SOUTHEAST ASIA-EUROPE
JOINT FUNDING SCHEME FOR
RESEARCH AND INNOVATION

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Mahasarakham University
Thailand

# Topic 1: Climate-Responsive Wastewater Management: Enhancing Urban Resilience in Khon Kaen and Surrounding areas

Brokerage Event – 9th Call

03 October 2024

# My and my institution's area of expertise

**Name: PECHLADDA PECHPAKDEE**

**Position: Asst.Prof.**

**Unit: Faculty of Architecture, Urban Design, and Creative Art**

**Organisation: Mahasarakham University**

**City: Maha Sarakham**

**Country: THAILAND**
**E-Mail: Pechladda@gmail.com**

## Expertise:

- **Academic**: Urban Design and Development Class, A Convenor of Thesis of the Year Award for ARCASIA, Decoding Singapore Development (Book)
- **Research:** IWRM (AusAID and Mekong Challenge Program on water and Food (**CPWF**))/ Waste Management and Symbiosis Approach/ Urban Tourism in BKK/ Aerotropolis in Lat Krabang, Smart cities and policy guidelines with DLA and JICA, Citizen Centric Governance (USAID)
- **Practice**: Special City in Khon Kaen, Project Manager of Urban Development in BKK (Minburi and Lat Krabang District for Bangkok Metropolitan Administration)

# My and my institution's area of expertise

## Expertise: Urban Studies: Urban Design, Urban Development, and Smart Cities

Cooperations through IWRM for better water governance, a case study of Chi River basin of the Northeast Thailand

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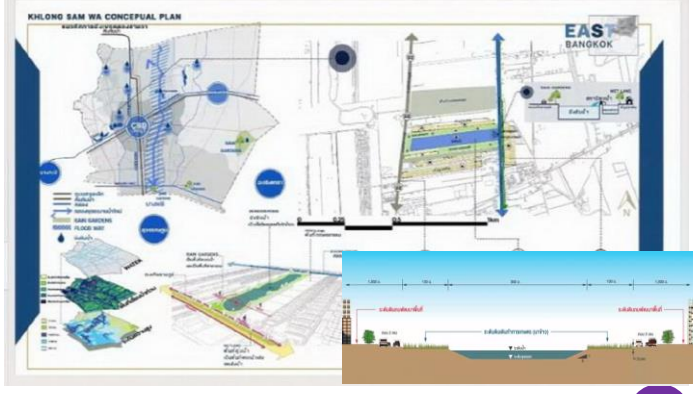
Community Waste Management





Smart cities and policy guidelines by JICA, DEPA, and DLA




Flood and Water management in East BKK

# My proposed Research Idea for the 9th JFS Call


## Research Question:

•What are the main challenges and best practices in wastewater treatment across Europe and Southeast Asia, focusing on regulatory frameworks, resource constraints, and climate adaptation? Additionally, what are the risks of neglecting wastewater management and the benefits of effective implementation?

•How can SEA and European municipalities collaborate to create sustainable, efficient wastewater reuse systems for municipal use?

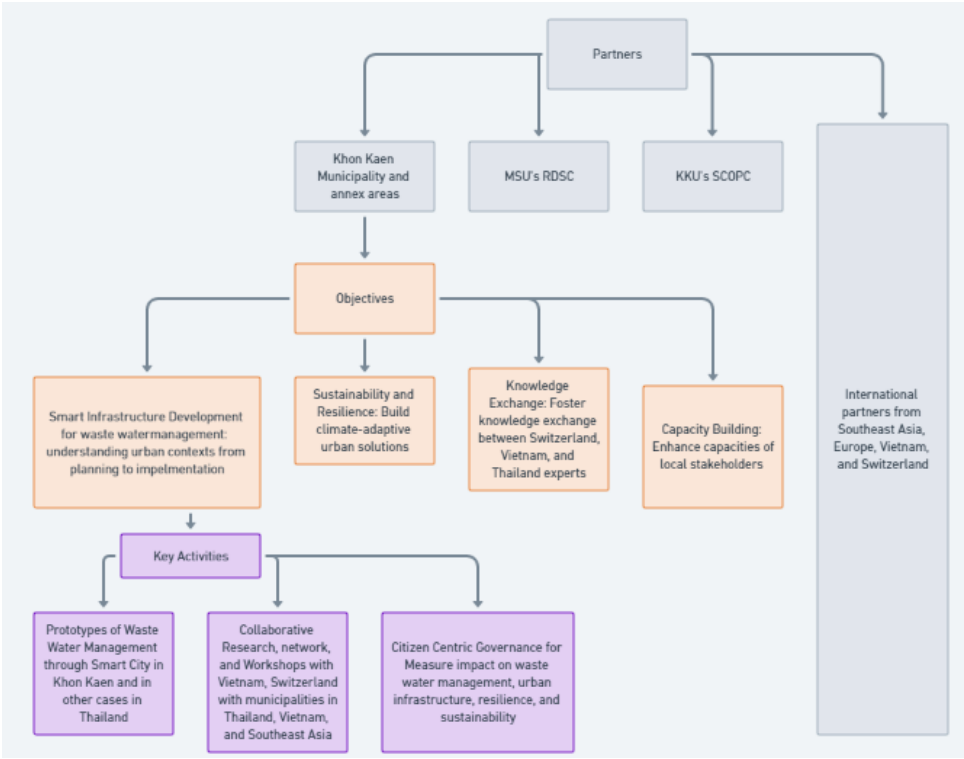

## Proposed Project Activity:

This project aims to implement an integrated wastewater management system in collaboration with Khon Kaen municipality and annex areas, RDSC at Mahasarakham University (MSU), and SCOPC at Khon Kaen University (KKU). The initiative will also involve international partners from Southeast Asia (SE), Europe (EU), Vietnam, and Switzerland, fostering critical and creative collaboration.

# My proposed Research Idea for the 9th JFS Call

**Proposed Research Activity:** The main focus

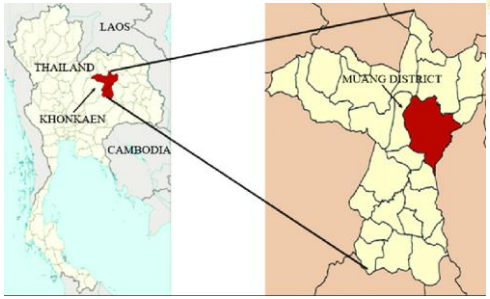
- **Separate wastewater and stormwater** by creating an advanced system that channels domestic wastewater to a centralized treatment facility. Larger pipelines will be developed to collect runoff from roads, ensuring that wastewater does not mix with surface rainwater.
- This system will help **reduce treatment costs** by keeping untreated runoff separate from wastewater, which often causes inefficiencies in the treatment process.
- **Improving drainage efficiency** will also mitigate risks of urban flooding exacerbated by climate change, ensuring the long-term sustainability and resilience of the system.

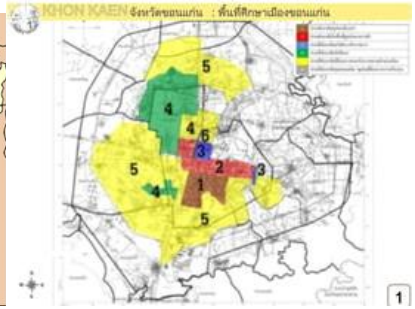


# Project Consortium

## My organisation: Faculty of Architecture, Urban Design and Creative Arts, Mahasarakham University

**Role:** Collaborator and planning with Smart City Unit (RDSC)




## Further existing partners (if any):

**Partner 1:** Khon Kaen Municipality and annex areas

**Expertise:** Administrators and local service providers, Sanitary system

**Role:** Local Administration Management and Public Service Facilities

**Partner 2: SCOPC in KKU**

**Expertise:** Smart City expertise

**Role:** site survey, data collection, analysis, plan

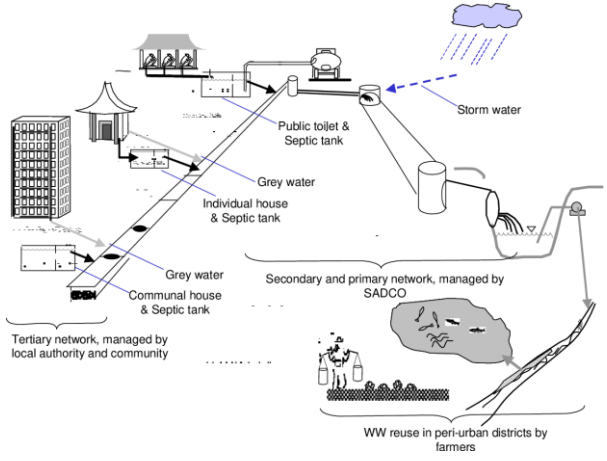
# Project Consortium

## Partners that we are seeking for our project consortium:

**Region:** Vietnam

**Expertise:** Wastewater management

**Role:** Co-design and Co-creation

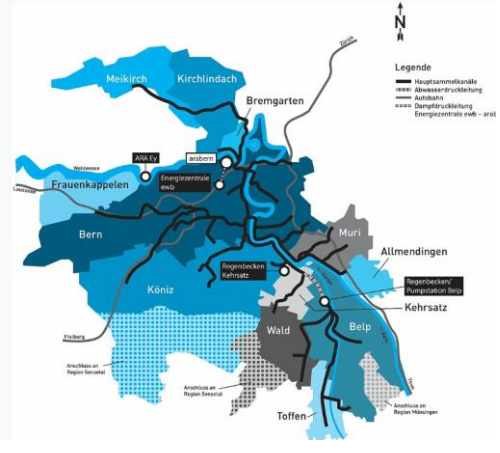



Anh, N.V. (2005). Decentralised wastewater management in Vietnam - a Hanoi case study.

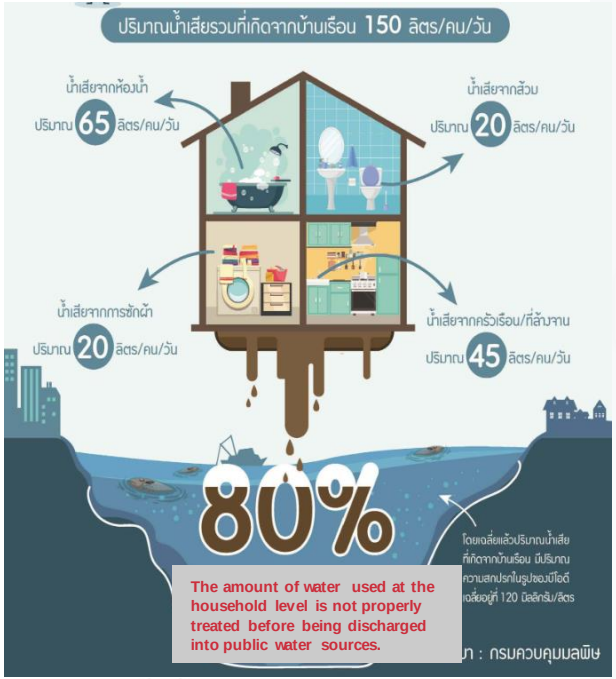
**Region:** Switzerland

**Expertise:** Wastewater management

**Role:** Co-design and Co-creation




# Conclusion


ปริมาณน้ำเสียรวมที่เกิดจากบ้านเรือน 150 ลิตร/คน/วัน
น้ำเสียจากห้องน้ำ
ปริมาณ 65 ลิตร/คน/วัน
น้ำเสียจากส้วม
ปริมาณ 20 ลิตร/คน/วัน
น้ำเสียจากการซักผ้า
ปริมาณ 20 ลิตร/คน/วัน
น้ำเสียจากครัวเรือน/ที่ล้างจาน
ปริมาณ 45 ลิตร/คน/วัน
80%
The amount of water used at the household level is not properly treated before being discharged into public water sources.


Wastewater Management Project
Problem
Managing wastewater
Flooding risks
Water scarcity
Process
Collaboration between RDSC, SCOPC, Switzerland, Vietnam
Focus on urban settlement growth and trends
Activities
Knowledge exchange
Innovation co-design
Co-creation with local partners
Swiss team: Wastewater innovations
Vietnam team: Localized solutions
Actors
Academic specialists in sanitary engineering
Environmental experts
International partners (Switzerland, Vietnam)
Local stakeholders: Government officials, private sector, citizens
Objective
Citizen-centric governance
Co-created wastewater systems
Sustainable urban development
Address bio-risks from floods and water scarcity