Climate resilience implementation for agricultural cooperatives

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Overview

- Thai National Shippers' Council (TNSC) expects lower rainfall from El Niño to last from January of this year to June 2024
- The damage this will do to Thai agriculture and crops is estimated at 10 billion to 30 billion baht.
- Only 4.46% of farmers with higher education have conducted studies on climate change.
- Over 80% of agricultural households are subsistence farmers facing socio-economic challenges.
- Only 26% of all households have access to irrigation systems, making it difficult for them to adapt to climate change.
- The lack of government assistance and policies tailored to the needs of farmers exacerbates the situation.

NATIONAL GREENHOUSE GAS INVENTORY

- Agriculture is also the second largest source of GHG emissions in Thailand, while rice cultivation is the main source of national methane emissions.
- Thailand has outlined a plan of action to adapt to climate change and reduce emissions in its nationally determined contribution (NDC) and National Adaptation Plan (NAP).
- Thailand's NAP and its NDC recognize the importance of adapting the agriculture sectors to climate change.

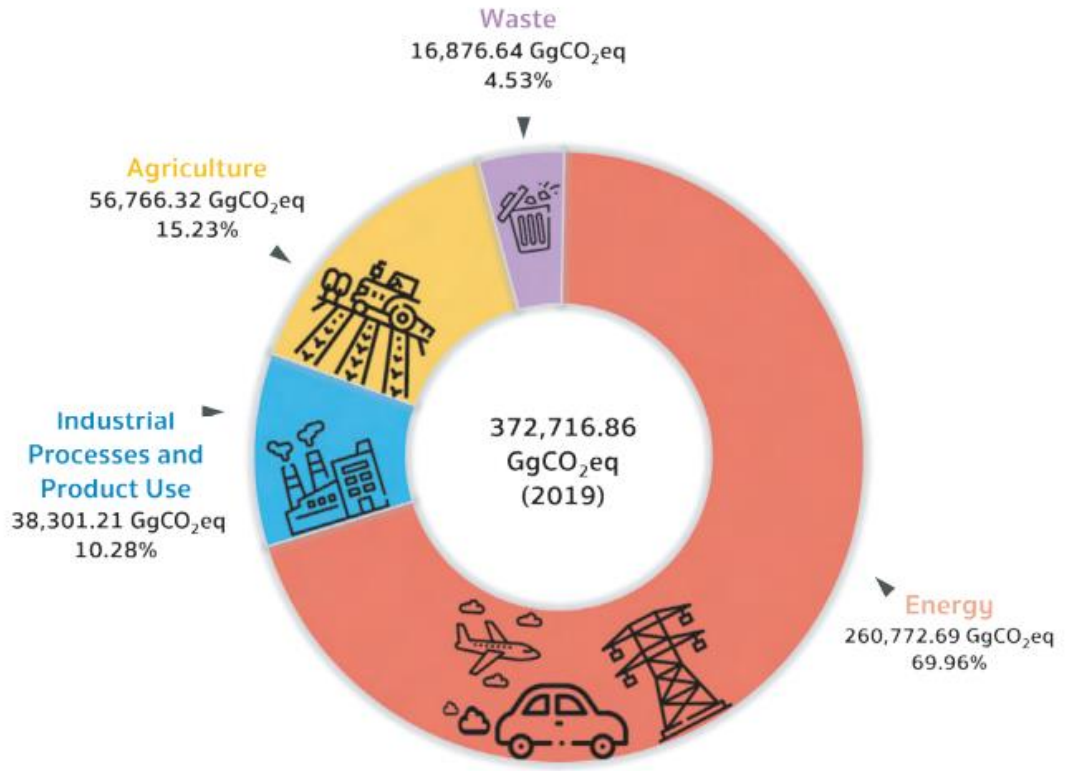
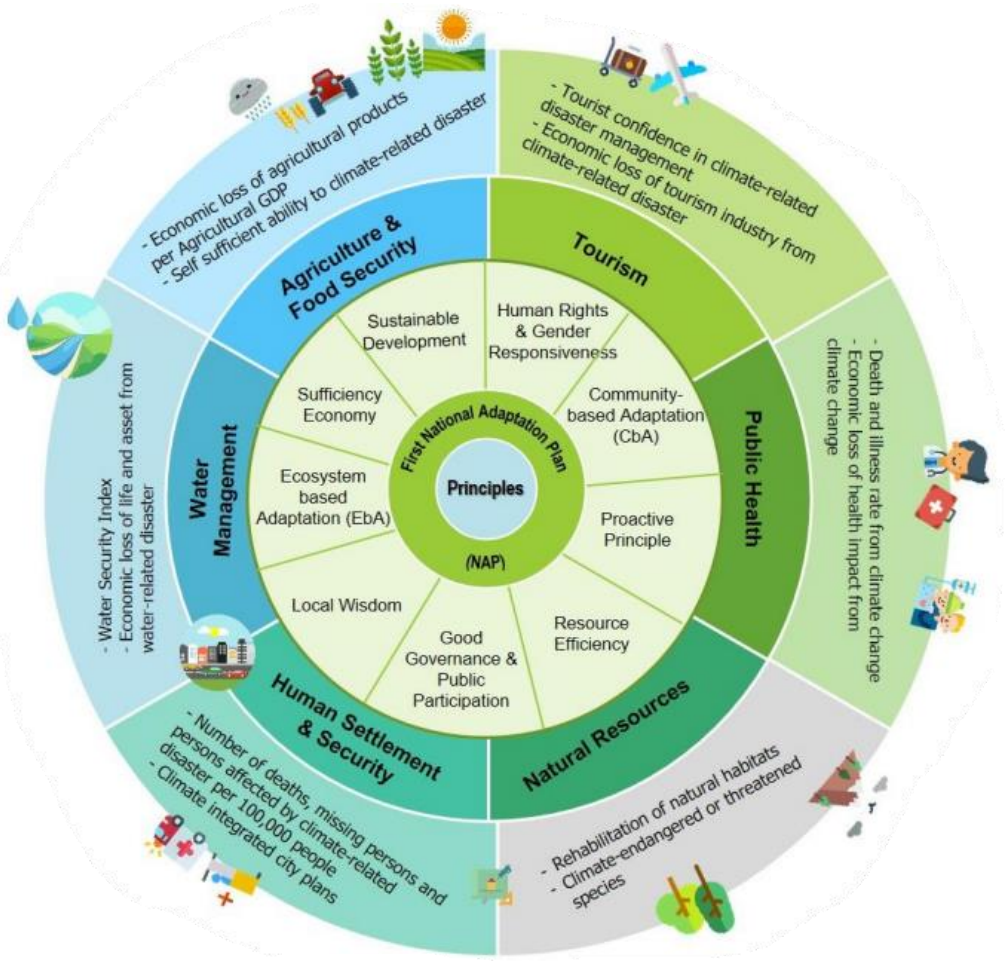


Figure: Total GHG emissions by sector (excluding LULUCF), 2019

Country climate strategy and plans

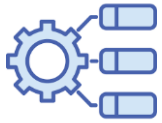


- Thailand's Climate Change Master Plan (CCMP) (2015-2050) is the highest-level policy document guiding the national climate change response.
- The Agriculture Strategic Plan on Climate Change (ASPCC) (2017-2022), which is aligned with the CCMP and provided sectoral input to Thailand's National Adaptation Plan (NAP).
- The country's NAP aims to ensure wide buy-in to the adaptation planning process by fostering inter-ministerial, inclusive coordination and cooperation based on sharing experiences and identifying synergetic interests among key stakeholders.
- Thailand's NAP and its NDC recognize the importance of adapting the agriculture sectors to climate change.

Key barriers

Without adequate information and baselines, long-term adaptation and mitigation planning will not be fit for purpose

Capacity for assessing, prioritizing and funding adaptation options in agriculture and encouraging both public and private sectors to engage is limited

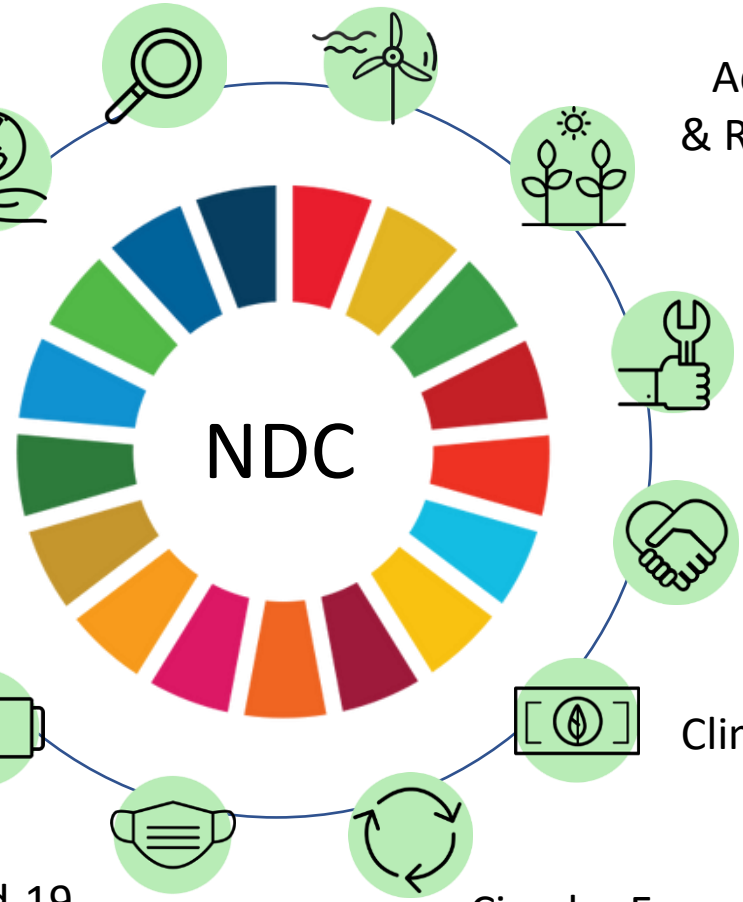


NDCs/NAPs were prepared without an operational plan for the agriculture sectors.

National plans/budgets/long term strategies do not integrate climate-informed agriculture priorities sufficiently.

The NAP process does not always create the strategic linkages between national and sub national adaptation planning.

Lack of sufficient private sector engagement in implementing NDCs



Transparency

- NC4-BUR3 to UNFCCC Project (2020-2023)
- BTR1- BTR2+NC5 Project (2023-2027)

Net Zero Pathways

Climate Security

- Low carbon cities project (2017-2021)
- Electrifying urban mobility – Nakhon Ratchasima (2022)

Adaptive & Resilience

- GCF - Effective water management and sustainable agriculture project (2022-2027)
- GCF - Increasing resilience to climate change impacts in marine and coastal areas along the Gulf of Thailand (2020-2024)
- Support Programme on Scaling up Climate Ambition on Land Use and Agriculture through NDCs and NAPs (SCALA) (2022-2027)

Urban Issues

Just Transition

Forest, Land and Nature

- GEF Small Grant Programme
- Tiger conservation and habitat management (2015-2021)
- Counter illegal wildlife trade (2018-2023)

Inclusion

- A handbook on Integrating Climate Change, Gender and Social Inclusion (CC-GSI) into planning and budgeting in Thailand
- Thailand Youth Climate Action Agenda (Aug – Dec 2022)

Energy

- The investment and financial flow (IFF) assessment of climate-proofing for road and rail sectors in Thailand (2022)
- Energy Efficiency Platform study
- Thailand NDC support on incentivize use of EV (2023-2024)

Climate Finance

- Delivering sustainability through climate finance actions in Thailand (NDC Support)(2018 – 2022)
- Thailand Climate Change Finance Framework (2022)
- BioFin phase II (2021 – 2025)

Covid-19 Recovery

- COVID-19 Recovery Crowdfunding ‘Koh Tao, Better Together”
- Insurance and Risk Finance
- Financing Strategy for Phuket

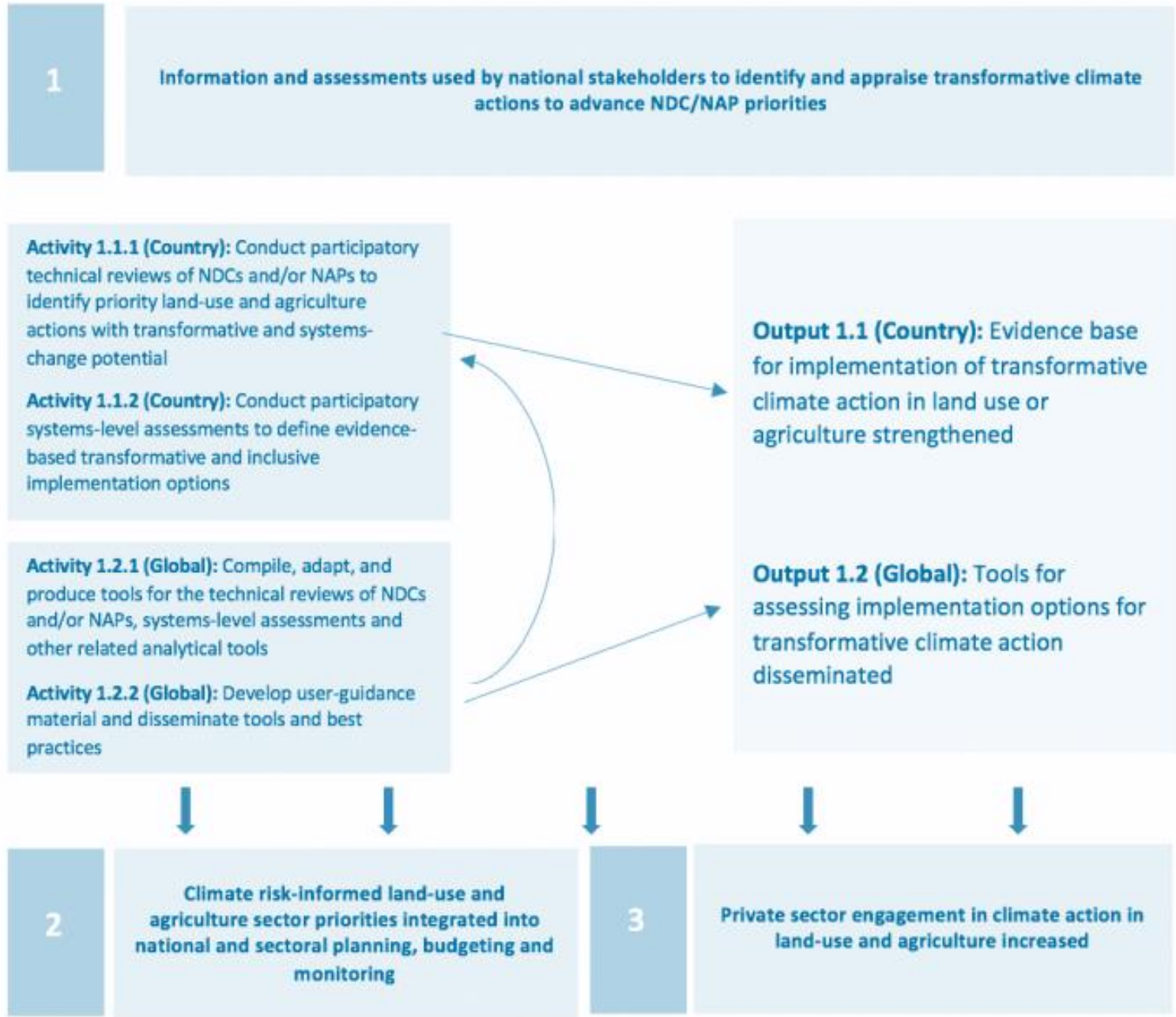
Circular Economy

- Cargill & Government Saving Bank Waste Bank project (2021-2023)

UNDP Thailand Climate Action Portfolio: Agriculture

- Scaling up Climate Ambition on Land Use and Agriculture through NDCs and National Adaptation Plans (SCALA) programme (2020-2025)
- Increasing resilience to climate change impacts in marine and coastal areas along the Gulf of Thailand (2020-2024)
- Enhancing Climate Resilience in Thailand through Effective Water Management and Sustainable Agriculture (2022-2027)

FIGURE 2 Linkages between SCALA outcomes, outputs, and activities



THAILAND'S CLIMATE-SMART AGRICULTURE SYSTEMS

5% decline in global wheat and **6%** decline in global maize yields due to climate change

One-third of Thailand's labor force is employed by the agriculture sector

US$ 17.91-83.83 billion is the estimated cost of climate change impacts on agriculture.

THE SCALA VISION

Thailand has translated its NDC and/or NAP into actionable and transformative climate solutions that employ a climate-smart agriculture (CSA) approach in cropping, livestock and land or soil management systems with multi-stakeholder engagement.

KEY ACTIONS → RESULTS

- Develop CSA approaches through value chain analyses and improvement of information basis.
  - → Identified crops and livestock systems in specific geographies for piloting and scaling CSA practices.
- Support the development, implementation and M&E of the Climate Change Action Plan for Thai Agriculture (CCAPA) 2023 – 2027.
  - → Enhanced planning, reporting and monitoring through technical inputs, advice and operational support.
- Identify private sector and business opportunities, policy and financial de-risking measures.
  - → Identified barriers and opportunities for private sector CSA engagement and developed key CSA business models.

TRANSFORMATIVE CHANGE

- Preserved natural resources and decarbonized agriculture for resilient food and livelihood systems
- Increased economic resilience through agricultural income and investments in the rural economy.
- Enhanced institutional capacity to further research, gender and social inclusion, innovation and technology for managing agriculture and land use responding to climate adaptation and mitigation needs.

Table 1: Strategies, Strategic goals, and Strategies of the Agricultural Climate Change Strategic Plan (2017-2022)

Strategy	Strategic Goal	Approach
1. Gathering, developing and building a database of knowledge, technology and innovation to raise awareness of the climate change resilience.	Having a database, knowledge, technology and innovation and awareness on climate change.	1.1 Collecting, developing and building a database for the climate change resilience 1.2 Creating and developing technology and innovations for the climate resilience 1.3 Raising awareness of climate change
2. Increasing the climate adaptation ability for farmers, farmer institutions and related businesses.	Strengthening the efficiency of agricultural resource utilization and adaptation of farmers under the current climate change context.	2.1 Water management to reduce the impact of climate change 2.2 Sustainable soil management 2.3 Strengthening the resilience to climate change 2.4 Developing measures to support the adaptation of farmers and businesses
3. Participation in reducing greenhouse gas emissions and developing a green growth.	Greenhouse gas emissions in the agricultural sector are reduced.	3.1 The transition to eco-friendly agricultural technology and contributing to the reduction of greenhouse gas emissions 3.2 Marketing for low carbon products
4. Strengthening management capacity for the climate change resilience in agriculture	Driving more efficient and effective agricultural climate change strategies to achieve goals	4.1 Enhancing personnel and partners in joint development 4.2 Building a network of cooperation/partnerships in joint development 4.3 Restructuring the government sector to support the movement

Source: The Agricultural Climate Change Strategic Plan (2017-2022)

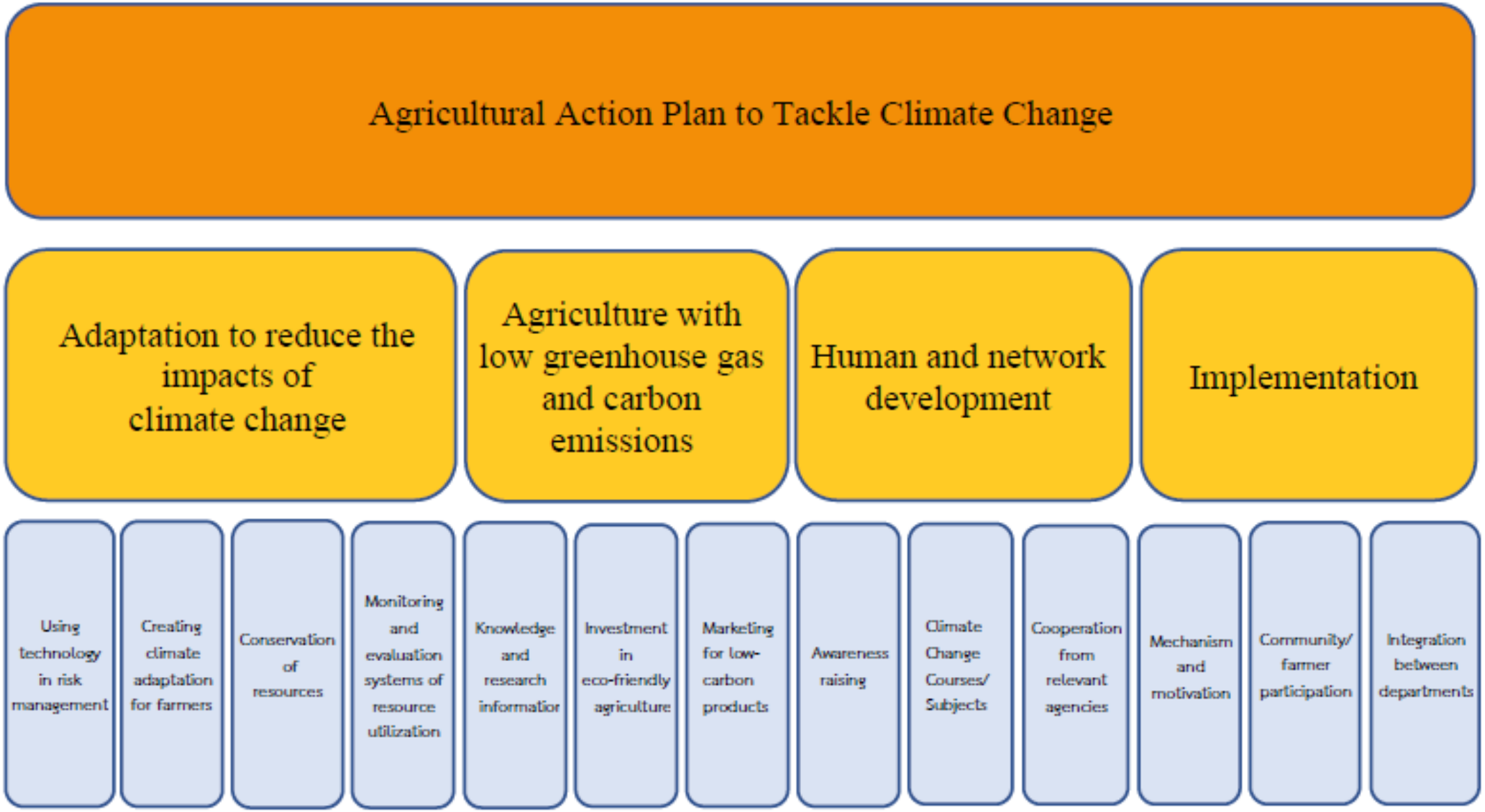
Evaluation results of the implementation of the Agricultural Climate Change Strategic Plan Monitoring Reports, the Ministry of Agriculture and Cooperatives (2017-2022)

- The implementation of the strategic plan focused on collecting, accumulating knowledge and technology for adaptation as well as creating and disseminating information along with raising awareness which it had been found to be operating as appropriate

- Encouraging farmers on climate change resilience was only possible to some extent due to geographic and budget constraints

- the infrastructure improvements (people, databases, implementation) to drive the plan were too small

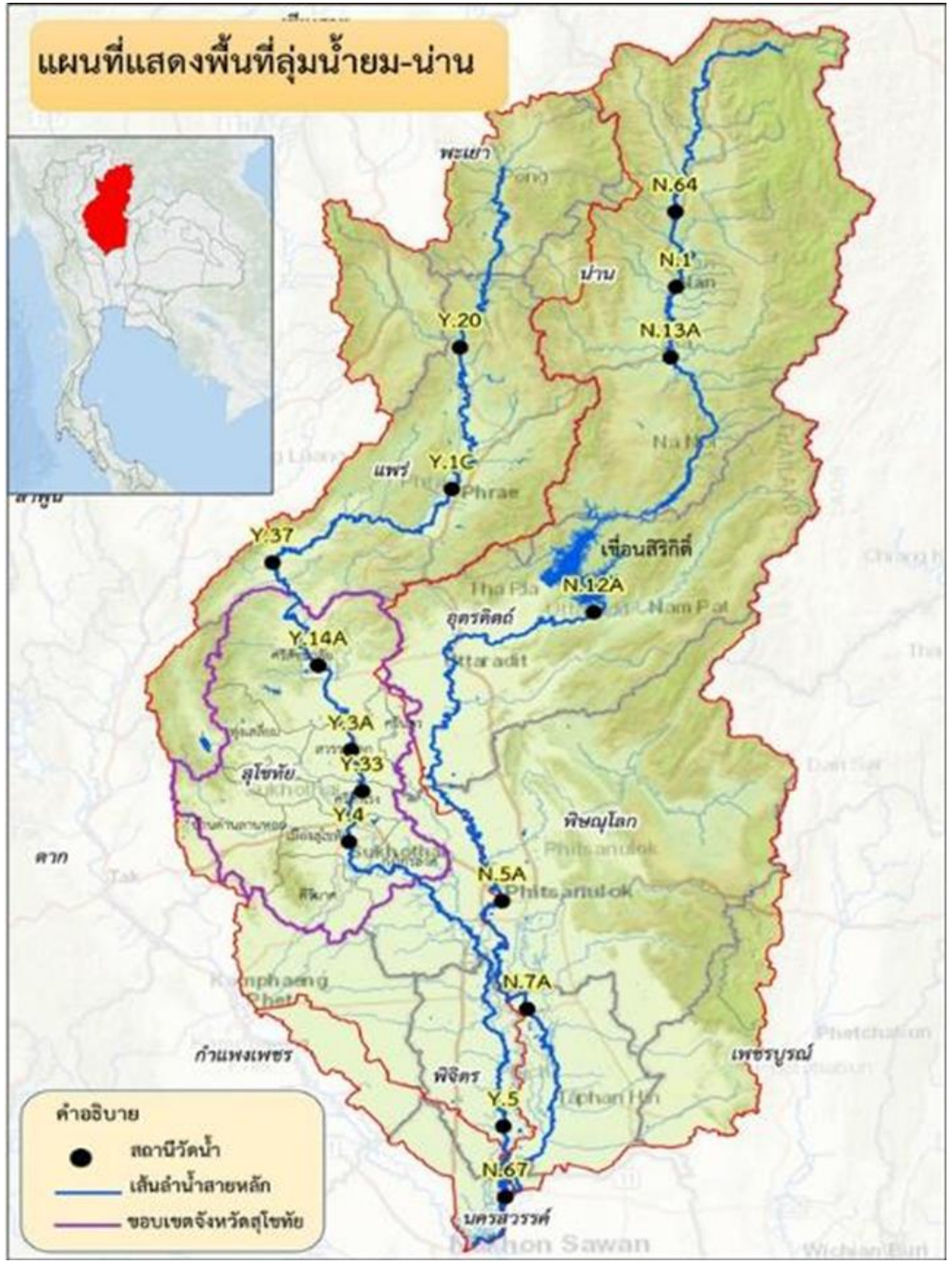
Action plan guidelines for the next phase of climate change resilience in agriculture



Key implementing activities	Output 1.1		Output 2.1			Output 3.1	
	Activity 1.1.1: Conduct participatory technical reviews and identify transformative systems change	**Activity 1.1.2:** Conduct participatory systems-level assessments to define evidence-based transformative and inclusive implementation options	**Activity 2.1.1:** Support MOAC in the process to update Thailand's Agriculture Strategic Plan on Climate Change (ASPCC)	**Activity 2.1.2:** Develop MRV and M&E systems at national and/or sectoral level	**Activity 2.1.3:** Enhance NDCs and/or NAPs by integrating transformative and inclusive land-use and agriculture priorities	**Activity 3.1.1:** Identify policy and financial de-risking measures and business opportunities	**Activity 3.1.2:** Develop project concept notes to leverage investment for transformative and inclusive action in partnership with the private sector
1. Conducting systems-level assessment through a study of CSA value chain analysis and models development	X	X					
2. CSA Extension program at local level		X			X		X
3. Capacity development on gender and social inclusion (GSI) program			X		X		X
4. Capacity development on Climate Change Benefit Analysis (CCBA) program			X		X	X	X
5. Development of the action plan on climate change for MoAC (ASPCC) 2023 – 2027			X	X	X		
6. Development of MRV and M&E systems for agriculture sector of the country and capacity building				X	X		
7. Development of business models on CSA and private sector engagement (PSE) plan in agriculture sector addressing to climate change and capacity building program		X				X	X

Enhancing Climate Resilience in Thailand through Effective Water Management and Sustainable Agriculture

Implementing Partner	**Royal Irrigation Department, under the Ministry of Agriculture and Cooperative (MOAC)**
Responsible Party	• King Mongkut's University of Technology North Bangkok (KMUTNB) • Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ) GmbH
Execution Modality	Partial CO support to NIM National Implementation (NIM)
Project Overview	• With climate extremes expected to increase, climate-informed water management and climate-resilient water infrastructure will be critical in order to prepare for and respond to floods and droughts, which are the key priorities in Thailand's National Adaptation Plan 2018. • Given the cost of upgrading existing water infrastructure across the country, the Royal Irrigation Department (RID) is seeking to complement its grey infrastructure with ecosystems-based adaptation measures (EbA), an integrated solution which brings together water management and agriculture.
Goals & Objectives	The project seeks to a) support climate informed water management, planning and investment, and b) support vulnerable farmers in reducing volatility to changing climatic conditions, enhancing climate-informed and integrated planning as well as reduce disruption to smallholder farmers.
Budget	**Grand-Total Project Financing: USD 33,911,323** include; Total Budget administered by UNDP: USD **17,533,500** Total confirmed co-financing that is not cash co-financing administered by UNDP a. The Royal Irrigation Department (RID): USD 16,263,940 (in-kind) b. Krungsri Bank: USD 113,883 (in-kind)



IMPACT

Enhancing climate resilience in Thailand through effective water management and sustainable agriculture

OUTCOMES

- Climate-informed and integrated planning at the national, sub-national levels for more cost-efficient and cost-effective development investment
- Reduced disruption to smallholder farmers, from the impacts of climate change (i.e. higher temperatures, drier dry seasons, increased incidence of extreme events)

OUTPUTS

1. Enhance climate and risk informed planning in the water and agricultural sectors through improved climate information and cross sectoral coordination
2. Improve water management through strengthened infrastructure complemented by EbA measures, for greater resilience to climate change impacts
3. Reduce volatility of agriculture livelihoods in drought and flood prone areas through strengthened extension support and local planning, investment in on-farm adaptation measures and greater access to finance and markets

ACTIVITIES

Co-financing: RID water management policies/planning, investment in water management infrastructure, O&M and irrigation support to farmers

1.1. Strengthening capacity to generate tailored climate information to inform water management and agriculture planning

1.2. Facilitating inter-ministerial coordination for climate-informed and integrated planning

1.3. Expanding access to climate information for application at the household level

2.1. Climate-informed engineering designs for the 13 schemes of the Yom-Nan river basin, and upgrade of 2 water infrastructure

2.2. Complementing of grey infrastructure with EbA measures and integration of EbA approaches into water management policy and planning

3.1. Application of climate information in household agriculture planning and strengthening related support through extension services

3.2. Implementation of on-farm climate resilient measures to improve drought and flood resilience and improved access to finance to sustainable agriculture

3.3. Capacity building for farmers to support market access for climate resilient agriculture

Co-financing: Krungsri Bank business/market access training to farmers

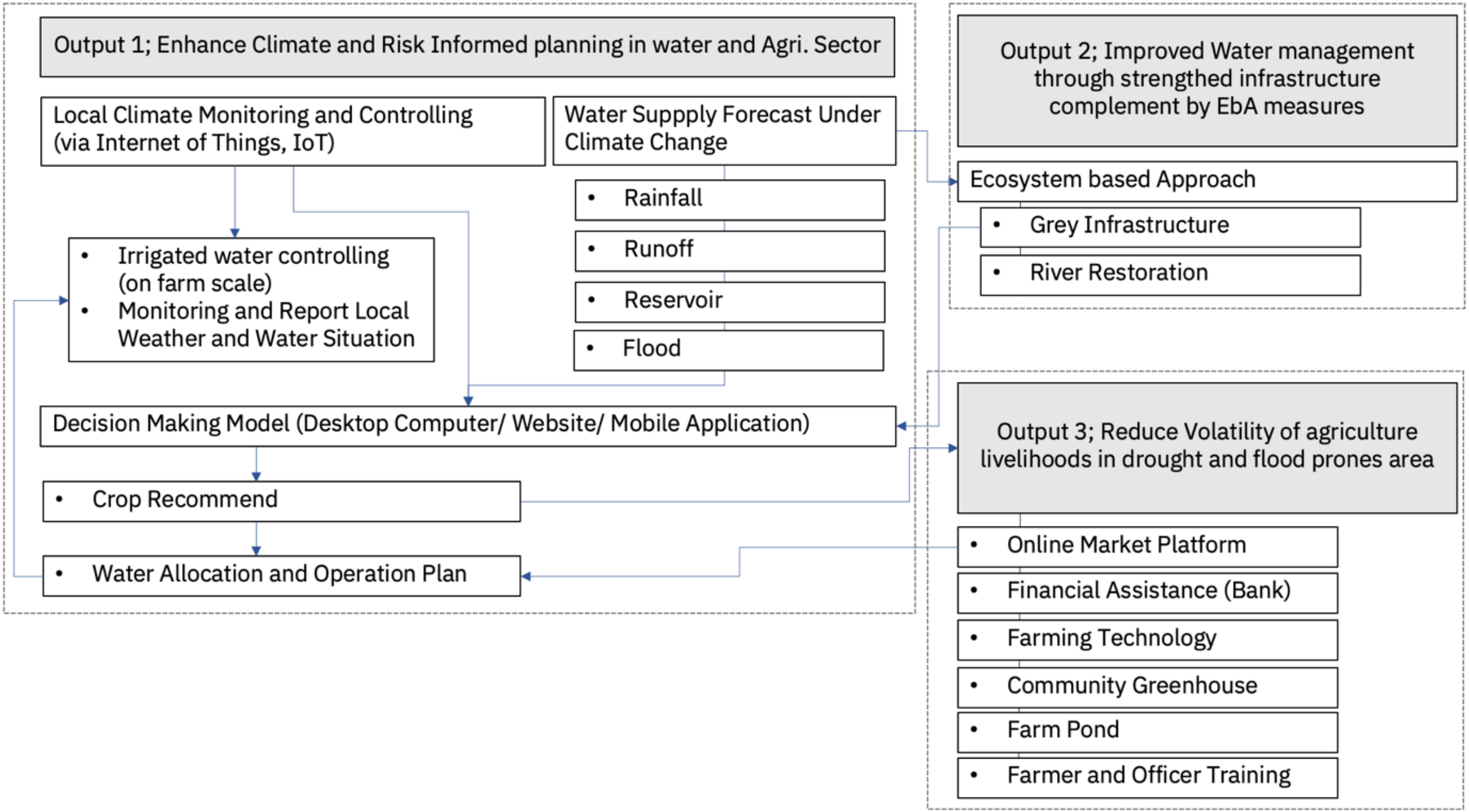
BARRIERS

- Lack of reliable data and risk information on localized climate change impacts available
- Insufficient coordination between water and agriculture sectors for effective integrated water resources management
- Limited technical and financial capacity for the needed climate-informed upgrade existing infrastructure
- Limited use of EbA measures to complement grey infrastructure for water management

Farmers lack of access to climate information and support to adapt to climate change

PROBLEM

Changing rainfall patterns and increased incidence/intensity of extreme events straining existing water infrastructure in the Yom-Nan river basin – impacting agriculture livelihoods in the immediate area during the dry season, and resulting in increased runoff and downstream flooding during the wet season


Output 1; Enhance Climate and Risk Informed planning in water and Agri. Sector
Local Climate Monitoring and Controlling (via Internet of Things, IoT)
Water Suppply Forecast Under Climate Change
Rainfall
Runoff
Reservoir
Flood
Irrigated water controlling (on farm scale)
Monitoring and Report Local Weather and Water Situation
Decision Making Model (Desktop Computer/ Website/ Mobile Application)
Crop Recommend
Water Allocation and Operation Plan
Output 2; Improved Water management through strengthed infrastructure complement by EbA measures
Ecosystem based Approach
Grey Infrastructure
River Restoration
Output 3; Reduce Volatility of agriculture livelihoods in drought and flood prones area
Online Market Platform
Financial Assistance (Bank)
Farming Technology
Community Greenhouse
Farm Pond
Farmer and Officer Training

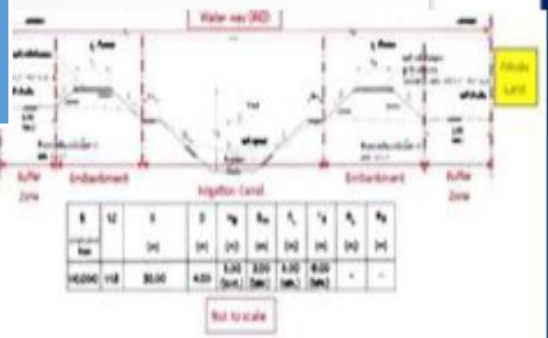
2.1.8 ความเชื่อมโยงระหว่าง 3 Output

Output 1: Enhance climate and risk informed planning in the water and agricultural sectors through improved climate information and cross sectoral coordination

Output 2: Improve water management through strengthened infrastructure complemented by EbA measures, for greater resilience to climate change impacts

ปรับปรุง โครงสร้างที่เหมาะสมกับสิ่งแวดล้อม

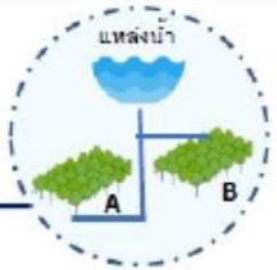
ผัง ปตร.



อาคารก่อสร้าง+EbA

ระบบคลองส่งน้ำหลัก

ระบบส่งน้ำรายแปลง (On farm)



การแก้ปัญหาระดับแปลงนา (On farm Solution)

ตารางการจัดสรรน้ำ

ระบบควบคุมโครงสร้างชลประทาน
- ควบคุมระบบด้วยคน
- ควบคุมระบบออโตเมติก

Internet of Things (IoT)

Model

เครื่องมือวางแผนการปลูกพืช

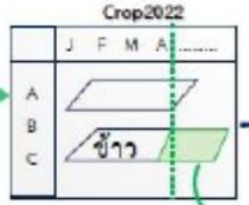
เครื่องมือบริหารจัดการน้ำ

ผู้ใช้งาน : Groups of farmers

แอพพลิเคชั่นรายงานผลผลิต

Farmers

Farmers



ตลาดล่วงหน้า

ตลาด กระจายสินค้า

Output 3: Reduce volatility of agriculture livelihoods in drought and flood prone areas through strengthened extension support and local planning, investment in on-farm adaptation measures and greater access to finance and markets.

Table 6 The installation point of flow radar and canal physical.

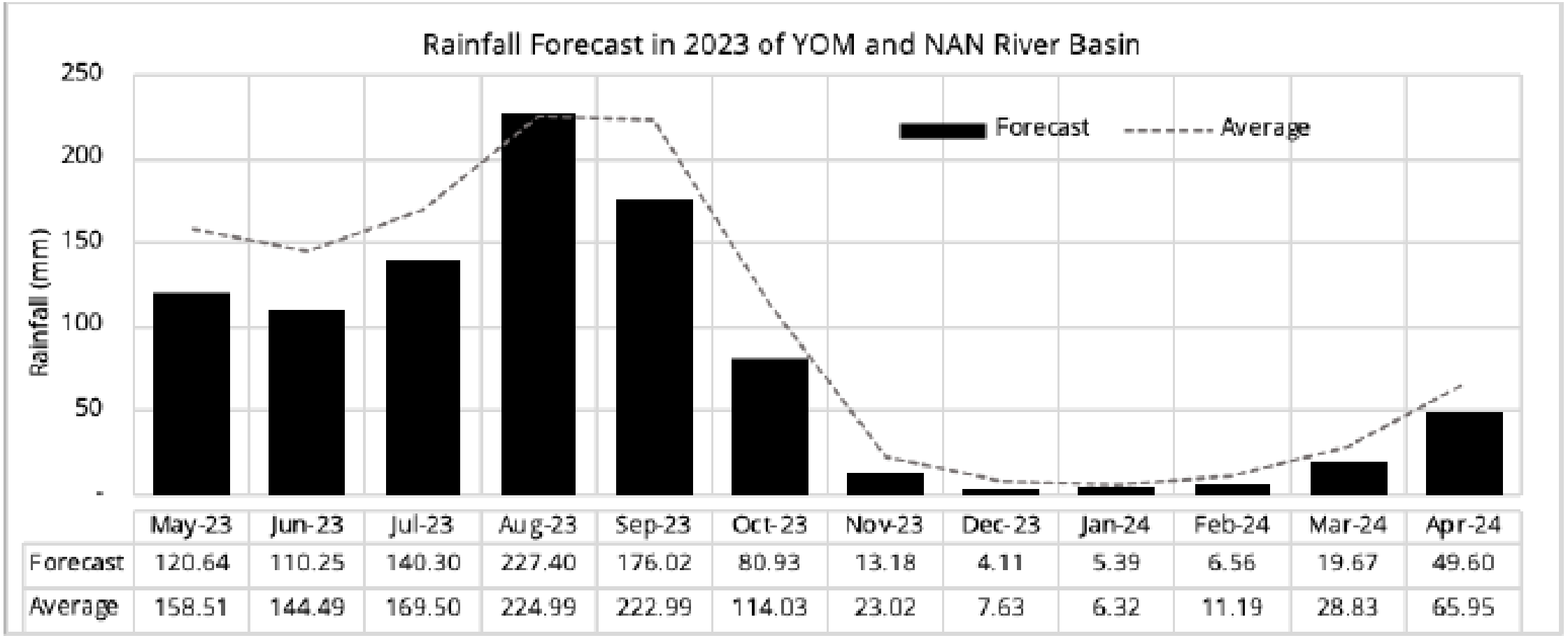
No	Gate (G.)	Coor.	Picture	Picture
1.	KlongHokBat Pa Kum Ko, Sawankhalok, Sukhothai	17.37481, 99.80824		
2.	YomSaiKao Pa Kum Ko, Sawankhalok, Sukhothai	17.36481, 99.84729		
3.	KoRum Kho Rum, Phichai, Uttaradit	17.29959, 100.0615		

No	Gate (G.)	Coor.	Picture	Picture
6.	KlongTonPlo Nong Khaem, PhromPhiram, Phitsanulok	17.06686, 100.1695		
7.	KlongTaDan Sri Phirom, PhromPhiram, Phitsanulok	17.09104, 99.98334		
8.	KlongTaKae Kok Raet, KongKrailat, Sukhothai	16.97823, 100.10002		

Table 10 The installation point of Water level gauge lake

No.	Name	Sub-district	District	Province	Coor.	Picture
1	Beaung Jone	Wang Won	PhromPhiram	Phitsanulok	17.02954, 100.06411	
2	Beaung Mun	Dong Dueai	KongKrailat	Sukhothai	16.93500, 100.01791	
3	Klong Aom	Si Phirom	PhromPhiram	Phitsanulok	17.13563, 100.09008	

The result of seasonal forecast data in 2023 which is El Nino event



	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24
Forecast	120.64	110.25	140.30	227.40	176.02	80.93	13.18	4.11	5.39	6.56	19.67	49.60
Average	158.51	144.49	169.50	224.99	222.99	114.03	23.02	7.63	6.32	11.19	28.83	65.95

Figure 25 Monthly Rainfall Forecasting of Yom and Nan River Basin

Key messages

- Portfolio management
- Partnership management
- Source of funding: vertical fund (GEF/ GCF), national budget, private sector
- Meaningful stakeholder engagement
- Social inclusion and leave no one behind

Thank you