Agriculture, Fishery and Forestry, will receive the project findings to support their efforts. Ministries, including the Ministry of Agriculture, Forestry, and Fisheries, the Ministry of Water Resources and Meteorology, the Ministry of Environment, and the Cambodia National Mekong Committee, will use the research findings to foster more collaborative responses to climate change impacts, emphasizing the interconnection of water, energy, and climate.

Image by ClaudineVM from Getty Images

04 Strengthening climate resilience of agricultural livelihods in Savannakhet Province, Lao PDR, through participatory Ecosystem-based Adaptation

Short project name: Climate Resilience through Participatory EbA

Countries: Lao PDR, Thailand
Sectors: Water, Climate
Consortium:

- Asian Institute of Technology (AIT)
- National University of Laos (NUOL)
- Kasetsart University (KU)

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In Lao People's Democratic Republic (Laos), a landlocked Least Developed Country in Southeast Asia, agriculture is vital, contributing 30% to the GDP and supporting about 80% of the population. However, the country is highly vulnerable to climatic hazards, including severe flooding and drought. In 2018, floods caused damages of USD 370 million, heavily impacting the agriculture and transport sectors. Historical data indicates an increasing frequency of such climatic events, adversely affecting agricultural livelihoods.

Savannakhet Province, the largest in Laos, plays a crucial role in the country's agriculture, with extensive flood plains and significant rice production. However, with 78% of rice cultivation reliant on rain, it is highly susceptible to changes in precipitation patterns. The heavy rainfall between August and September 2019 caused severe flash floods, damaging crops and livestock and resulting in food insecurity. Addressing how climate-related hazards impact agricultural livelihoods and finding solutions to enhance resilience is critical for this province.

This project employs a research-to-policy approach to strengthen agricultural resilience through participatory Ecosystem-based Adaptation (EbA). It integrates rigorous scientific research on climate-related impacts with community engagement, focusing on vulnerable and marginalized groups. The project includes analyzing climate hazards, simulating ecosystem service models, assessing EbA practices, and identifying barriers to implementation. It also aims to influence policymaking at national and regional levels through stakeholder engagement, addressing policy gaps that hinder EbA, and promoting sustainable livelihoods.

The project's impacts include enhancing climate resilience by developing scenarios of climate-hazard impacts and assessing EbA practices to empower agricultural communities in Savannakhet. This approach improves livelihood resilience and reduces adaptation inequalities. Community empowerment is achieved through focus groups and engagement with marginalized groups, amplifying their voices to policymakers and fostering local ownership of resilience

The project addresses Gender Equality, Disability, and Social Inclusion (GEDSI) gaps by promoting climate adaptation measures that are gender-responsive and accessible to all. It emphasizes community engagement, co-developing EbA measures, and visualizing benefits to build resilience among marginalized communities. The research and engagement components are designed with GEDSI considerations, including accessible venues and equitable participation. A GEDSI plan and scoping will be developed to ensure non-discrimination and adherence to social inclusion principles.

In Laos, climate resilience actions are guided by the Water and Water Resources Law 1996, the National Adaptation Plan (NAP) 2009, and the National Climate Change Strategy 2010. These policies recognize agriculture's importance but lack specific adaptation practices and often involve limited community engagement. The project aims to support the development of targeted, GEDSI-responsive policies and strategies for EbA. By combining scientific evidence with community input, the project seeks to create equitable solutions, enhance community ownership, and improve the likelihood of successful policy implementation.

05 Building resilience and adaptive capacity of Women's Union to address water-energy-climate challenges in the Vietnamese Mekong Delta

Short project name: WEC Capacity for Women's Union in Vietnam Mekong Delta

Countries: Vietnam
Sectors: Water, Energy, Climate
Consortium:

- Mekong Delta Development Research Institute (MDI)
- School of Social Sciences and Humanities, Can Tho University (CTU)

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The Mekong Delta, a critical economic region, faces numerous challenges due to climate change and natural disasters, including sea-level rise, saltwater intrusion, landslides, and erratic floods. Water scarcity, pollution, and ineffective management are critical challenges for water security in the Mekong River Basin, varying by socio-economic context and production systems. Energy security is also pressing, with hydropower plants on the main river and its tributaries exacerbating issues like silt and sand reduction, riverbank erosion, and soil degradation, compounded by saltwater intrusion affecting more than half the natural area.

This project targets three representative provinces in the Mekong Delta for scalable lessons: An Giang province in the upper part, facing flooding and pollution from intensive rice and catfish production; Vinh Long province in the middle part, dealing with water pollution from intensive fruit, rice, and livestock production; and Tra Vinh province in the coastal area, struggling with salinity intrusion, a large Khmer population, and pollution from intensive rice, fruit, and shrimp production. The project aims to address water scarcity through the development of solar-powered groundwater treatment systems.

A key strategy is improving community capacity through focused training and communication. Awareness initiatives will target officials and members of the Women's Union in the Vietnamese Mekong Delta, highlighting women's crucial role in resource management and children's education. The communication program will employ various mediums to convey essential information to local farmers, including video clips, visualization techniques, and the Participatory Adults Learning Approach (PALA).

The Women's Union system, from the central level to grassroots organizations, will be integral to implementing project activities. This established network ensures sustained and far-reaching impacts. A participatory approach will engage Women's Union members from the project's inception, including early-stage consultations, participation in Training of Trainers (TOT) classes, and development of practical teaching and training materials. This model leverages the existing association structure and actively involves the community in shaping and implementing the project.

All images and videos will be crafted from authentic community situations, focusing on women, children, individuals with disabilities, and older people. The Committee for the Advancement of Women, in collaboration with the local Women's Union, will disseminate essential information and knowledge using formats tailored to each research location. Expected project outcomes include training about 30 Women's Union staff on WEC knowledge and facilitation skills through a TOT training class, direct participation of at least 300 Women's Union members in capacity-building programs through meetings and workshops, development of at least three action plans to integrate WEC challenges into provincial Women's Union programs, creation of three video clips in the selected provinces, production of a policy brief, and organization of kick-off and final workshops.

The project will involve the Women's Union in these provinces to ensure the development of training materials, especially for socially marginalized groups. GEDSI principles will guide the project, guaranteeing inclusive awareness-raising activities targeting women, ethnic minorities, people with disabilities, and rural populations. The project aims to convey sustainable water and energy use for climate change adaptation to the most socially marginalized and vulnerable groups.

The project embraces a holistic approach addressing the nexus of water, energy, and climate challenges while prioritizing gender equality, disability inclusion, social equity, human rights, conflict sensitivity, and participatory governance. The goal is to secure equitable benefits for all, particularly socially marginalized and at-risk communities. The research aligns with crucial national policies, including Governmental Resolution 120 (2017), emphasizing communication programs for Sustainable and Climate-Resilient Development in the Mekong Delta; the National New Rural Program, emphasizing environmental protection criteria; and the Resolution of the 13th National Women's Congress (2022), highlighting major Women's Union programs like "Three Clean" (clean house, clean alley, clean kitchen) and "Five Having" (having a safe house, sustainable livelihood, health, knowledge, and cultural lifestyle).

The project will begin with active participation from the Center for Women and Development in the Mekong Delta and the Women's Union across the 13 provinces. Outcomes will advance state policy implementation, including lessons learned and policy briefs.

Image by Rvimages from Getty Images Signature

06 Enhancing Fisheries Resilience and Managing Fisheries Resources Sustainably under Climate Change Impacts through Local Community Participation in Lao PDR

Short project name: Enhancing Fisheries

Countries: Lao PDR
Sectors: Water, Climate
Consortium:

- Maejo University (MJU)
- Northern Agriculture and Forestry College (NAFC)
- Souphanouvong University (SU)
- Agriculture and Forestry Department Lao PDR

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The Lao People's Democratic Republic (Lao PDR), situated in the Mekong River Basin, faces significant challenges due to its reliance on climate- and water-sensitive natural resources. Marginalized communities, heavily dependent on aquatic biodiversity, rely on fish and other aquatic species for nutrition and income. This reliance has led to overfishing and the use of illicit methods, exacerbated by limited adaptive capacities due to economic and geopolitical issues.

About 70% of Laos's population resides in rural areas, with 36% involved in agriculture, forestry, and fisheries. The Mekong Basin, covering around 35% of Laos's territory, is recognized as a biodiversity hotspot, hosting approximately 1,148 fish species. However, 14 species, including the Mekong giant catfish, are critically endangered, and 50 are classified as endangered or vulnerable. The river's challenges include climate variability, hydropower development, disrupted river dynamics, increased fishing pressures, land-cover changes, and inadequate fishery governance, contributing to declining fish stocks.

Local stakeholders have proposed establishing conservation zones with robust community engagement to address these issues. Despite these efforts, challenges such as knowledge gaps and limited guidance persist. This project aims to address these challenges by utilizing existing datasets from Thailand and Laos and initiating participatory data collection involving diverse local inhabitants. The focus is on inclusivity, actively involving women, minorities, and marginalized communities to ensure equitable power dynamics and effective sustainability measures.

Xuang River where the conservation zone will be potentially built.
(credit: MTT Rapid Response Project - Enhancing Fisheries Resilience)

The project's primary goal is to enhance fisheries resilience in Laos's Mekong River Basin by tackling climate variability, hydropower impacts, water quality, and the over-reliance on fragile aquatic resources. The project plans to establish conservation zones to protect crucial spawning periods and introduce small-scale community-based aquaculture systems. This approach involves collaboration among communities, researchers, and local government to formulate local conservation policies with potential regional applications.

In addition to enhancing fisheries resilience, the project prioritizes Gender Equality, Disability, and Social Inclusion (GEDSI) by engaging women and minority groups in fisheries management. By understanding and promoting their roles, the project aims to sustain resilience and biodiversity conservation, enhance food security, stimulate local economic growth, and foster comprehensive community development.

The project employs a Theory of Change framework, integrating grassroots knowledge with scientific insights. It includes two Rapid Response Actions (RRAs) and participatory activities to develop evidence-based policy recommendations. These policies aim to protect fish reproduction, conserve ecosystems, and provide regional insights for adaptive management practices.

A key focus is on influencing policy at the local and district levels. The project targets local governance structures for policy creation, emphasizing enhanced fish reproduction, brood stock protection, sustainable resource use, and effective environmental management strategies. By aligning these outcomes with the governance framework and leveraging success stories from similar initiatives, the project aims to impact local and district-level policies significantly. These efforts are designed to resonate with policymakers, promoting long-term, evidence-based conservation, and sustainable resource management that could be adapted across the region. This strategic approach seeks to integrate scientific data and local insights to drive meaningful policy changes, ensuring the resilience and sustainability of fisheries in Lao PDR.

07 Promote equitable sharing of water resources for ethnic minority communities living downstream of small hydropower projects through collaboration among the community, businesses, and the state in Vietnam

Short project name: SHARE-WREM

Countries: Lao PDR
Sectors: Water, Energy
Consortium:

- Nghe An Centre for Forestry Development and Consultation (NACEFDECO)
- Vinh University

Contact: Dr. Ho Thi Phuong (phuongmt.dhv@gmail.com)

Ethnic minority communities in Vietnam's mountainous areas depend on irrigated agriculture, now threatened by climate change and water competition from upstream small hydropower plants. With over 600 small hydroelectric projects in Vietnam, these projects significantly strain water resources for irrigation, directly impacting millions of ethnic minorities. While irrigation helps alleviate poverty for ethnic farming households and provides economic opportunities for women, hydropower projects contribute to national socio-economic development. Addressing the water-energy-climate nexus is urgent, given the pressures of climate change. This research project aims to ensure harmonious development locally and nationally by providing evidence-based impacts of small hydropower projects on the agricultural livelihoods of ethnic minorities and developing an action plan for equitable water resource sharing among communities, businesses, and the state.

Nghe An Province, the largest in Vietnam with over 3.2 million people, has 54 hydropower projects with a total capacity of nearly 1,700 MW. The project area, Tam Thai Commune, is downstream of the Xoong Con hydropower plant, which has significantly impacted the lives of 8 of 9 villages in the commune. These villages, mainly inhabited by Thai ethnic people, suffer from flood damage during the rainy season and droughts during the dry season due to dam closures, leading to abandoned arable land.

The SHARE-WREM project's primary goal is to increase equitable access to water resources for ethnic minority communities in Tuong Duong District. The project will generate and disseminate lessons learned to other hydroelectric areas in Nghe An Province and across Vietnam. Two major approaches will be applied: a gender-sensitive approach ensuring equal participation of women and men and a participatory methods approach involving stakeholders in the project's activities.

The project aims to achieve two primary outcomes: knowledge-based evidence and an action plan with benefit-sharing regulations. The research will explore the impacts of small hydropower projects on agricultural livelihoods through qualitative and quantitative data collection, including questionnaires, expert consultations, pilot surveys, household surveys, focus group discussions, critical in-depth interviews, and consultation meetings. The action plan and benefit-sharing regulations will be developed based on community concerns and needs, reviewed by relevant parties, and promoted for equitable water resource sharing among local communities, businesses, and government agencies.

A gender equality, disability, and social inclusion (GEDSI) perspective will be mainstreamed throughout the project stages, ensuring the participation of marginalized groups such as women, youth, people with disabilities, and ethnic minorities. The project will comply with relevant water resource regulations while addressing conflicts arising from top-down hydropower operation decision-making. By engaging industry leaders, government authorities, and local communities, the project will propose regulations to ensure hydropower plants' disaster response plans are responsible and informed, promoting legal compliance and human and environmental health. This initiative aims to enhance policy frameworks for equitable water distribution, supporting sustainable livelihoods and development for ethnic minority communities.

Mekong Thought Leadership and Think Tanks Network (MTT) Program

The Mekong Thought Leadership and Think Tanks Network Program aims to work with national and regional knowledge-based policy influence organizations to enhance their effectiveness and inclusiveness in policy engagement. This will be combined with communications based on high-quality research, practical advice generated by the program, cross-learning among relevant organizations in the subregion, and drawing upon relevant Australian and other expertise and experiences in water security, energy security, and climate change mitigation and adaptation.

The program partnership comprises 25 organisations, including eight consortium members, that not only help to ensure technical competency across the water, energy, and climate domain, but also draw upon critical insights and connections. The program is supported by the Department of Foreign Affairs and Trade (DFAT), Government of Australia.

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