




Southeast Asia Partnership  
for Adaptation through Water

# Building A Water-Resilient World

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Efforts to combat climate change have historically leaned heavily towards mitigation. Adaptation action must now be aggressively scaled.

Between 2020 and 2024, Southeast Asia faced significant climate-related challenges, including **devastating typhoons and extreme heatwaves.**

The Philippines was hit hard by Typhoon Goni (Rolly) in 2020, one of the strongest typhoons on record, causing widespread destruction, displacement, and loss of life. Meanwhile, the region experienced unprecedented heatwaves in 2023, with countries like Thailand and Vietnam grappling with severe water shortages and health risks.

Today, only about 5%\* of climate financing is directed towards adaptation, representing a **financing gap of US\$215 billion annually.**

# Risks linked to climate adaptation are top-of-mind for both businesses and governments...

## Global risks ranked by severity over short and long terms

### Risk categories

- Economic
- Environmental
- Geopolitical
- Societal
- Technological

### 2 years



### 10 years

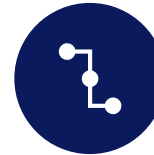


...yet businesses face challenges in working on adaptation.

The World Economic Forum conducted an 18-month study, surveyed **50** Forbes 2000 companies and found:



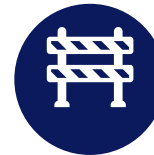
Only 27% rated adaptation as a very high priority



Although 8 in 10 companies recognise climate risks to their business, only 2 will invest in mitigating those risks



Despite having identified market opportunities in climate adaptation, less than half are working to develop those opportunities

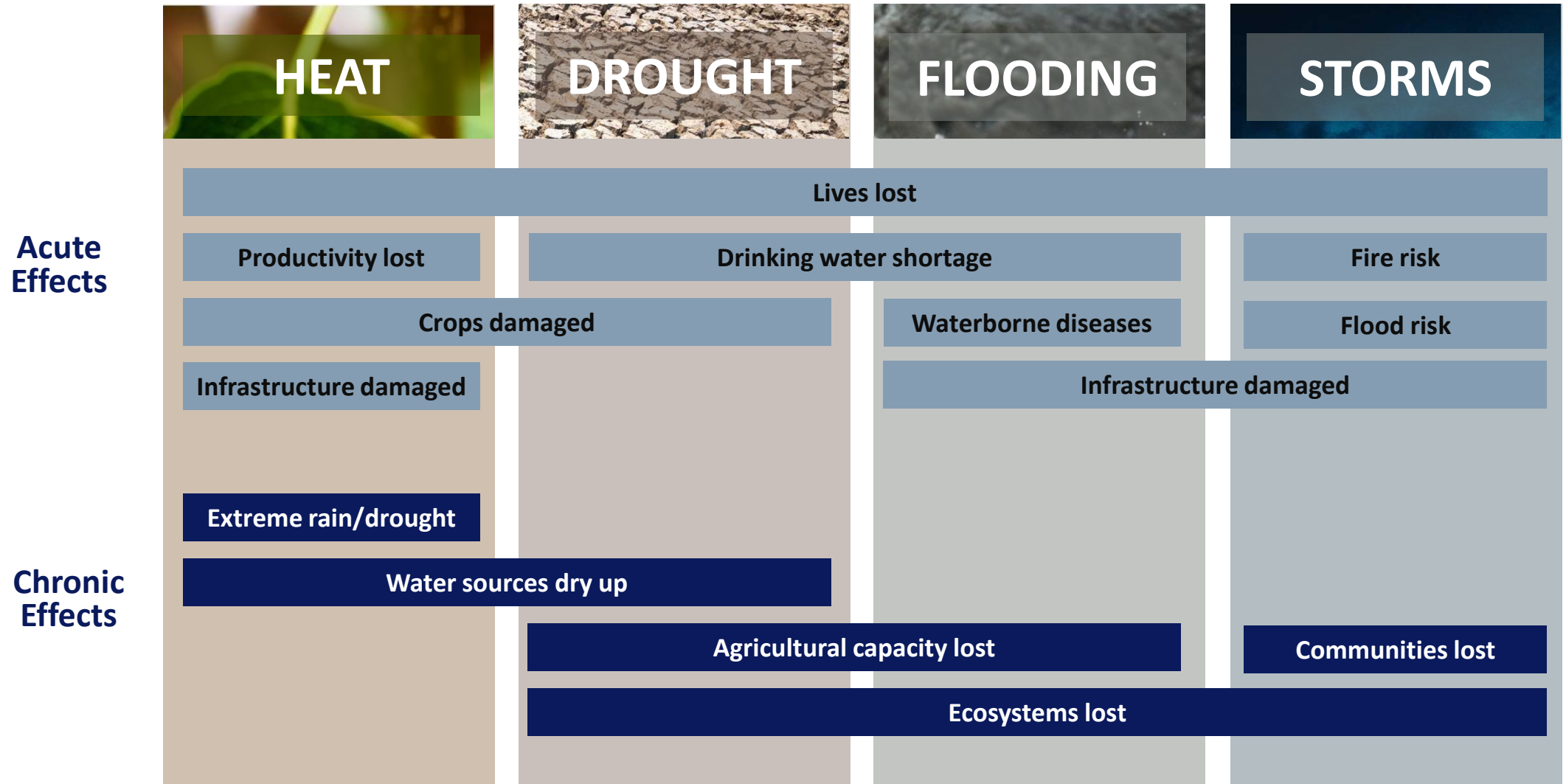


Businesses face internal challenges in reducing risks and external challenges in bringing adaptation products to market



Governments do not facilitate business efforts on adaptation

# Duality of Water: Both a Cause and Casualty of Climate Crisis

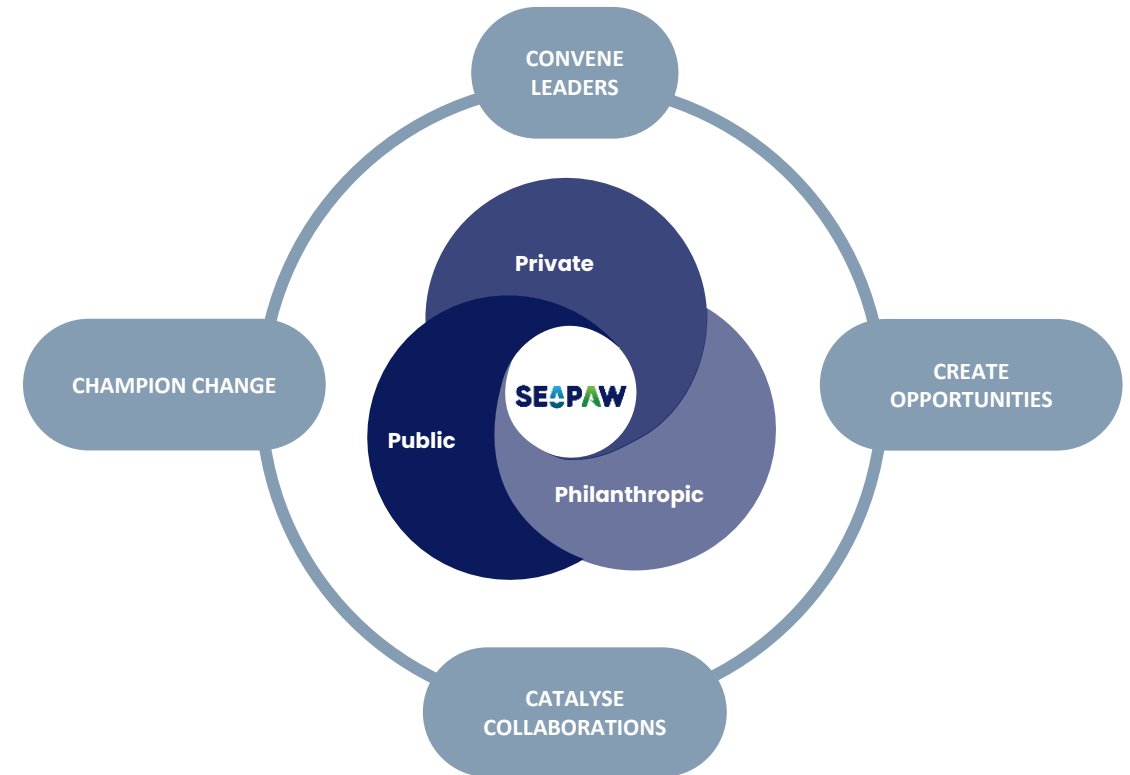


# Southeast Asia Partnership for Adaptation through Water

SEAPAW is the first platform in the region to **focus on strengthening water resilience** as an approach to climate adaptation.

## Key Levers of Change:

- **Bridging Critical Agendas:** Connecting adaptation, resilience, and water strategies to amplify collective impact
- **Informing Policy with Expertise:** Collaborating with policymakers and leading experts to apply global knowledge in Southeast Asia
- **Unlocking Business Potential:** Activating opportunities by transforming climate risks into adaptation-focused investments



# SEAPAW Areas of Focus

## Water Resource Management



Optimise water use and manage supply amid climate shifts

## Food Security



Secure agricultural productivity against extreme water events

## Asset Protection



Protect asset values from water incursion and desertification

## Sustainable Water Access



Provide water access to enhance community resilience

## Nature-based & Circular Solutions



Mitigate climate impact through ecologically-centred, regenerative solutions

# SEAPAW Areas of Focus – Examples

## Water Resource Management



Pilot strategies that optimise water for water intensive industries such as data centres

## Food Security



Pilot sustainable approaches and practices to reduce methane emissions and water use and enhance productivity in rice farming

## Asset Protection

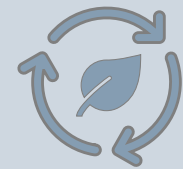


## Sustainable Water Access



Pilot sustainable systems and practices to provide clean water access for rural communities

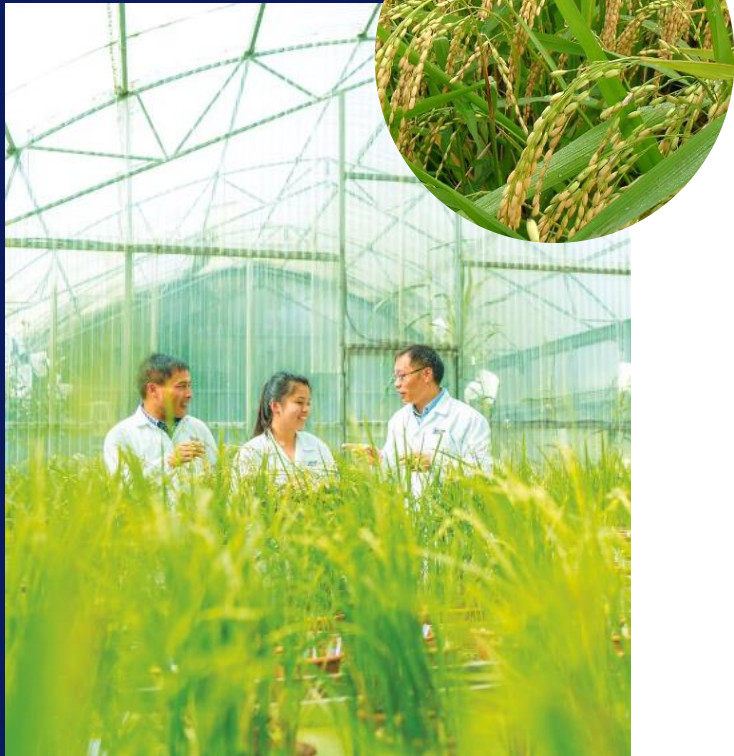
## Nature-based & Circular Solutions





# Climate Adaptation Solution

## Sustainable Agriculture



Climate-driven challenges such as droughts, heat stress and flooding have reduced crop productivity.

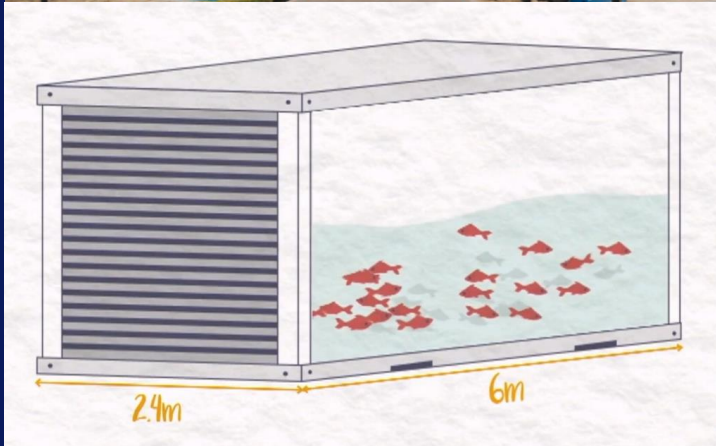
A Singapore-based research institute has developed a three-pronged integrative approach to sustainable rice agriculture:

- Development and adaptation of climate-resilient rice varieties.
- Sustainable water use management by optimising irrigation techniques.
- Improved soil management to improve yields and limit methane production.

Outcomes include an improvement in yield, lower water usage and reduction in methane emissions. This approach helps increase farmers' resilience towards erratic weather patterns and supplements income from dry season harvests.

# Climate Adaptation Solution

## Sustainable Aquaculture



The growing global demand for seafood highlights the need for efficient water usage in land-based aquaculture.

Modularised, scalable and stackable mini-fish farms, that can be deployed in urban environments achieve:

- Efficient water recycling for sustainable production in water-scarce regions.
- Real-time monitoring for climate-adaptive control with smart sensors.
- Efficient waste removal systems that prevent improper discharge, maintaining a clean environment for seafood cultivation.

The controlled environment enables the fishes to be farmed free from antibiotics, mercury, chemicals, pollution and microplastics, providing a reliable source of high value, quality and safe fish food protein.

# Climate Adaptation Solution

## Clean Water to Empower Communities



PRODUCT  
WATER

RAW  
WATER

Climate change has resulted in the increased occurrence of adverse weather events like floods/droughts/typhoons which can lead to widespread damage and contaminate/degrade existing water sources.

This compact water purification system is able to treat raw water from varied water sources such as river/stream/rainwater to provide drinking water.

- Filters 5,000 to 10,000 litres of water per day.
- Powered by renewable energy source such as solar and a battery storage system, minimising environmental impacts.
- Modular design for easy installation and maintenance.

This allows for easy deployment to rural villages and disaster-prone coastal communities who face increased challenges in accessing clean and reliable drinking water.

# Climate Adaptation Solution

## Having Access to Clean Water in a Crisis



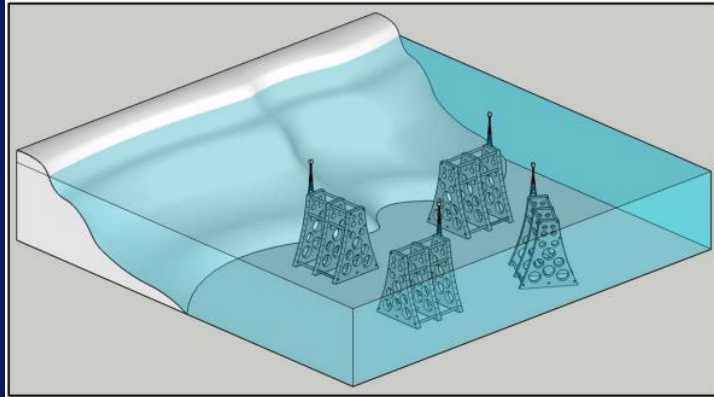
Similar to the earlier example, this portable filtration system converts unsafe water into drinking water in minutes and is best used for disaster relief and smaller communities. Key features include:

- Low cost, no electricity required (makes use of a bicycle pump design).
- Lightweight (weighs 2.5kg) and transportable and easy to set-up in under one minute.
- Filters over 200 litres of water per hour.

Having access to clean water will decrease the incidence of waterborne diseases like diarrhoea and vomiting, and reduces the time spent collecting water.

# Climate Adaptation Solution

## Building Reef Resilience Against Climate Change



Coral reefs are seen as being vital to coastal resilience, as they provide natural protection against storms, erosion, and flooding.

A high-relief artificial reef is beneficial for coastal defence and biodiversity enhancement:

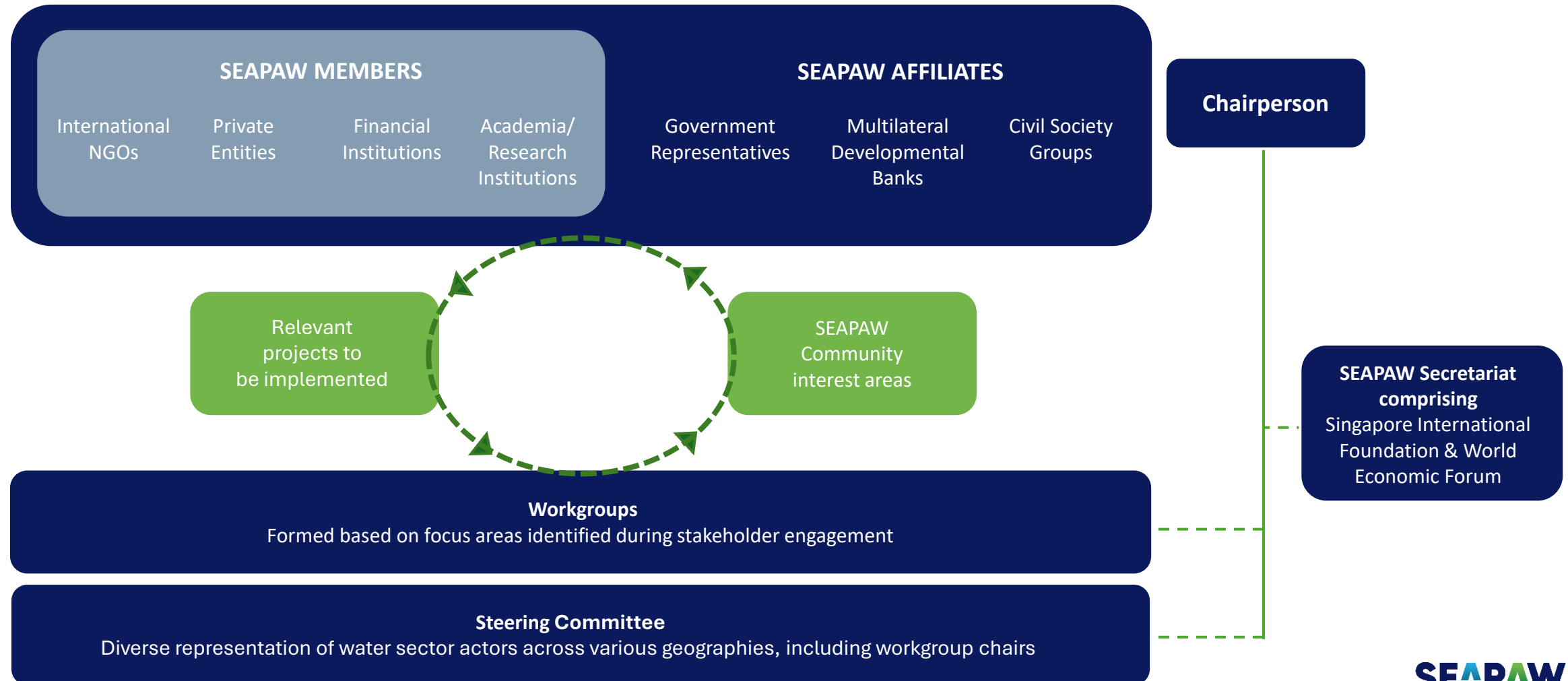
- No piling work needed, resulting in minimum seabed disturbance.
- Frame engages sloped or curved surfaces to minimise sediment accumulation.
- Mimics natural reef systems in open water which enhances biodiversity. The artificial reefs provide shelter and food for marine organisms, stimulate reef development and recovery, increase coral larvae density.
- Reduction of wave energy, wave height and sea-bed erosion.



This natural protection against coastal hazards and promoting marine biodiversity demonstrates the effectiveness of reef restoration in enhancing coastal resilience.

# SEAPAW Membership Structure

SEAPAW brings together diverse leaders to drive collaborative climate adaptation through water, fostering active engagement, knowledge sharing and impactful projects.



# Chairperson of SEAPAW Secretariat

Professor Khoo Teng Chye



Professor Khoo Teng Chye is Director, NUS Cities and Practice Professor with the College of Design and Engineering, National University of Singapore. He was formerly the Executive Director for the Centre for Liveable Cities and continues to be a Fellow at CLC. He was the CEO/Chief Planner at the Urban Redevelopment Authority, CEO/Group President of PSA Corporation, President and CEO of Mapletree Investments, and Managing Director (Special Projects) of Temasek Holdings and Chief Executive of PUB, Singapore's National Water Agency.

He graduated with First Class Honours in Civil Engineering from Monash University, Australia. He has been appointed a Fellow of the Monash University. A President-cum-Colombo Plan Scholar, he also holds a Master of Science in Construction Engineering and a Master of Business Administration from the National University of Singapore. He attended the Advanced Management Programme at Harvard Business School.

He was awarded the Singapore Government's Meritorious Service Medal in 2018, the Public Administration (Gold) in 1996 and the Public Administration (Silver) in 1987. He was also conferred the Meritorious Service Award by the National Trade Union Congress in 2008.

# Join Us in Building a Water-Resilient World

## CONTRIBUTE



Partner SEAPAW to **bring your expertise and innovations** to drive sustainable climate adaptation in Southeast Asia

## CHAMPION



**Advocate for and implement water resilience initiatives** to secure a sustainable future for all

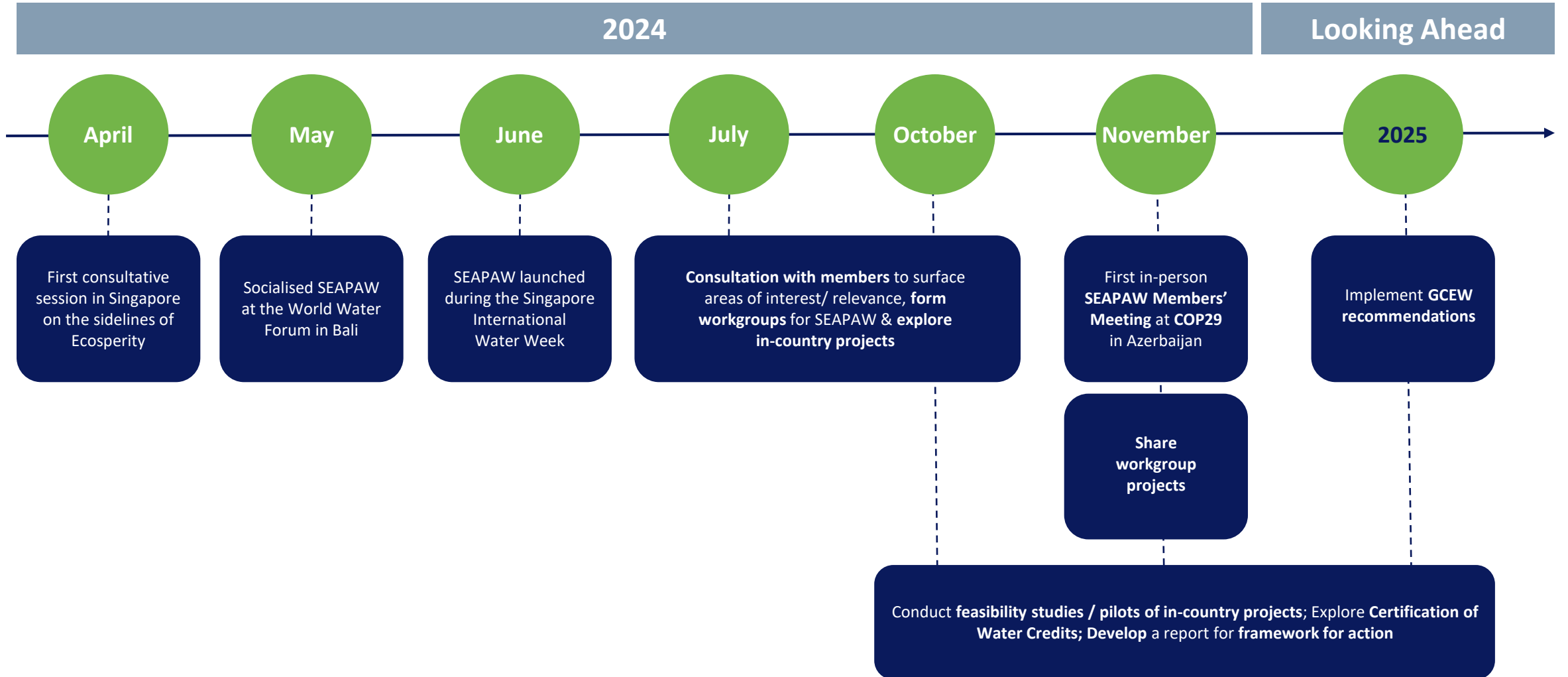
## CONNECT



**Share SEAPAW** with peers to advance climate adaptation through water solutions in Southeast Asia



# Milestone of events





Southeast Asia Partnership  
for Adaptation through Water

**THANK YOU**