

Promotion of Community Resilience Against Plastic Pollution
and Climate Change in the Mekong River Basin

Plastic Free Rivers



From
the People of Japan



Regional Office for Asia and the Pacific (ROAP)
United Nations Environment Programme (UNEP)



Overview of the Project

- **Project Name:** Promotion of Community Resilience Against Plastic Pollution and Climate Change in the Mekong River Basin
- **Short Name:** Plastic Free Rivers
- **Donor:** Government of Japan
- **Project Period:** April 2022 – March 2023
- **Locations:** Riverine communities in Vietnam and Thailand

Summary of the Project Progress

- **Project Site Selection**

- Vietnam – Cai Rang District, Can Tho, Vietnam
- Thailand - Wat Bangbua community (LadPrao Canal), Bangkok, Thailand

- **Scoping**

- **Plastic and Climate Resilience Nexus:** Research on the interlinkage between **Floods and plastic pollution and community resilience**
 - Both cities experiences frequent flood and flood influence the livelihood of local communities
 - Plastic leakage into canal increases the risk of flood by clogging the canal drainage system
 - Improvement of community-led plastic waste management directly and indirectly enhance the community resilience

- **Technology**

- CCTV plastic monitoring – Plan to implement in Cai Rang District
- Mobile application to promote waste segregation and recycling – Plan to implement in Wat Bangbua community

- **Government Counterpart consultation**

- Pollution Control Department, Thailand
- Bangkok Metropolitan Administration, Thailand
- Ministry of Natural Resources and Environment, Vietnam
- Departments of Natural Resources and the Environment, Vietnam
- Vietnam Administration of Sea and Islands, Vietnam

CounterMEASURES I & II Projects

Science-Policy Interface for macro and micro
plastics management in rivers

Promote Resilience in Riverine Communities for Plastic Pollution and Climate Change

*Capacity building based on the tools and mechanisms developed under the
CounterMEASURES project*

*Increased investment and uptake of plastic
pollution prevention measures by national and
local governments, CSOs and financial institutions
demonstrated in the Lower Mekong River through
international cooperation and stakeholder
engagement.*

Targets under this project

Output 1: *A network of regional experts, stakeholders, and representatives of Mekong riverine communities are supported and trained to accelerate the implementation of the protocols for Riverine Microplastic and Macroplastic Monitoring in the Lower Mekong River and to assess and map the impact of CC and plastic pollution during the COVID-19 Pandemic on livelihoods of selected riverine communities in Thailand and Vietnam to inform decisions*

Output 2: *Effectiveness of new technologies and good practices to mitigate the impact of climate change and plastic pollution demonstrated in selected Mekong riverine communities in Thailand and Vietnam, documented and made available for replication.*

Project rollout

Implementation Arrangement: Established diversified team with local partners and engaging with local stakeholders

- **Implementation Partner**

- **Thailand:** Asian Institute of Technology (AIT) – USD 170,000
- **Vietnam:** The Institute of Strategy and Policy of Natural Resource and Environment (ISPONRE) – USD 114,500

- **Diversified Team**

- **30 Experts** (22: Thailand, 8: Vietnam, Gender Balance: 61% Man, 39% Woman)
- **Expertise:** Waste Management, Waste Management Technology, Innovation, GIS, Machine Learning, Gender, Social Development, Climate Change, Communication, Information Technology

- **Government Counterpart consultation**

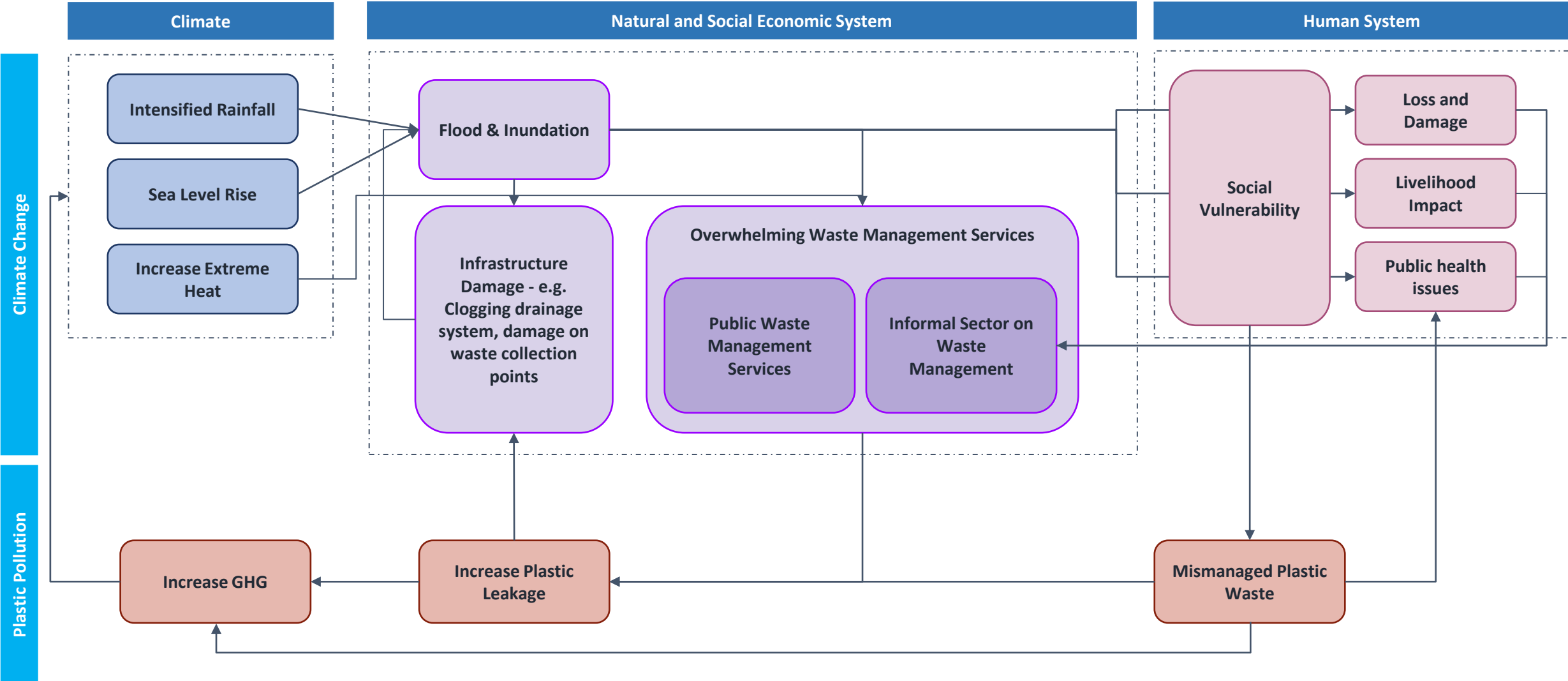
- **Thailand**

- Pollution Control Department (PCD)
- Bangkok Metropolitan Administration (BMA)

- **Vietnam**

- Ministry of Natural Resources and Environment (MoNRE)
- Departments of Natural Resources and the Environment Can Tho (DONRE)
- Vietnam Administration of Sea and Islands (VASI)

Plastic Pollution and Climate Resilience Nexus: Focus on Urban Floods and Plastic Leakage. Plastic Pollution amplifies the Urban Flood impacts on community resilience



Vision: Stop the loop of flood, plastic leakage and community vulnerability and promote a shift to inclusive and resilient circular economy with the power of technology and citizen engagement



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Power of Technology



CCTV
Plastic Monitoring



Mobile based
Circular Economy Platform

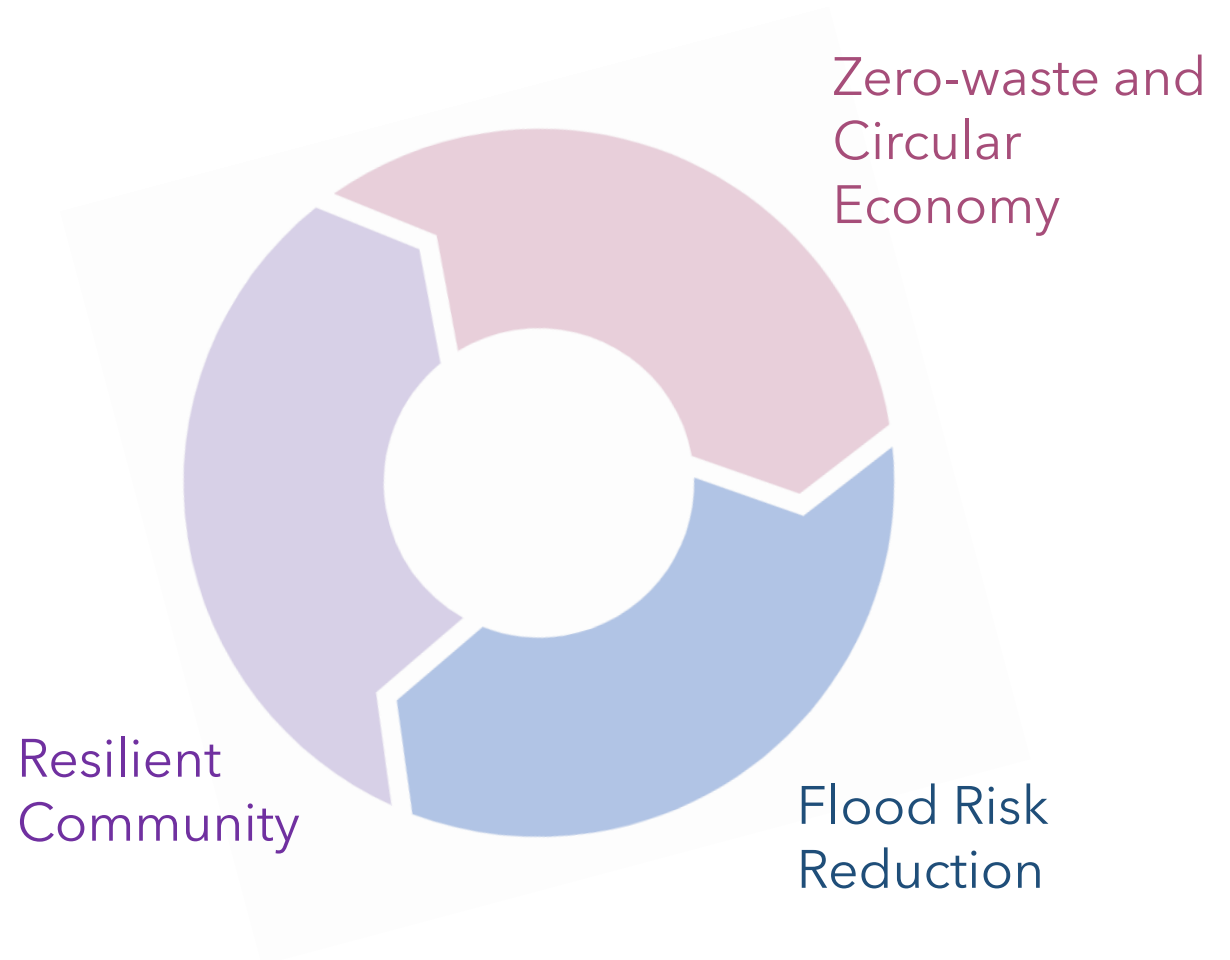
Power of Citizen Engagement



Community-based
Plastic Waste Management



Inclusive Circular Economy



Baseline Survey, Impact Assessment, Solution design are ongoing in both Thailand and Vietnam

Discussion Points		Potential Questions	Required Support from stakeholders
1 Issues Identification What is the major issues for community resilience that has strong interlinkage with plastic pollution and climate change?	a Plastic Pollution Issues	<ul style="list-style-type: none"> Where is the major plastic leakage hotspots Who will be the main contributor on plastic pollution What is the major challenges on plastic waste management (formal/informal) What is the mechanism that plastic pollution leak into environment 	<ul style="list-style-type: none"> Existing Data on plastic pollution and leakage in Can Tho Implementation site selection Hazard map of any natural disasters Climate related data Socio-economic data and demographic data of Can Tho Support and Coordination on interview/data collection on formal/informal sector on waste management, socially vulnerable groups, industry groups
	b Climate Change Issues	<ul style="list-style-type: none"> What is the major climate change impacts in Can Tho and where it happens How the impacts amplified the risk of plastic leakage into environment What is the climate change impacts on waste management operations How climate change affects to increase of plastic pollution and its leakage 	
	c Issues in a Community	<ul style="list-style-type: none"> Is there any urban flood that caused by clogging of plastic waste in drainages Is there any livelihood issues, such as fishery, agriculture, tourism industry etc, that caused by plastic pollution amplified by climate change Is there any health issues that caused by insufficient plastic waste management Is there any issues on socially vulnerable groups due to the increase plastic pollution amplified by the climate change 	
2 Capacity Identification The community has sufficient capacity to deal with the issues?	d Competencies/ Resources/ Enabling Environment	<ul style="list-style-type: none"> Community members are aware of the plastic pollution issues and how it impacts their livelihood and health issues? Community member and local authorities has sufficient skills to monitor the issues? Is there sufficient technology to deal with the issues? Are there any national and local policies that enhance, or at least do not constrain, the efficiency and effectiveness of plastic waste management (formal/informal) 	<ul style="list-style-type: none"> Participate the capacity mapping activities (interview/questionnaires) Provide the information on existing activities
3 Technology Intervention What technology is the best to implement in a community and how to operationalize to sustain	e Technology Feasibility	<ul style="list-style-type: none"> Plastic Monitoring technology meets the needs of community and fits to current operations by local authorities and communities? The technologies satisfies the local/national regulation, and local capacities? 	<ul style="list-style-type: none"> Permission to conduct PoC on plastic monitoring Identify and coordinate with main users within the local authority Provide staff for capacity development training and for PoC implementation
	f Stakeholders	<ul style="list-style-type: none"> Who will be the main users/operators of the technologies, who needs to be involved and who will be interested and capable to support 	
	g Operationalize	<ul style="list-style-type: none"> What is the necessary points to consider for sustainability (finance, regulations, human resources, etc) Is there any successful cases that we can learn What is the necessary procedure in Can Tho to implement and operationalize 	

Site Selection: Targeted riverine communities that has significant plastic leakage and affected by urban flooding and inundation



Thailand: Wat Bangbua Community (Ladprao canal)

- **Community Profile**

- Traditional (encroach on the canal) and renovated slum areas
- Total area: >4,800 m² (3 Rai)
- 140 households

- **Issues**

- Large number of plastics leaked to canal and block waterway
- Increase in water-born Diseases

- **Community Challenges**

- **Waste management**

- Facing plastic pollution and waste management issue : tradition way of waste disposal
- Polluted canal and sanitation issues, especially during summer: odor, low water quality
- Transportation issues: waste collection point (BMA) located far from their houses

- **Climate Change**

- Have faced flooding for a weeks (1-10 Sep, 2022)
- During flood event,
 - water level increased up to 50-70 cm from the floor
 - Plastic wastes have distributed (flow in-out) between their households
 - Increase in water-born disease

Site Selection: Targeted riverine communities that has significant plastic leakage and affected by urban flooding and inundation



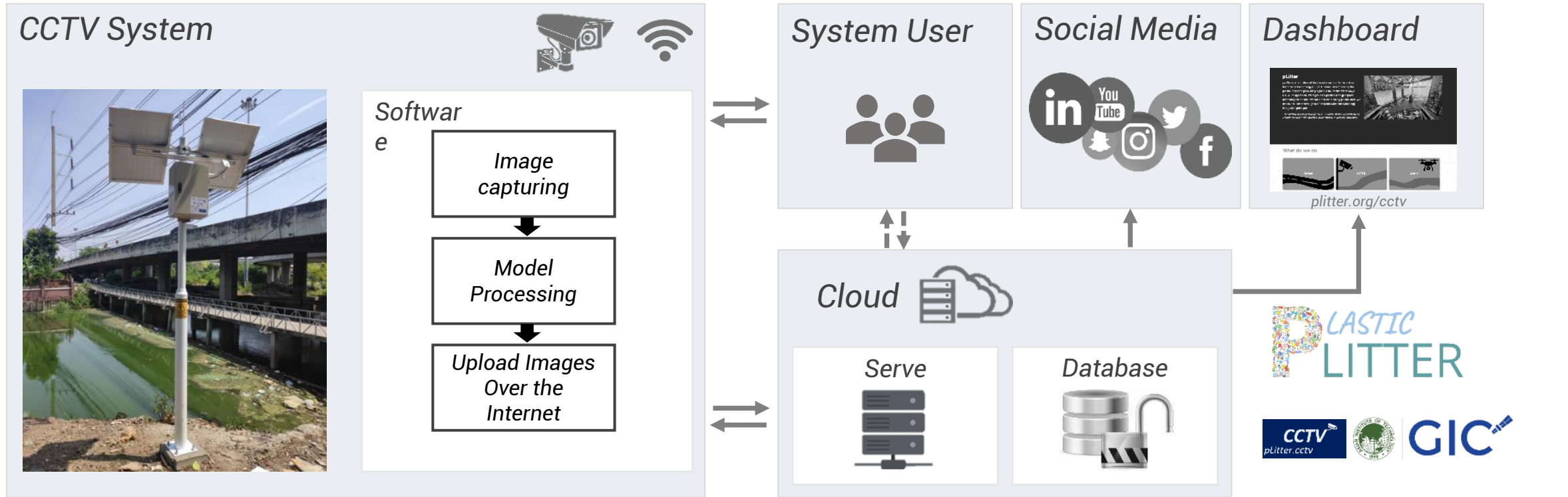
Vietnam: Ninh Kieu District and Cai Rang Floating Market Community

- **Community Profile**
 - Ninh Kieu District: Urban land-based community
 - Cai Rang Floating Market Community: Most famous tourist site of Can Tho city
- **Issues**
 - Poor plastic waste management blocks drainage systems and then exacerbates the inundation during extreme rainfall events, which can reduce the ability of the city to cope with extreme climate events
 - Socio-economic issues caused by floods and pollution
- **Community Challenges**
- **Waste management**
 - Lack of access to waste collection service
 - Lack of proper equipment for waste collection
 - Polluted canal and sanitation issues
 - Transportation issues: waste collection to communities
- **Climate Change**
 - Recorded Flood event 2019, 2022
 - Intensified rain

Technology Review: A total of 101 technologies reviewed with a focus on plastic waste management

Topic	Challenge	Possible Intervention	Technology option
Infrastructure, Settlement and Livelihood	<ul style="list-style-type: none"> • Damage to the settlement (inundation) and infrastructure (drainage system) which is exacerbated by plastic clogged in a drainage system • Lack of accessibility to public services (public announcement and awareness programme, accessibility of alternative) • Public health issues (water-/vector-borne diseases) • Food and water contamination both by flood and microplastic • Extreme use of plastic bottles to secure clean water in daily life and in emergency due to the disaster or plastic buckets to collect rainwater • Extreme use of plastic food wrappers and plastic bags due to frequent shopping to secure fresh foods and water (due to no fridge system) 	<ul style="list-style-type: none"> • Identify/map out drain system clogged with plastic waste (hotspots), overlaid with a flood risk map • Improve infrastructure including a drainage system • Clean-up drains and waterways • Assess the living (hygiene, public health, water supply, etc.) Develop specific policies, guidelines and plans to improve above environments • Implement the activities according to the above policy arrangement 	<ul style="list-style-type: none"> • CCTV, Drone, etc. • Mobile app for citizen science • Litter boom • Waste collector at the water gate • Cleanup equipment for waterways
Working environment and Occupational safety and health (OSH)	<ul style="list-style-type: none"> • Poor living and working environment (poor occupational safety and health) due to extreme heat and floods together with the negative impact of plastic pollution to ecosystem and biodiversity 	Assess the working environments (vulnerabilities such as informal waste management sector including waste picking, communal waste management, etc.)	<ul style="list-style-type: none"> • Equipment for separation, PPE equipment • Any mobile app to promote separation in informal sector / community • Waste tracker for informal sector
Community Trust and Cohesion	<ul style="list-style-type: none"> • Lack of awareness activities against plastic pollution with climate change • Loss of opportunities to participate activities and events related to plastic pollution with climate change 	<p>Strengthen the community awareness and outreach activities integrated both plastic pollution and climate change</p> <p>Promote citizen science to recognize the plastic pollution with the impact to community</p>	<ul style="list-style-type: none"> • Visualization of plastic pollution and climate change impacts (mobile app, Facebook, CCTV result, etc.) • Any tools for outreach for plastic pollution to the communities
Community Waste Management	<ul style="list-style-type: none"> • Vulnerability waste management in a community resulted in plastic pollution, linked with climate change 	<ul style="list-style-type: none"> • Improve SWM system (poor/no 3Rs and collection/transportation, open dumping) in collaboration with a community, NGOs and an informal sector • Improve SWM infrastructures (collection station, transportation, recycling technology, disposal site) • Identify the plastic leakage sources and pathways • Clean-up (plastic) waste clogged in drains and waterways 	<ul style="list-style-type: none"> • Mobile app to accelerate the separation in a community • Mobile app to make community (generator) easier access to junkshop or waste picker • Mobile app Cleanup equipment at the waterway • Interceptor

Monitoring as Entry point of being Resilient: Set up CCTVs to monitor the leakage of plastic pollution for better planning and raising awareness

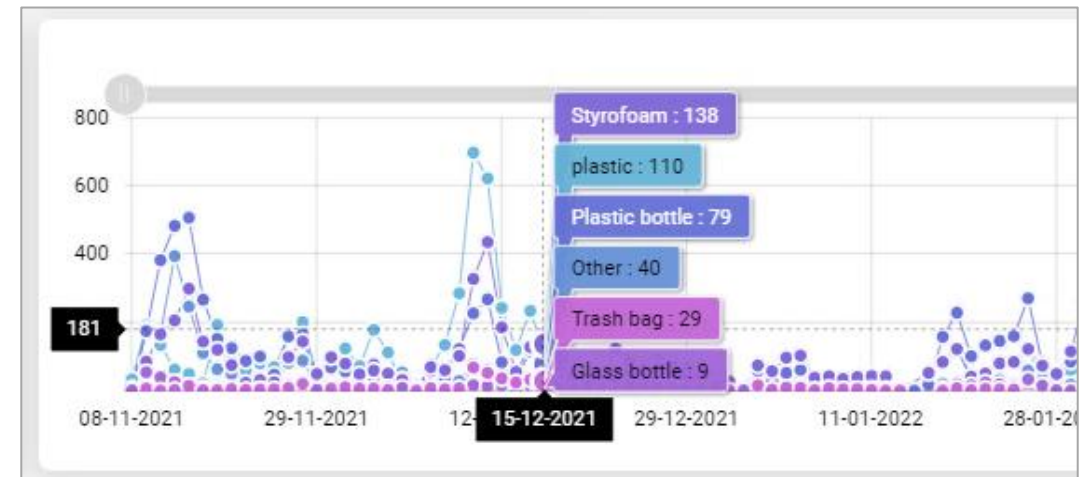


Aim of pLitterCCTV

1. Detect plastic litter on rivers and categorized in to 6 categories
2. Daily number of plastic litter detected for each category

Benefits of Having the plitterCCTV System

1. Awareness of what type of plastic litter discharging to rivers (Evidence collection)



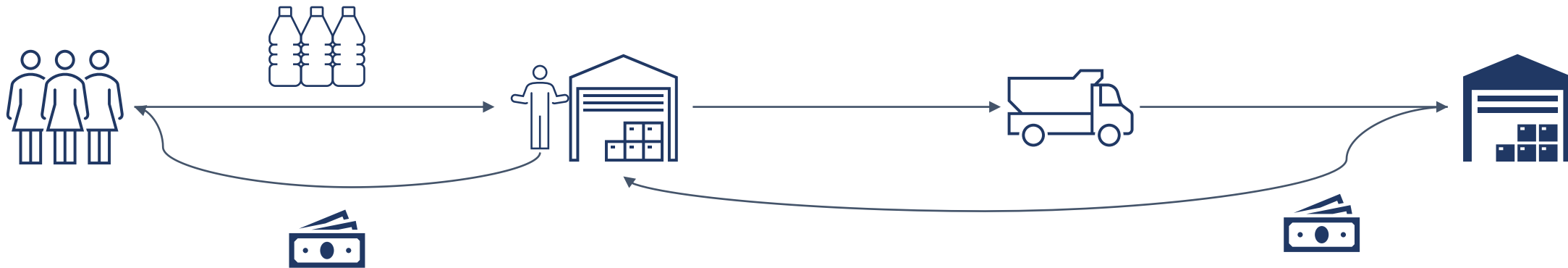
Digital Technology to bridge community and circular economy: Deploy mobile circular economy platform to incentives the plastic waste collection, segregation and recycling and improve the livelihood



Green2Get: Bridge producer, Consumer and Recyclers with mobile app



OK Recycle: Connect Sellers and Buyers



Stakeholder Engagement: Project introduced to government counterparts and stakeholders and welcomes the project and keen for the uptake of the project output



- **Meeting with Government Counterparts**
Organized with VASI, DONRE (Vietnam) and PCD (Thailand), BMA is also informed.
- **VASI:** Interested in the project contribution to INC process. Request further meeting with UNEP.
- **DONRE:** Interested in CCTV monitoring system to integrate their local monitoring system
- **PCD:** Welcomed the project and proposed the implementation sites and the potential technologies
- **Community Survey** is ongoing

Outreach and Communication: Project introduced to Bangkok based ambassadors/representatives and preparation process for INC



- **Participated from** Australia, Egypt, EU, Finland, Germany, Kenya, India, Indonesia, Japan, Malaysia, and Thailand
- **CounterMEASURE project and the current project were highlighted** and introduced as remarkable regional initiatives to promote science-based plastic leakage monitoring
- **CounterMEASURE project were highlighted** in the preparation documents for the Panel - Asia Pacific's role negotiating a global treaty on plastic pollution

Thank you

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