Food and Agriculture Organization of the United Nations

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SCALING UP CLIMATE AMBITION ON LAND USE AND AGRICULTURE THROUGH NDCS AND NAPS (SCALA)

Inception Report | THAILAND

ACKNOWLEDGEMENTS

This inception report was drafted and prepared by the SCALA Thailand national consultants, Kanchana Wiset (National Coordinator, FAO) and Bussabongkot Deewaja (Consultant, UNDP) with support from the four technical advisory staff – Krib Sitathani (UNDP), Beau Damen (FAORAP), Srijita Dasgupta (FAORAP) and Janek Toepper (FAORAP).

This report reflects the results of the inception phase, during which the SCALA team members worked closely with the coordination teams from the two focal government agencies appointed by the MoAC – which are the Agricultural Economics (OAE) (Ms. Sairak Chailanggar – Project coordinator of OAE) and the Land Development Department (LDD) (Pimpilai Nuanlaong - Project coordinator of LDD).

The SCALA Thailand team is grateful for all support, cooperation, and advice received from the representatives of different agencies and the coordination teams of OAE and LDD, plus stakeholders from other ministries, academia and the private sector. Their efforts contributed greatly to identify the key priorities of the SCALA Programme in Thailand.

CONTENTS

ABBREVIATIONS AND ACRONYMS

AFOLU	agriculture, forestry and other land Use
ASPCC	Agriculture Strategic Plan on Climate Change
AIT	Asian Institute of Technology
BMWK	Federal Ministry for Economic Affairs and Climate Action
BTT	Board of Trade of Thailand
BUR	Biennial Update Report to the UNFCCC
CAR	Climate Action Review Matrix
CCAPA	Climate Change Action Plan for Thai Agriculture (CCAPA) 2023 – 2027
CMU	Chiang Mai University
FAO	Food and Agriculture Organization of the United Nations
FTI	Federation of Thai Industries
GCNT	Global Compact Network of Thailand
GDP	gross domestic product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GHG	greenhouse gas
IKI	International Climate Initiative
INDC	intended nationally determined contribution
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
KMUTT	King Mongkut's University of Technology Thonburi
KU	Kasetsart University
LDD	Land Development Department, MoAC
LULUCF	land use, land use change and forestry
MoAC	Ministry of Agriculture and Cooperatives, Royal Government of Thailand
MoNRE	Ministry of Natural Resources and Environment, Royal Government of Thailand

MRV	Measurement, Reporting and Verification
NAMA	nationally appropriate mitigation action
NAP	National Adaptation Plan
NC	National Communication to the UNFCCC
NCCC	National Committee on Climate Change Policy
NESDC	Office of the National Economic and Social Development Council
NESDP	National Economic and Social Development Plan
NDC	Nationally Determined Contribution
OAE	Office of Agricultural Economics, MoAC
ONEP	Office of Natural Resources and Environmental Policy and Planning, MoNRE
SCALA	Scaling up Climate Ambition on Land Use and Agriculture through Nationally Determined Contribution (NDC) and the National Adaptation Plan (NAP) Programme
TBCSD	Thailand Business Council for Sustainable Development
TDRI	Thailand Development Research Institute Foundation
TGO	Thailand Greenhouse Gas Management Organization
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

The Food and Agriculture Organization of the United Nations (FAO) and the United Nations Development Programme (UNDP) will jointly implement the Support Programme on Scaling up Climate Ambition on Land Use and Agriculture through NDCs and NAPs (SCALA) from 2021 to 2024 with funding from the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) through the International Climate Initiate (IKI). SCALA builds on lessons learned from the previous IKI-funded Integrating Agriculture in National Adaptation Plans (NAP-Ag) Programme.

To implement SCALA in Thailand, the FAO and UNDP will work closely with the Ministry of Agriculture and Cooperatives (MoAC), which is the key government counterpart and the Ministry of Natural Resources and Environment (MONRE), to achieve the NDC and NAP targets.

1.1 PURPOSE OF THE REPORT

The purpose of this report is to present SCALA's approach in Thailand, based on a series of activities carried out during the inception phase. The findings in this report can be used as a guidance for the implementation of the SCALA programme in Thailand. The report further provides detail on the overall participatory technical reviews and validation processes followed to identify climate actions with transformative potential to be supported by SCALA, based on NAP and NDC priorities.

The remainder of this report comprises five chapters. This chapter presents the purpose of this report and provides an overview of the SCALA programme globally, as well as on the SCALA inception phase activities in Thailand. Chapter two outlines the country profile and the status of climate policy and planning in the agricultural sectors, summarizing related inception phase materials. Chapter three presents the details and results of the 'climate action review' that centrally informed the planning of support activities under SCALA. Chapters four and five provide an overview of SCALA activities during the inception phase and its upcoming implementation phase, plus other related operational arrangements.

1.2 OVERVIEW OF THE GLOBAL PROGRAMME

The SCALA programme is a multi-year initiative funded by Germany's Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) through its International Climate Initiative (IKI). The programme is designed to support transformative climate actions in the land use and agriculture sectors to reduce GHG emissions and/or enhance removals, as well as strengthen resilience and adaptive capacity to climate change in participant countries. Its specific objective is for countries to translate their NDC and/or NAPs into actionable and transformative climate solutions in land use and agriculture with multi-stakeholder engagement. It emphasizes collaboration between the public and private sectors to drive implementation. This will be achieved through three outcomes:

> **Outcome 1**: Information and assessments used by national stakeholders to identify and appraise transformative climate actions to advance NDC/NAP priorities in land-use and agriculture.
>
> **Outcome 2**: Climate risk-informed land-use and agriculture sector priorities integrated into national and sectoral planning, budgeting and monitoring.
>
> **Outcome 3**: Private sector engagement in climate action in land-use and agriculture increased.

SCALA supports 12 countries in Africa, Asia, and Latin America (Argentina, Cambodia, Colombia, Costa Rica, Cote d'Ivoire, Egypt, Ethiopia, Mongolia, Nepal, Senegal, Thailand, and Uganda). It works directly with key government stakeholders (i.e., Ministries of Agriculture, Environment, Finance and Planning and Climate Change Coordination bodies) as well as representatives of civil society organizations, private sector, research, and academia. To reach a wider selection of countries, it also promotes sharing knowledge and lessons learned through a technical facility set up under the programme focused on private sector engagement and public-private collaboration.

SCALA taps on the technical knowledge and experience of both FAO and UNDP, working together with the respective regional offices and country offices in support of country programming frameworks and leveraging on the substantial relevant regional and national priorities lead by both the agencies to facilitate knowledge exchange, capacity development and resource mobilization.

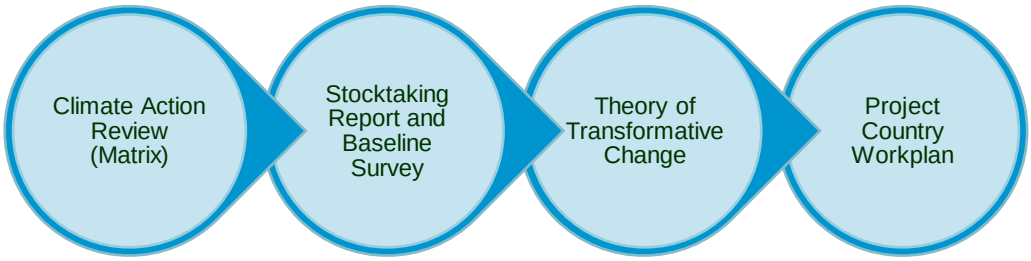
1.3 INCEPTION PHASE

On 19 March 2021, UNDP and FAO signed the agreement with the Government of Thailand, represented by the Ministry of Agriculture and Cooperatives, to jointly implement the programme in Thailand from 2021 to 2025. The assigned focal point agencies of the SCALA programme Thailand are the Office of Agricultural Economics (OAE) and the Land Development Department (LDD) under the MoAC.

The inception phase aimed to establish collaboration with key focal partner agencies and to bring together national stakeholders to plan for programme implementation over the next two years. The initial step during the inception phase was to conduct a baseline survey and desk review to take stock of the ongoing initiatives in agriculture and land use sectors by relevant ministries in order to gain an adequate picture of the status quo on agriculture, land use and climate change activities in Thailand. Given the institutional responsibility outlined above, key transformative climate actions of Thailand were identified through various consultation meetings with the OAE and LDD during SCALA's inception phase. The results of these studies were used to identify the support the SCALA programme will contribute towards Thailand in achieving its efforts in the agriculture sector and meeting its NDC and NAP targets.

With support from the FAO-UNDP global and regional teams, the Thailand country team worked on (a) **a stocktaking report** which identified the 25 priority actions outlined in the NAP (see next paragraph, chapter 2 and section 3.2 Step 2), prepared b) the assessment of these priority climate actions using using seven dimensions of transformation in the **Climate Action Review Matrix (CAR)** (see section 3), developed (c) the draft **Theory of Transformative Change (ToC)** (see section 4.2), and (d) the **workplan** (see section 4.3). This is illustrated in the below figure. Multiple technical consultations and meetings with government partners and stakeholders were organized to collect feedback and comments to finalize these documents.

Figure 1: Key steps and outputs during the SCALA inception phase, each of which is detailed later in this report



The background studies and research underlying the prioritization of actions (detailed in Chapter 3) can be found in separate reports available alongside this report. The corresponding meetings and workshops are documented in Annex 1.

As a result of these exercises, and as further explained in chapter 3 of this report, the overall objective of SCALA Thailand is the **promotion and establishment of climate-smart agriculture systems** to promote transformative actions in **crop production, livestock systems** and **sustainable soil and land use management** (see section 4.2).

SCALA also contributes support to the OAE to update the Climate Change Action Plan for Thai Agriculture (CCAPA). The CCAPA is a five-year plan guiding the actions of relevant stakeholders in addressing climate change mitigation and adaptation in the agriculture sector of the country. The CSA approach has also been adopted as one of the key strategies under this new CCAPA, illustrating the alignment of SCALA with government priorities.

2. CONTEXT

This chapter provides an overview of the country profile and a snapshot of the status quo of climate policy and planning in the agricultural sectors, summarizing related inception phase materials. It largely builds on a stocktaking report developed by the SCALA team to compile relevant data regarding the context for Thailand including the country profile, climate risks and impacts and climate policies and institutions as follows.

2.1 COUNTRY PROFILE

The Kingdom of Thailand is located in Southeast Asia, with a total area of 513 115 km^2. The country borders Myanmar and Laos to the north, Laos and Cambodia to the east, Malaysia and the Gulf of Thailand to the south, and Myanmar and the Andaman Sea to the west (Figure 2).

Figure 2. Map of the Kingdom of Thailand

Source: UN Geospatial. 2009.Thailand. United Nations. Cited 15 July 2019. https://www.un.org/geospatial/content/thailand

The climate of Thailand is influenced by the main monsoon winds - the southwest monsoon and the northeast monsoon, which produce three seasons: hot, cool, and wet. Thailand's Third Biennial Update Report (BUR) showed that the patterns of climate have fluctuated over the six decades, from 1951 to 2019, based on the information of the Thai Meteorological Department (TMD), see Figure 3. Specifically, since 1997, the temperature has dramatically changed. In 2016, the temperature rose to 44.6 °C, which was the highest ever recorded of the country (recorded in Mae Hong Son province). Average temperature increased 0.16 °C and 0.14 °C in the periods of 1991 – 2000 and 2001 – 2010 respectively. The average temperature from 2011 – 2019 increased yearly by 0.09 °C (ONEP, 2020).

The average range of annual rainfall is approximately 1 300 – 2 000 mm per year. The precipitation varied over time between 1951 – 2019, see Figure 3. According to the records of the TMD, the average annual rainfall was lower than 1,400 mm in 1977, 1979 and 1992. High average of annual rainfall, which was higher than 1,900 mm, was recorded in 1953 and 2011 (ONEP, 2018). Over the last five years, from 2015 to 2019, the country has the most fluctuation of rainfall pattern by having very low rainfall in 2019, approximate 1 343 mm which is the lowest in 40 years since recording began in 1951 (ONEP, 2020a).

Figure 3. Annual mean maximum temperature in Thailand (°C) 1951 – 2019 (ONEP, 2020a based on Thai Meteorological Department data)

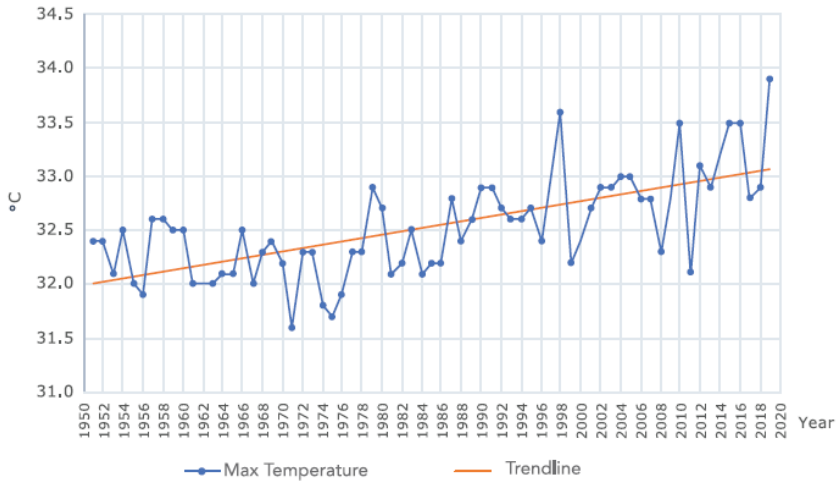
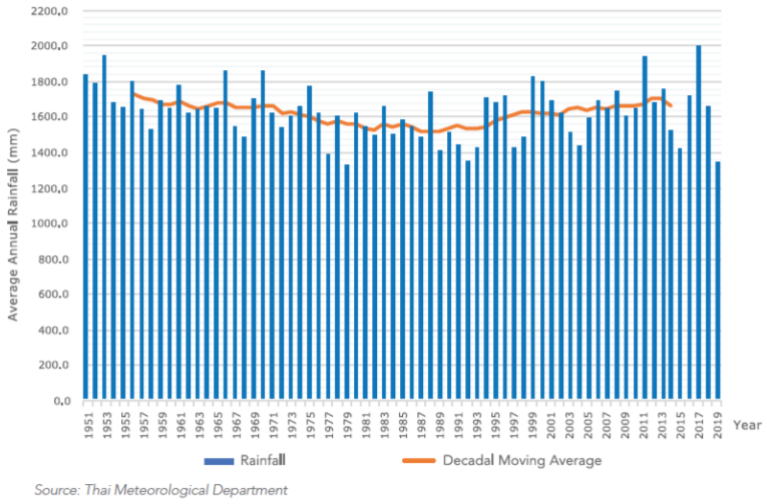


Figure 4. Annual mean rainfall in Thailand (mm) 1951 – 2019 (ONEP, 2020a based on Thai Meteorological Department data)



Source: Thai Meteorological Department

Thailand is officially divided into 6 regions – north, northeast, east, central, west, and central. The country has a total of 77 provinces, with Bangkok as the capital city. The public administration of Thailand is divided into 3 levels - central, provincial, and local administrative levels. The central administration is comprised of the ministries, bureaus, and departments which are responsible for implementing the government policies. The provincial government consists of provinces and each province is divided into districts. The provincial administration follows the concept of decentralization which is authorized through the central administration. The local administration comprises the Provincial Administrative Organization, Municipality, and Sub-district Administrative Organization. Its roles and functions are as stated in the Determining Plans and Process of Decentralisation to Local Government Organization Act B.E. 2542 (1999) (ONEP, 2020a).

As of 2018, the country has a total population around 66,413,979, making the country the 20th ranking of most populated country in the world. The annual population growth rate over the past two decades is estimated to be around 0.4 percent (ONEP, 2020a). The population size forecasted for 2025, 2030 and 2040 are 67.09, 67.14 and 65.37 million, respectively (ONEP, 2021).

The socio-economic development of Thailand has been achieved through the guidance of the Twelfth National Economic and Social Development Plan (NESDP) (2017 – 2021, extension to 2022), committed to the sustainable development goals (SDGs), a philosophy of Sufficiency Economy, and the Thailand 4.0 Policy. The Twelfth NESDP is the master national plan, which guides the development directions and strategies of the country to achieve the objectives of "Security, Prosperity, and Sustainability" and constitutes a mix of agriculture, industry, tourism, service and natural resources (NESDC, 2017). In 2018, the economy grew by 4.1 percent, up from 4.0 percent in 2017, which is the highest expansion rate in six years (ONEP, 2020a). Based on the report of the Office of National Economic and Social Development Council (2022), in the first quarter of 2022 the Thai economy expanded by 2.2 percent, accelerating from a 1.8 percent growth in the previous quarter. Gross domestic product at current prices registered a total value of 4301.8 billion baht and the gross national income (GNI) was 4 213.6 billion baht. On the production side, the agriculture, forestry, and fishing sector rebounded to 4.1 percent year-on-year production growth. The growth was driven by the increasing yields of crops such as paddy, sugarcane, oil palm, and pineapple. Livestock production also increased, based on the production of broilers, hen eggs, and swine. Fishing production continually expanded from the previous quarter. Non-agricultural production increased by 2.0 percent, which was mainly from the industrial sector with a rise of 0.5 percent, led by the manufacturing sector with a 1.9 percent growth.

Regarding economic stability, the unemployment rate was at 1.53 percent, which declined from 1.64 percent in the previous quarter and 1.96 percent in the first quarter of 2021. 31 percent of the labor force are employed in the agricultural sectors (ILO, 2019).

Poverty related issues are also a barrier to the development of the country. From 2015 to 2018, the poverty line increased from 2 644 to 5 710 THB per person per month, and in 2018 the number of poor people increased by 2.1 percent of the total population, compared to 2017 figures (ONEP, 2020a). According to the poverty data reported on the World Bank web page[1], 6.8 percent of the population lived below the national poverty line in 2020.

Food security issues are also pertinent. A study by Jankhotkaew *et al.,* (2022) revealed the following findings. The overall prevalence of moderate or severe food insecurity was 2.79 percent. The households living in rural areas had lower food insecurity scores than households in urban areas, because rural households had better access to homegrown food produces, while the urban households depended more on food purchasing. Households in the southern region have the highest prevalence of food insecurity, compared to other regions. The recent report by FAO on the Asia and the Pacific Regional Overview of Food Security and Nutrition (2020) estimated that the households in the country having children under five years old had a moderate or severe food insecurity at 5.4 percent. The Minimum Acceptable Diet (MAD) among children 6 to 23 months of age of the country was at 53.8 percent. The prevalence of the Minimum Dietary Diversity in children 6 to 23 months of age in Thailand had less variation between the urban and rural households, which was at 66 percent and 61 percent respectively. The rate of malnutrition was at medium rate, and child overweight percentage was at 8.2. Over 90 percent of Thailand's households have access to basic drinking water services.

2.2 CLIMATE CHANGE IMPACTS, RISKS AND VULNERABILITIES

The trends of greenhouse gas (GHG) emissions between 2000 to 2016 were reported in the Third BUR of the country, submitted to the UNFCCC in 2020. The total GHG emissions increased from 245 757.14 GgCO2eq in 2000 to 354 357.61 GgCO2eq in 2016 with an average annual increase by 2.31 percent (excluding those from LULUCF). The main source of GHG emissions between 2000 to2016 was from the energy sector, which shared 67.2 percent and 71.6 percent of the total GHG emissions in those years, respectively. This was

[1] Poverty headcount ratio at national poverty lines (% of population) - Thailand, World Bank. https://data.worldbank.org/indicator/SI.POV.NAHC?locations=TH (Accessed August 2022)

followed by the GHG emission from the agricultural sector; the rate of total emissions about 19.9 percent in 2000 and 14.7 percent in 2016 (ONEP, 2020a).

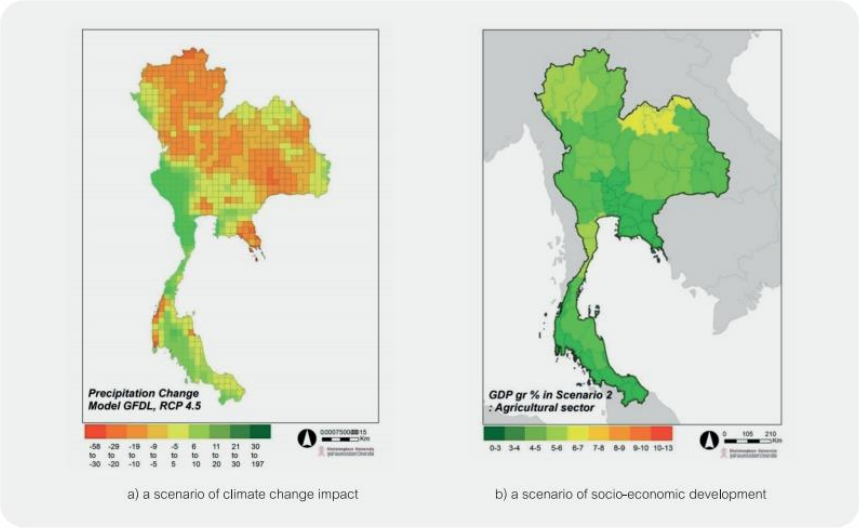
Thailand is one of the many developing countries in the region that is highly vulnerable to the impacts of climate change. Based on the Global Climate Risk Index Report (CRI) 2021, Thailand ranked as the 9th most affected country in the period of 1999 – 2019, resulting in 0.82 percent of losses per unit GDP of the country (Eckstein *et al.*, 2021). The country experienced 146 climate-related extreme events from 2000 to 2019. For example, the severe and large-scale floods in 2011 affected almost 14 million inhabitants, estimated at US$ 45.7 billion in damages (Word Bank, 2011).

The country is highly exposed to the impacts of climate change. Kiguchi *et al.,* (2021) noted the following conditions that caused the high vulnerability of the country to drought, flooding, coastal erosion, and landslides. In the long dry season (November – April), there is little rainfall and crops depend on water supplies from the large dams but water availability in the dams is often not sufficient. The mountainous areas in the north and the south are vulnerable to sediment deposits and the high slope areas often encounter flash floods. The country has a long coastline consisting of sandy beaches, where the impacts of sea level rise caused a shoreline retreat of up to 72 percent (39 km 2) of total sandy beach area.

The agriculture sector in Thailand is also highly vulnerable to the impacts of climate change. A study by Attavanich (2018) revealed that through changes in both average conditions and climate-related extreme events, climate change was projected to adversely affect the agriculture sector of Thailand, incurring losses ranging from US$17.91 billion to US$ 83.83 billion and almost all provinces would be negatively affected. Other research also revealed that climate change impacts the yields and production of the main agricultural products of the country. For instance, the frequency of flooding events often impacted rice productions (Nara *et al.,* 2014), and increasing temperatures and precipitation differently affected rice yields of different regions of the country (Arunrat *et al.,* 2020), which the rice production in the north-eastern region would be the most affected due to the weather change (Arunrat and Pumijumnong, 2015). Climate variability and extreme events are likely to influence the decreasing of the yields of sugarcane and cassava in the next 20 years, based on the projection of Pipitpukdee *et al.,* (2020a) and Pipitpukdee *et al.,* (2020b).

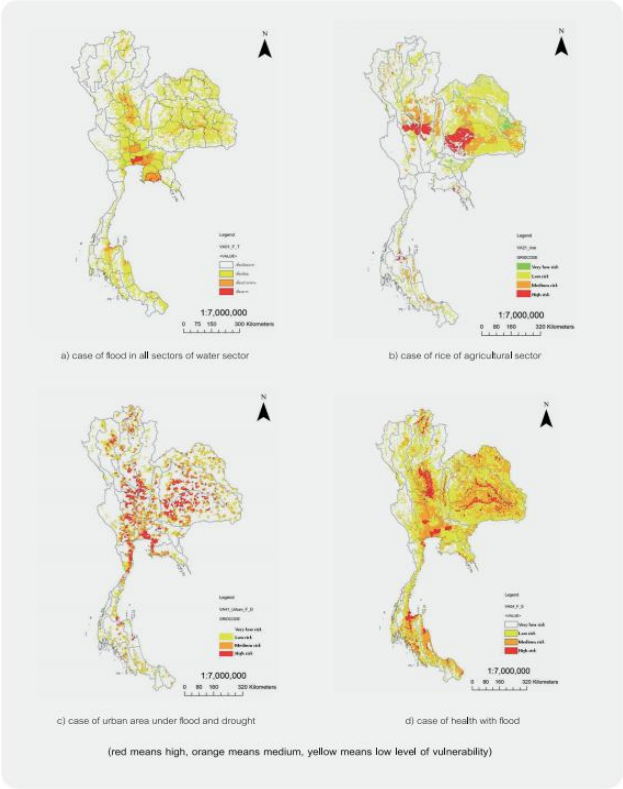
As projected, climate change will cause adverse impacts to agricultural production in the different areas throughout the country. For instance, the southern, north, and north-eastern regions are projected to face higher negative impacts than the east and central regions (Attavanich, 2018). The Third National Communication report also highlighted that some agricultural areas in the northern part will be highly affected by a decrease in precipitation caused by the changes of climate pattern and many communities will encounter water shortages (ONEP, 2018). Figure 4 shows a combination of scenarios of climate change and socio-economic development in 2030.

Figure 5. Example of a combination of scenarios of climate change and socio-economic matrix in 2030 (FAO and UNDP, 2022)



The vulnerability maps of Thailand illustrate the level of impacts and at-risk areas to climate change of the four sectors - water resources, agriculture, human settlement, and health, Figure 6. The agricultural areas in the upper Chao Phraya River Basin and the upper Mun River Basin are the hotspots having a high exposure to climate change impacts. The two hotspots are focal areas for the main agricultural crop production of the country, including rice, sugarcane, casava, maize. These crops' productions are projected to encounter high climate risks. Another crop that grows in other areas but will similarly be highly affected is rubber trees which are mostly grown in the southern part of the country.

Figure 6. Vulnerability map in case of flood and drought in each economic sector (FAO and UNDP, 2022)



2.3 CLIMATE CHANGE PLANNING AND IMPLEMENTATION

2.3.1 Institutional arrangements

Thailand signed the United Nations Framework Convention on Climate Change (UNFCCC) at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, in June 1992. Then, Thailand ratified the Convention in March 1995. In September 2016, Thailand also ratified the Paris Agreement which entered into force in November 2016.

The Thai Government established relevant institutions to supervise, manage and make decisions about coping with climate change issues. The highest body is the National Committee on Climate Change Policy (NCCC), established in 2007. It is chaired by the Prime Minister and the co-vice chairpersons are from the Minister of the Ministry of Natural Resources and Environment (MoNRE) and the Ministry of Foreign Affairs (MFA). The NCCC provides policy guidance and supports the international commitments and regulations on climate change of the country. There are four sub-committees under the umbrella of the NCCC, which have different focuses and areas of supervision, as listed below.

- Subcommittee on Climate Change Knowledge and Database
- Subcommittee on Climate Change Policy and Planning Integration
- Subcommittee on Climate Change Negotiation and International Cooperation
- Subcommittee on Public Relations and Actions for Climate Empowerment

Under the MoNRE, the Office of Natural Resources and Environmental Policy and Planning (ONEP) is Thailand's national focal point to the UNFCCC. The ONEP leads the development and oversight of the policies and strategies regarding climate change issues. Also, ONEP coordinates and manages all international support and commitments on climate change and provides support on the implementation of climate change policies and strategies at sectoral and sub-national levels. The Climate Change Management and Coordination Division is a focal unit facilitating all these efforts on behalf of the ONEP.

The specific institutions working on issues related to climate change and agriculture including the MoAC and OAE. The MoAC is the leading organization to supervise and oversee policies, strategic development and implementation related to the agricultural sector and climate change of the country. The OAE is assigned as the focal point within MoAC to enhance the strategies for climate change mitigation and adaptation of the agriculture sector.

The Subcommittee for Steering Climate Change in Agriculture was established by the MoAC. Under this Sub-Committee, two working groups were set up, which are the Working Group for Developing Climate Change Strategic Plan for Agriculture, and the Working Group for Managing and Monitoring the Database of Greenhouse Gas Emissions of Agricultural Sector.

Additionally, the country also formed other institutions working on different issues such as the institutional arrangements for the National Greenhouse Gas Inventory and the Domestic Measurable, Reportable and Verification (MRV) System (ONEP, 2018). The institutional arrangement of the National Greenhouse Gas Inventory was formed through collaboration with ONEP and other relevant leading agencies in five sectors as follows:

- *Energy*: The leading agency is the Energy Policy and Planning Office (EPPO) and the Office of Transport and Traffic Policy and Planning (OTP).
- *Industrial Processes and Product Use (IPPU)*: The leading agency is the Department of Industrial Works (DIW).
- *Agriculture*: The leading agency is the Office of Agricultural Economics (OAE).
- *Land Use, Land-Use Change and Forestry (LULUCF)*: The leading agency is the Department of National Parks, Wildlife and Plant Conservation (DNP).
- *Waste*: The leading agency is the Pollution Control Department (PCD).

The institutional arrangement of Domestic MRV System is for monitoring the progress of the implementation of the Nationally Appropriate Mitigation Action (NAMA) Roadmap. A Domestic MRV System of Thailand is operated through two different structures.

At National level: The working groups on GHG inventory and mitigation measures are responsible for selecting the proper measures for monitoring and evaluation (M&E) of GHG emissions reduction, identifying Coefficient/Emission Factors, implementing MRV processes for activity data, and reviewing and providing feedback on the GHG emissions reduction report. The report will be submitted for the approval of the Subcommittee on Climate Change Knowledge and Database, and then the NCCC. This report will be included in the national reports such as the Biennial Update Report (BUR) and National Communication (NC) to the UNFCCC.

At Sectoral level: The key agencies at the sectoral level will be responsible for verifying data collected and generated by the working groups on GHG inventory and mitigation measures.

2.3.2 Key policies and frameworks

The Government of Thailand has developed many policies, strategies and plans to handle climate change issues. The key policy frameworks are listed in Table 1. Climate-related policies and plans that are particularly central in relation to the agriculture sector and, by consequence to the SCALA programme are further described below.

Table 1. Climate change related policies of Thailand

Year	Policy framework
2008	Strategic Plan on Climate Change (2008-2012)
2008	Global Warming Mitigation Plan on Agriculture sector (2008-2011)
2011	Second National Communication, 2011
2013	Agriculture Strategic Plan on Climate Change (APSCC) (2013-2016)
2015	Thailand Climate Change Master Plan (2015-2050)
2015	National Disaster Prevention and Mitigation Plan 2015
2015	Intended Nationally Determined Contribution (INDC)
2015	First Biennial Update Report, 2015
2016	Nationally Determined Contribution (NDC)
2017	Second Biennial Update Report, 2017
2017	Nationally Determined Contribution (NDC) Roadmap on Mitigation
2017	Agriculture Strategic Plan on Climate Change (ASPCC) (2017-2021)
2018	National Adaptation Plan (NAP), (2018-2037)
2018	Third National Communication, 2018
2020	Third Biennial Update Report, 2020
2020	Updated Nationally Determined Contribution (NDC)
In preparation	Fourth National Communication
In preparation	Climate Change Action Plan for Thai Agriculture (CCAPA) (2023-2027), previously called as Agriculture Strategic Plan on Climate Change

Climate Change Master Plan (2015 to 2050)

Thailand formulated the Climate Change Master Plan (2015 to 2050) as the key national climate policy. The Master Plan provides a long-term national framework on climate change mitigation and adaptation to be implemented in different sectors and at multiple levels. The Master Plan also aims to provide government agencies and relevant organizations with a framework for detailed action plans and to provide budgeting agencies with a clear framework for budget allocation.

Three overarching themes were defined under this master plan to guide policy and planning: climate change adaptation, mitigation, and low carbon development, and enabling environment for climate change management (ONEP, 2015).

Thailand's Nationally Determined Contribution

Thailand submitted the Intended Nationally Determined Contribution (INDC) to the UNFCCC in 2015, which later became the first NDC of the country. In 2020, Thailand submitted its second NDC with the following reinforced target:

Thailand intends to reduce its greenhouse gas emissions by 20 percent from the projected business-as-usual (BAU) level by 2030. The level of contribution could increase up to 25 percent, subject to adequate and enhanced access to technology development and transfer, financial resources and capacity building support. Thailand is formulating its Long-term Low Greenhouse Gas Emission Development Strategy (LT-LEDS) which will guide Thailand towards a climate-resilient and low greenhouse gas emissions development and serve as a basis for enhancing its subsequent NDCs *(*p.66, ONEP, 2020).

In relation to the agricultural sectors, Thailand's NDC focuses on adaptation aspects as follows: "*Agriculture and food security sector aims to maintain productivity and food security by increasing the ability to respond and manage climate risks in the agricultural sector".*

The Thai cabinet released the NDC Roadmap (2021 to 2030) in 2017 as guidance for the country to achieve its NDC targets. The roadmap was developed through a national consultative process, and it identified a set of NDC Sectoral Actions Plans 2021 to 2030 in different sectors including the energy, transportation, IPPU and waste management. The NDC Roadmap indicated the reduction of GHG emissions of approximately 115.6 MtCO2eq, which equals a 20.83 percent reduction in 2030 compared to the BAU level.

The NDC Roadmap was developed based on the following key policies and plans of the country:

- 12th National Economics and Social Development Plan 2017-2021
- Climate Change Master Plan 2015-2050
- Power Development Plan 2015-2036
- Thailand Smart Grid Development Master Plan 2015-2036
- Energy Efficiency Plan 2015-2036
- Alternative Energy Development Plan 2015-2036
- Environmentally Sustainable Transport System Plan 2013-2030
- National Industrial Development Master Plan 2012-2031
- Waste Management Roadmap

Thailand's National Adaptation Plan

Thailand's National Adaptation Plan (NAP) was formulated based on the priorities identified in the Climate Change Master Plan (2015-2050). The first draft of the NAP was developed in 2015-2017, and the final NAP was approved by the NCCC in 2018.

The NAP process in Thailand was funded by the national budget with additional financial support from external donor agencies, including the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and IKI (BMU), The UNDP and FAO also provided additional support through the NAP-Ag programme (FAO and UNDP, 2020).

The NAP (2018 to 2037) identifies sectoral actions into six components which are water management, agricultural and food security, tourism, public health, natural resource management and human settlements and security.

The NDC and NAP of the country have given high importance to the management of climate change issues in the agricultural sectors. The NDC has identified enhanced "safeguarding of food security" and "promoting sustainable agriculture" as the top priority strategies in handling climate change impacts. The NAP defines goals for creating resilience and readiness; the adaptation of agriculture sectors to natural disaster risks; and for maintaining food security at all levels (FAO and UNDP, 2020). For instance, the current update of Thailand's NAP defines goals on the adaptation of agriculture to climate change. Specifically, the stated objective *is "*to strengthen the productivity and food security addressing climate risks and impacts of climate change" (ONEP, 2020b). The following four actions and 25 measures are listed for achieving this goal (see Table 2).

Table 2. The climate actions identified in Thailand's National Adaptation Plan (NAP).

Actions	Mechanisms
1) Crop production management	• Enhancing the adaptation of crop production responding to climate change • Enhancing the integrated crop production and rotational farming • Developing and improving water management in the irrigation areas for mitigating the natural disaster risks (e.g., flooding and drought) • Improving the efficiency of water bodies in non-irrigation areas for crop production • Promoting soil conservation and rehabilitation and addressing soil degradation • Promoting the appropriate agricultural activities to mitigate soil erosion and land slide issues
2) Livestock production management	• Developing livestock systems and products responding to the changes of climate patterns • Developing control, prevention and treatment systems of livestock diseases occurred by climate change impacts
3) Fishery and aquaculture productions management	• Enhancing fishery productions responding to the changes of climate patterns • Restoring fishery resources and fishery habitats and nursery grounds • Developing systems to control and mitigate the impacts of flooding and drought over fishery and aquaculture productions
4) Enabling factors of agricultural production systems and food security	• Strengthening self-reliance of farmers in coping disaster risks caused by climate change • Developing climate risks map on agricultural productions and enhancing access to information of farmers • Enhancing a precision farming system, including research and technology development, and promoting the practices to farmers • Enhancing land use zoning management through the application of Agri-map for ensuring the effectiveness of agricultural productions • Applying the productions based on the philosophy of sufficiency economy, sustainable agriculture, and integrated agriculture • Enhancing and restoring traditional knowledge on households' food bank systems • Establishing gene banks of crops, livestock, and fishery for serving as storages when disaster happened • Improving research development on genetics of crop and livestock addressing climate change impacts and disaster risks • Developing effective food storages and distribution systems mitigating the issues of insecurity of foods when natural disaster occurred • Promoting research development and technology to reduce the concerns of 'food loss food waste' in agriculture • Enhancing the establishment of local farmer networks working on climate change mitigation and adaptation

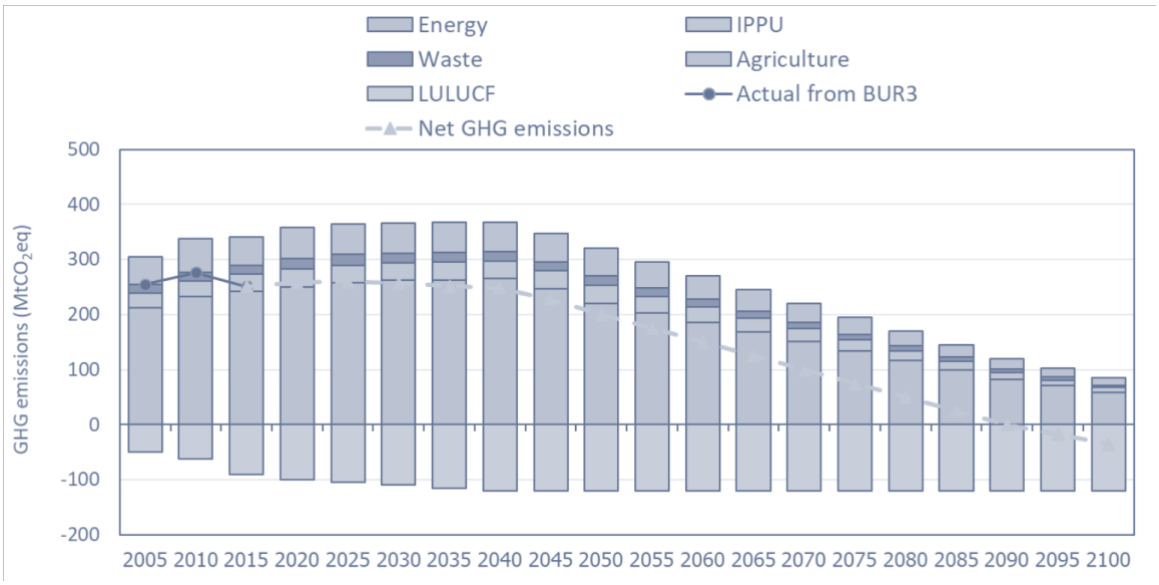
	• Raising awareness and capacity development of farmers on climate change issues and the impacts on agriculture, including their readiness in coping with climate change concerns • Promoting research development on the issues of climate change and agriculture, including crop production management, livestock production management, fishery and aquatic production management

The Mid-century, Long-term Low Greenhouse Gas Emission Development Strategy

The country ratified the Paris Agreement and submitted the Mid-century, Long-term Low Greenhouse Gas Emission Development Strategy (LT-LEDS) under the Agreement in 2021. The country indicated that Thailand aims to peak its greenhouse gas emissions in 2030, with the ambition to move towards net-zero greenhouse gas emissions as early as possible within the second half of this century, and towards carbon neutrality by 2065, while looking forward to enhanced international cooperation and support on finance, technology, and capacity-building to achieve this ambition, (p.ii, ONEP, 2021).

Thailand's LT-LEDS indicated the peak emissions level of the country in 2030 will be around 370 MtCO2eq. The country will further pursue efforts to achieve net zero GHG emissions of MtCO2eq in 2050, representing a decrease of 64 percent compared to emissions in the BAU scenario. The targets of projected GHG emissions from activities in different sectors in 2050 will be 220.0 MtCO2eq from the energy sector, 34.0 MtCO2eq from the IPPU sector, 16.0 MtCO2eq from waste management, 50.0 MtCO2eq from agriculture sector, 120.0 MtCO2eq from LULUCF sector (Figure 6).

Figure 7: Thailand's long-term low greenhouse gas emission scenario



Agriculture Strategic Plan on Climate Change (ASPCC) (2017-2021)

To achieve the targets of its NDC and NAP, Thailand's MoAC formulated the key policy framework – the Agriculture Strategic Plan on Climate Change (ASPCC) (2017 to 2021). The NAP-Ag Programme, implemented by UNDP and FAO, provided technical support and funding for the development of the ASPCC (2017-2021). There are the four main strategic priorities promoted in the ASPCC (2017-2021):

- **Strategic priority 1:** Collection, development and setting up the database, knowledge and technology to raise awareness of climate change.
- **Strategic priority 2**: Increasing the ability of farmers, farmer institutions, and related businesses to adapt to climate change.

- **Strategic priority 3**: Participation in reducing GHG emissions and development of a growth model with friendly environment.
- **Strategic priority 4**: Strengthening the capacity of institutions to cope with climate change in agriculture.

Climate Change Action Plan for Thai Agriculture (CCAPA) 2023 to 2027

The SCALA workplan includes activities to support the OAE in reviewing and drafting the ASPCC (2023-2027). The draft is expected to be submitted for the approval by the Working Group for Developing Climate Change Strategic Plan for Agriculture (CCSA) of MoAC by late March 2023. The updated plan is expected to evolve from a 'strategic plan' (2017-21) to an 'action plan' (2023-2027). The title will be *"Climate Change Action Plan for Thai Agriculture (CCAPA) 2023 to 2027*". This new plan indicates a set of five strategies, each containing different measures, aiming to transform policies into actions.

The overarching vision of the CCAPA is that the agriculture sector in Thailand has strong capacity and resilience to respond to climate change by using latest data and information and is safeguarded by a favorable environment. The key missions relevant to Thailand's agriculture sector under this updated plan is presented in Table 3.

Table 3. Key missions for Thailand's agriculture sector under the Climate Change Action Plan for Thai Agriculture (CCAPA) (2023 – 2027)

Mission	Issues
1) Enhance the adaptive capacity of farmers and related businesses throughout the agricultural supply chain	• Promote adaptation with climate-smart agriculture approach • Increase the adoption and deployment of climate action-based technology throughout agricultural supply chain • promoting for a sustainable of soil management, water management and ecosystem management • Improve soil fertility, and sufficiency plus access to water resources and ecosystems
2) Contribute to reducing greenhouse gas (GHG) emissions throughout the agricultural supply chain to mitigate the long-term impact of climate change	• Promote the production of environmentally friendly and low-carbon agricultural products that comply with the Nationally Determined Contributions (NDCs) and Long-Term Strategies (LTS) of the country • Support for market development of low-carbon agricultural products
3) Develop database and knowledge, and support raising awareness of climate change impacts, and the importance of climate change adaptation and mitigation	• Develop an efficient resource and risk management system • Increase knowledge and research development • Develop climate-related database and transfer the knowledge
4) Develop manpower capacity in agriculture and promote cooperation of network partners to deal with climate change in all sectors and levels	• Raise the awareness of climate change • Enhance the manpower capacity in accordance with the context of the area
5) Enhance contributions and efforts of different agencies in implementing climate actions	• Enhance integration with agencies outside the Ministry of Agriculture and Cooperatives • Enhance integration between departments under the Ministry of Agriculture and Cooperatives • Improve and develop regulations, laws, incentives and the environment to adjust behavior of stakeholders

2.3.3 Capacity needs for climate action in land use and agriculture

Capacity and knowledge development are the key needs for Thailand in addressing climate change mitigation and adaptation, as was also identified in the Twelfth NESDP of Thailand (2017-2022). The strategy identifies and reiterates the following:

1.3.6 Adjustment of the Agricultural Production System to Comply with Climate Change Commitments and Land Use Potential

To add value to agricultural products that are safe for health and have no negative effects on the quality of life and the environment, it is important to build capacity in cognitive, academic, and agricultural science in support of knowledge creation and innovation in agriculture and the utilization of bio-based natural resources. The strategy focuses on developing systems of sustainable agriculture while expanding opportunities for farmers to access arable land. To achieve economies of scale, individual farmers are encouraged to collaborate with each other in the forms of cooperatives, partnerships, and commercial companies (p.8, NESDC, 2017).

As a part of the process for the development of the CCAPA (2023 – 2027), in-depth interviews were conducted in July – August 2022 with the representatives of relevant stakeholder groups, to understand their needs (capacity, finance, support, technology etc.) in coping with climate change impacts in the agriculture sector. The summarized results of the interviews were as follows:

- **Communities:** Issues raised by the representatives of local organizations included promoting precision farming; developing technology and warning systems that help farmers adapt to climate change impacts; enhancing research development in plant and animal species addressing climate change impacts; raising awareness, knowledge development and technical support for farmers for coping with climate change impacts and addressing climate risks.

- **Government agencies:** The issues defined by the representatives of government agencies were on mainstreaming climate actions into policies and plans of different departments; strengthening human resources and capacities for implementing climate actions; establishing a specific unit of MoAC for supervising and monitoring work –related to climate actions; enhancing integrated area-based approach for climate action implementation; identifying models of climate actions at all levels; increasing the number of researchers working on climate action in agriculture; providing continuous capacity building of stakeholders on climate change knowledge; promoting a young smart farmer initiative; enhancing the uses of digital technology for informing and monitoring climate-related data; enhancing the cooperation of farmers and private sector actors in implementing climate action with government agencies.

- **Private sector:** The issues suggested by representatives of the private sector included enhancing research development on plant and animal species adapted to climate change impacts; developing and implementing piloting models for climate actions; developing GHG emissions reduction plans in agriculture sector of key MoAC departments; implementing carbon taxes and environmental taxes; enhancing the cooperation of multi-stakeholders on climate action implementation; managing climate change issues through the uses of value chain analysis approach.

The above-mentioned issues were consolidated and incorporated into the draft of the CCAPA (2023-2027). The team of experts that authored the strategy presented the draft in the consultation workshops with the representatives of different agencies in August and September, and the final draft is expected to be officially launched in late March 2023.

2.4 RELEVANT PROJECTS AND PROGRAMMES

The SCALA Thailand team gathered information about ongoing relevant projects and activities of different departments of the MoAC as part of a stocktaking exercise. Supplementary information were also collected from a previous DoA, Thailand project on ‘Identifying CSA interventions in four regions in Thailand’ that FAO helped implement. The following are the key initiatives on addressing climate change impacts in the agriculture sectors, by the different MoAC departments:

- **Land Development Department:** Key activities include improving the databases for soil resource and land management; promoting capacity development of farmers on land management; improving soil quality and land and water resources management; developing Agri-map and land use zoning and database development; establishing agricultural product bank; improving the effective land uses in degraded areas; enhancing sustainable agriculture; promoting biological organic substance uses, promoting the traditional agricultural products of different regions; and others.

- **Department of Fisheries*:*** Key activities include enhancing a better fishery management ; enhancing research and innovation development on fishery production systems, fishery industry and fishery management; promoting sustainable fishing; strengthening fishery and marine resource rehabilitation; empowering the local fisherman networks, promoting a smart-farmer program; and others.

- **Department of Agricultural Extension:** Key activities include enhancing agricultural production systems and proactive management in accordance with the Agri-Map zoning; promoting water use efficiency at farm level; increasing and improving efficient agricultural productions; providing capacity development on agricultural production processes; enhancing development of organic farming; raising awareness for stopping crop burning; promoting/distributing good quality seeds; promoting traditional agricultural production systems; enhancing smart-farmer program; empowering local farmer networks; providing capacity development for young farmers and local/small/community enterprises; and others.

- **Livestock Development Department*:*** Key activities include increasing efficiency in livestock production systems; promoting sustainable agriculture development; promoting the safety in agricultural production programme; providing capacity development on livestock productions; enhancing smart-farmer program and others.

- **Agricultural Land Reform Office Department*:*** Key activities include developing agricultural land management programs for smallholder farmers and vulnerable groups; enhancing smart-farmer program (e.g., for young generation farmers and champion farmers in the land reform areas); ***and others.***

- **Royal Irrigation Department*:*** Key activities include enhancing water resource management and extending irrigation systems***;*** promoting an integrated water resource management approach; preventing and mitigating the impacts of water-related disasters; enhancing collaborative management and integrated managements among relevant agencies and stakeholders; building local networks and strengthening civil society organizations network; empowering the local user networks in the irrigation areas; and others.

- **Rice Department*:*** Key activities include strengthening research and development on rice production and rice seeds; producing and distributing rice seeds***;*** developing the communities' seed banks; improving the rice production systems to address climate change impacts; promoting sustainable agriculture development and organic rice production; developing the Smart-Rice Production program (Smart-Technology to produce rice); improving Management Information System and database management for rice production system; enhancing a smart-farmer program; and others.

- **Department of Agriculture*:*** Key activities include improving agricultural biodiversity management; improving effective agricultural commodities processing and products development; enhancing the agricultural cultivation and productions aligning with the Agri-Map zoning; promoting sustainable agriculture development and organic agricultural production systems; developing the Smart-Agricultural Production programme (Smart-Technology to do agricultural activities); promoting suitable agricultural production systems and diversified and integrated agricultural production systems; promoting research and technology development for crop and agricultural productions; and others.

3. CLIMATE ACTION REVIEW

Against the backdrop of the country profile presented in chapter 2 (more specifically following the preparation of the **stocktaking report** and corresponding **baseline survey**, see FAO and UNDP 2022), the SCALA Thailand team conducted a review of potential climate actions in the agricultural sector to be supported by the project. This chapter provides a recount of methods followed and results of the exercise.

The data supplied for climate action review and analysis originated from both primary and secondary sources.

- Primary data sources are the relevant literature, prior studies, relevant policies, and government documents. These data were used to inform the stocktaking report (FAO and UNDP, 2022) and the baseline survey study, which then provided information for identifying the priority actions to be inserted in the Climate Action Review (CAR) matrix.

- Secondary data sources are the opinions and views derived from different consultation meetings and workshops, including interviews with the higher authorities of the focal government agencies. These data points were specifically considered for prioritizing Thailand's climate actions and developing the theory of transformative change.

3.1 METHODOLOGY

The Climate Action Review Matrix (CAR) was developed by the UNDP and FAO SCALA global team as a screening tool to assess climate actions in land use and agriculture for their transformative change potential within the context of NDC and/or NAP implementation. The matrix allows for a comparative analysis of climate actions across seven dimensions of transformation to inform the prioritization of a transformative climate action to take forward under SCALA. A transformative climate action in SCALA is one that is **climate-informed, applies systems-thinking, promotes gender equality and social inclusion, contributes to sustainable development, fosters a whole-of-government approach, incentivizes private sector engagement and applies innovative technologies and financing instruments** to achieve national climate change adaptation and/or mitigation goals in land-use and agriculture. The SCALA Thailand team undertook the following three steps for identifying transformative climate actions:

Step 1: Scoping and preparation

As a first step, desk review and background studies were conducted for developing the stocktaking report (FAO and UNDP, 2022) and the baseline survey. These gathered primary information regarding climate risks, climate related policies and institutional arrangement, and key initiatives by relevant departments including the targets of NDC and NAP of Thailand.

Step 2: The analysis of climate actions

The baseline survey (step 1) identified the potential climate actions for the assessment, which are the 25 priority actions on the agriculture and food security target under the NAP of Thailand (see Table 2). The NAP priorities resulted as the most relevant specific actions for the assessment insofar as they also represent NDC priorities. In fact, much of the small number of AFOLU references in Thailand's NDC refers to the country's NAP (under the NDC Adaptation component).

The 25 identified NAP actions were rearranged and regrouped into nine priority actions for the analysis using the identified seven dimensions of transformation (i.e., climate rationale; systems-thinking; private sector engagement; gender equality and social inclusion; sustainable development; a whole-of-government approach; and technological and financial innovation.)

The SCALA Thailand team modified and transferred the Climate Action Review Matrix into simple questions and used the *mentimeter* online tool for conducting the assessment with experts and stakeholders present at the inception workshop on 24 June 2022 (see Annex 3). The participants were provided explanations on each question and topic to be assessed by the team. Also, the participants had a chance to see the list of questions

in its entirety and then gave their answers and opinions to assess each issue. The results of the assessment are described in section 3.2.

Step 3: Prioritization and selection of transformative climate actions

After the inception workshop, the SCALA TH Team worked closely with the two focal agencies (i.e., OAE and LDD) by organizing multiple meetings for finalizing and selecting the key transformative climate actions for Thailand based on the CAR matrix results and other inception phase materials. The results from background studies (i.e., stocktaking report and the baseline survey) were used to develop a **theory of transformative change** of Thailand (see section 4.2).

3.2. Analysis of climate action with transformative potential

As explained under 'step 2' above, the climate action review was conducted in a participatory process with SCALA partner agencies. This comprised planning, selecting the potential climate actions, modifying the matrix, conducting the analysis, and finalizing and validating the results.

First, the assessment of the identified nine climate actions was conducted through brainstorming with the representatives of different organizations who attended the inception workshop. The identified **nine priority actions** (based on the longer list of 25 actions contained in the NAP) are as follows.

a) Management of crop production systems in line with climate change.
b) Water management in agricultural areas to cope with the impacts of floods and droughts.
c) Conservation, restoration and management of soil in agricultural areas as well as manage land use to mitigate the impacts of climate change.
d) Management of livestock production systems in line with climate change.
e) Management of fishery production systems in line with climate change.
f) Development of warning mechanisms and forecasting of climate change impacts in agriculture sector.
g) Development of research, technology and innovation in agriculture sector to cope and adapt to the impacts of climate change.
h) Promoting food stability and food availability in natural disaster situations.
i) Strengthening the capacity of all stakeholders in agriculture sector to adapt to the impacts of climate change.

The detailed results of the assessment along the seven 'transformation dimensions' can be found in Annex 2. Based on the ranking of the assessment scores of the nine priorities, **priority areas** no. a), c) and e) (see underlined actions in the list above) were selected as ones that hold the highest transformative potentials These were then also used as inputs for developing the theory of transformative change (see section 4.2)**.**

Based on the identified priority actions, the participants of the inception workshop were divided into four groups for discussing and proposing **initiatives with transformative change potential**. There were **four preliminary initiatives** that emerged from these focused group discussions:

- Promoting climate-smart agriculture.
- Promoting precision farming.
- Developing the database for informing climate risks and vulnerabilities for improving land use management.
- Developing the Agri-map database for enhancing the effective agricultural and land management addressing climate change issues.

Subsequently, the SCALA TH Team organized further team meetings and consultation workshops with the focal partner agencies (organized on 29 June 2022 and 11 July 2022) for finalizing and validating the key transformative climate actions for Thailand. Climate-smart agriculture approach for enhancing the **sustainable crop, soil and land use management** as well as potentially **livestock production** emerged as key priority systems for Thailand based on the multiple assessments and consultations conducted. The team continued to conduct further desk reviews to develop the framework for the theory of transformative change in Thailand (see more details in section 4.2).

4. IMPLEMENTATION OF TRANSFORMATIVE CLIMATE ACTION IN LAND USE AND AGRICULTURE

This chapter provides a more detailed recount of key steps during the SCALA inception phase as was briefly indicated in Chapter 3.

4.1 INCEPTION WORKSHOP

The inception workshop was held on 24 June 2022 from 9.00 am to 16.30 pm., at Pullman Bangkok King Power Hotel in Bangkok. The workshop was attended by almost 50 participants from different government agencies as well as the academic institutions and private sector.

The objectives of the workshop were the following:

1. Introduce the SCALA programme objectives, approach, outputs and outcomes.
2. Assess the climate change impacts and potential climate actions in the agricultural, food security and land use sectors of Thailand, and identify the prioritized climate actions.
3. Generate a discussion for the development of the programme workplan and identification of action plans for the SCALA programme in Thailand.

The workshop programme was designed to be an interactive learning event for encouraging participation of the participants. The workshop agenda and list of participants can be found in Annex 3. The workshop outputs were generally deemed satisfactory. Some of the key achievements were the following:

- The participants gained a good understanding of the SCALA programme, its activities and implementation approach in Thailand.
- The participants' awareness of the existing climate change situation and the impacts on the agricultural and land use sectors in Thailand was increased.
- Through a participatory process, participants identified key priorities on climate actions relevant to the agriculture and land use sectors to achieve the country's targets under the NDC and NAPs.
- The participants brainstormed to develop ideas for transformative systems change for Thailand, and to define the drivers and barriers of these identified systems. This included a list of key support activities through which the SCALA programme Thailand could address these drivers and barriers.

The results of the inception workshop were published in a *press release*, published on the UNDP Thailand webpage, the webpages of SCALA programme Thailand and on the Twitter accounts of FAO and UNDP.

Figure 7. The inception workshop photos

4.2 THEORY OF TRANSFORMATIVE CHANGE

4.2.1 System identification and analysis

As illustrated above, through the inception and consultation workshops, development of the **climate-smart agricultural activities** was identified as approach that holds value as for Thailand to address the current challenges facing the agriculture and land use sectors. After these workshops, the SCALA Thailand team conducted further interviews with the high authorities of OAE and LDD to gain their perspectives on the options for developing the CSA approach for Thailand. Additionally, the team also used the data from the baseline survey and the stocktaking report and did further desk review for developing a framework for the theory of transformative change. The results are presented in the following section.

The OAE, LDD and SCALA Thailand agreed to select **the enhancement of sustainable agriculture via a system-based *"*Climate-Smart Agriculture Approach*"* (CSA)** as SCALA's emphasis in Thailand.

The FAO (2018) defines CSA as:

Climate-smart agriculture (CSA) is an approach for transforming and reorienting agricultural production systems and food value chains so that they support sustainable development and can ensure food security under climate change (FAO, 2018).

Adoption of a CSA approach will be a core principle to strengthen Thailand's agriculture and land use sectors to make the transition to a low emission and sustainable production system. This can address climate change risks and impacts while enhancing adaptative capacities, mitigation potentials productivity and food security of large population dependent on this key sector. Under the overall umbrella concept of CSA, more specifically, t**he selected target promotion of climate-smart agricultural development for crop and livestock production and, soil and land use management were identified as the key sub sectoral focus areas.**

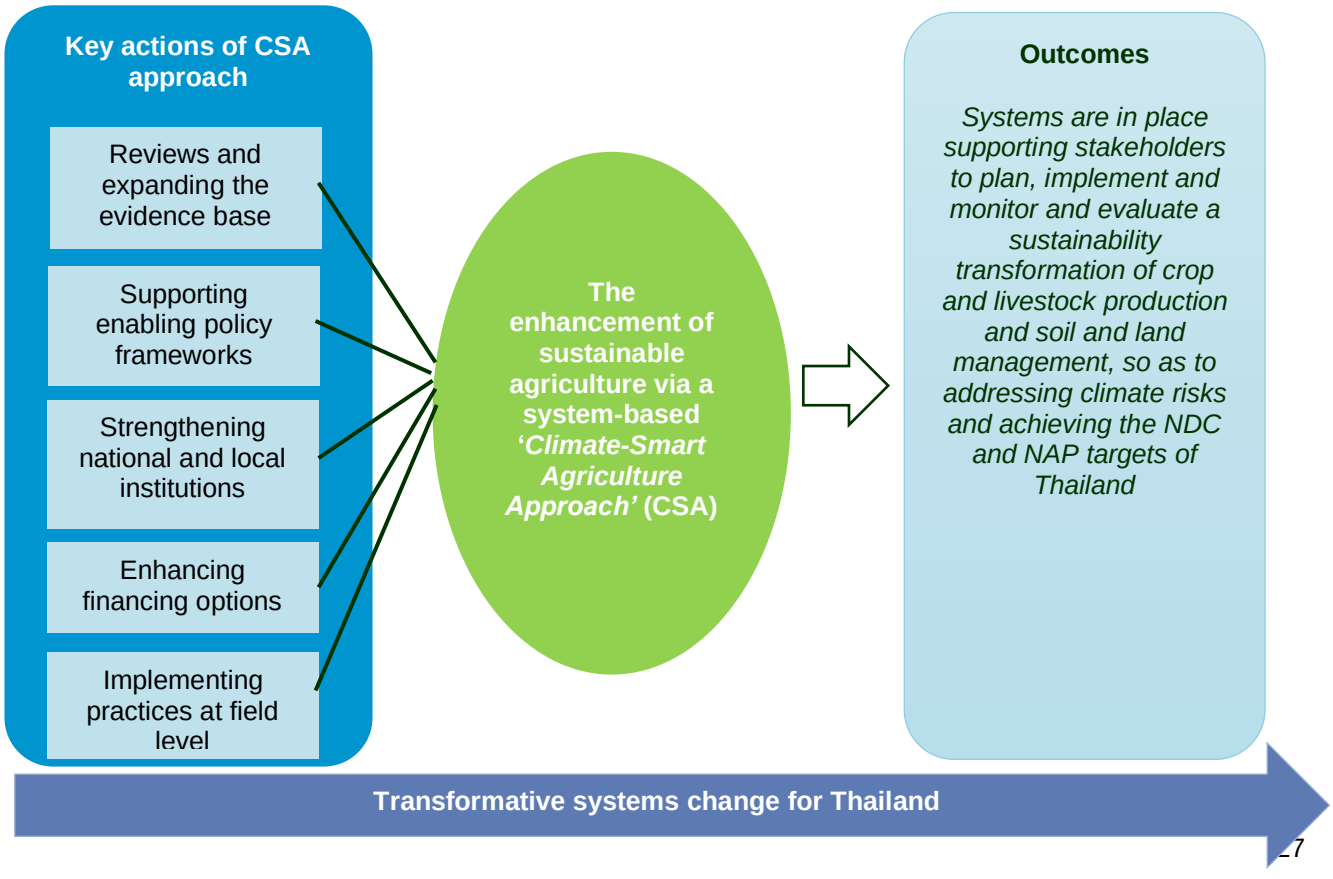
FAO definitions for the three subsectors identified as priority areas for Thailand can be found below.

- ***Climate-smart crop production*** *can include the climate change mitigation and adaptation options that can sustainably improve yields and minimize the harmful environmental impacts of production…. (FAO, 2018, p10).* ***Climate-smart livestock production*** *can be realized through management options that sustainably intensify livestock production, promote carbon sequestration in rangelands and reduce emissions from manure. A reduction in consumer demand for livestock products can also contribute to climate change mitigation. (FAO, 2018, p11).*

- *Successful implementation of* ***sustainable soil and land management*** *options requires an enabling environment that can help enhance technical knowledge in ways that build on modern science and local expertise, and contribute to overcoming the financial, institutional and communication barriers that hinder the wider adoption of climate-smart agriculture (FAO, 2018, p12).*

According to the CSA Sourcebook developed by FAO, the key actions and principles required for achieving CSA development include 1) reviews and expanding the evidence base, 2) supporting the enabling policy frameworks, 3) strengthening national and local institutions, 4) enhancing financing options, and 5) implementing practices at field level (FAO, 2018). The framework for CSA development in Thailand with a potential for transformative systems change is presented in Figure 8.

Figure 8. The framework for transformative systems change in Thailand. The key actions for CSA approach were identified from the FAO Sourcebook on CSA (FAO, 2018)



4.2.2. Analysis of drivers and barriers

To unlock the potential for transformative systems change via the adoption of a CSA approach, an analysis of drivers and barriers of its adoption was conducted.

The inputs for the analysis of drivers and barriers were the results from desk reviews (i.e., the stocktaking report and baseline survey matrix, FAO and UNDP 2022), CSA Country Profile for Thailand (FAO, 2022) and the results of the group discussions at the inception workshop. Additionally, the SCALA Thailand team conducted interviews with the two focal agencies (i.e., OAE and LDD) for learning their perspectives regarding the potential development and barriers to implement climate actions and the development of CSA approach as Thailand's transformative systems change.

Drivers and opportunities analysis

During the focused group discussions at the inception workshop, participants identified and defined different drivers and barriers to move forward the key initiatives for developing climate related actions for Thailand.

In terms of opportunities, Thailand already has in place many drivers for accelerating the implementation of transformative climate actions. Some of them include,

- **Policy support: Thailand** has continually developed relevant policies on integrating, mainstreaming and strengthening their climate actions. Particularly, the Agriculture Strategic Plan on Climate Change (ASPCC) (2017-2021) under the MoAC provided a strong basis for actions on enhancing climate actions regarding sustainable agricultural production systems and water and land management. Currently, the ASPCC is being updated responding to the targets of NDC and NAP. The new plan, CCAPA (2023-2027) is expected to get approved by MoAC in the beginning of 2023.

- **Institutional arrangement**: Thai Government established several relevant institutions to supervise, manage and make decisions on addressing climate change issues. The highest authoritative body is the National Committee on Climate Change Policy (NCCC), established in 2007.which there are specific subcommittees established under the NCCC. For agriculture sector, the MoAC established the workgroup on the Climate Change Strategic Plan for Agriculture (CCSA) to oversee the activities and implementation of different departments in handling with climate change issues.

- **Environmental management:** Coping with climate change issues is one of key national agenda, particularly in the Twelfth NESDP of Thailand (2017-2022). Currently, the Thirteenth NESDP (2023 – 2028) also aims for increased investment for sustainable development through reduced GHG emissions and enhanced country capacity to address climate risks in order to build a climate-resilient society. The government also declared transitioning to Bio-Circular-Green Economy as a national agenda. Thailand also endorsed and applied many global standards and compliances for promoting sustainable agriculture (e.g., Good Agricultural Practices).

- **Data and information*:*** Thailand has created multiple climate-related databases, has maps and satellite data, which could be a potential source of information for further development of the database system for informing on climate risks in agriculture productions.

- **Extension services and knowledge networks*:*** The country has good provision of extension services on agriculture and land management. Farmers have a good capacity to utilize local knowledge on climate change adaptation and connected to different networks for further knowledge sharing. Many local learning centers were established for guiding agricultural production and land use management. Private sector plays a significant role in engaging communities to address climate change mitigation and adaptation needs. Many universities have developed study programs and research centers on climate change issues.

- **Financing mechanisms:** To implement its climate change targets for the agriculture sector, Thailand has several ongoing projects supported by external funding mechanisms such as the Green Climate

Fund(GCF) and Global Environment Facility (GEF). At the national level, initiatives on providing climate funding support, loans and insurance mechanisms exist for farmers.

Barrier analysis

Many constraints and barriers were also discussed during the group discussions at the inception workshop. The information collected were further verified and complemented during the interviews with the representatives of the OAE and LDD. In some areas (such as on finance or policy coherence), elements that were both conducive ('drivers') and obstructive ('barriers') to transformative change were identified. The identified barriers include:

- **Access to data and information:** There is a lack of the integration of climate data across sectors. Some climate risk databases are outdated because lack of support to continue research and technology development. The land use database requires further updating and improvement for effectively informing climate risks and identifying vulnerable areas for agricultural production and management. Farmers lack access to updated information and technology for improving their farming practices. A lack of a reliable early warning system was also identified as a barrier

- **Policy integration and institutional coordination:** Policy formulation sometimes does not address well the local needs for coping with climate change impacts. Policies are also not always put into practice sufficiently by farmers and other actors. There is no direct policy support for CSA development. Furthermore, there is an issue of overlapping/contradicting policies and plans for agriculture and land use management. Land conflict and mismanagement issues have also been reported. There is still a need to build for better cooperation among relevant stakeholders.

- **Local stakeholder engagement and capacity:** Strengthening adaptive capacity and climate risks awareness of farmers is crucial. In some cases, local farmers have resistance and do not show much willingness to change and/or to invest in adopting any new agricultural practices. Small land sizes and tenure issues are obstacles creating uncertainty and insecurity on agricultural production by small-holder farmers. Supply of agricultural labor due to aging population also emerged as a potential concern during the discussions. The younger generations are generally less interested in continuing agricultural activities.

- **Financing and investment:** Insufficient financial resources and an unsatisfactory sectoral budget integration system for supporting climate actions implementation were also highlighted.

4.2.3 Leverage points for transformation

Against the backdrop of the identified barriers and opportunities, the country needs to leverage on the current and potential opportunities for enhancing CSA development for transformative systems change. Multiple leverage points (listed below) were identified through the inception workshop, consultation meetings with relevant stakeholders and focal partner agencies, and interviews with the high authorities and desk research.

The leverage points were identified and mapped against the five key CSA actions/principles. This analysis led to guide the ways for Thailand to implement transformative systems change. Table 4 describes the identified potential leverage points.

Table 4. The identification of potential leverage points against the key CSA actions

Key CSA actions *(FAO, 2018)*	The identified potential leverage points
1. Reviews and explaining the evidence base	• Increasing of research and technology development on agricultural production systems in addressing climate change concerns, including plant and animal species in coping with climate change issues. • Increasing of research on value chain analysis to inform and identify climate actions and engaging key stakeholders. • Developing and implementing the effective climate-related database systems to reduce risks of agricultural and land use management. • Improving for an effective land use database management to guide for a level of severity of climate change sensitive areas and degraded areas. • Developing software applications for warning and reporting systems to enhance better access to information of local stakeholders. • Linking CSA approach into the National Agricultural Big Data.
2. Supporting the enabling policy	• Enhancing an agricultural production with sustainable land use management and clean energy as a key agenda of the country. • Driving sustainable agriculture and CSA nationwide through sectoral plans and policies for increasing agricultural productivity, income generation, and greenhouse gas emission reduction, and promoting farming practices to minimize soil erosion problems and the uses of fossil energy. • Identifying zoning for crop productions in relation to climate risks and base territorial planning on these. • Improving and enhancing an integrated management system for ensuring an effective water management system for agricultural activities.
3. Strengthening national and local institutions	• Enhancing the capacity of government agencies to identify and deliver climate-related projects for enhancing sustainable agriculture and land use management. • Increasing of management efficiency and synergies between government agencies working on climate actions. • Engaging multiple stakeholders to implement climate actions with government agencies, for instance providing capacity development for communities and private sector to act as the change agents. • External support needed on technology and human resources development to implement climate actions.
4. Enhancing financing options	• Identifying and developing private sector engagement models. • Increasing financial mechanisms and funding on climate change issues. • Mobilizing resources for implementing climate change adaptation and mitigation mechanisms.
5. Implementing practices at field level	• Strengthening sustainable approach for a field-level implementation such as New Theory Agriculture, precision agriculture, Good Agricultural Practices and Large-Scale Agricultural Extension System Project. • Promoting research development on CSA and guidelines for CSA and precision farming and transform the practices into local level. • Addressing aging society which affects agricultural labor workforce: Promoting skills for agricultural employment in the young generation and build their capacity for being climate-smart farmers.

As a next step, the SCALA team consolidated the identified leverage points and selected priority leverage points to be included in the project workplan. The team identified the potential initiatives/ interventions to be implemented for Thailand to have better systems (policies and practices) in driving transformative climate actions (as per the definition of 'transformation' definition and dimensions introduced in chapter 3). These interventions aim at improving and strengthening all processes of planning, implementation, and monitoring

and evaluation of climate actions in the agriculture sector to meet the system outcome of CSA development. These interventions are as follows:

- CSA value chain analysis for policy recommendation and practices at local level.
- Improving climate-related database addressing climate risks and guiding for area-based management for sustainable crop and land use management.
- Capacity development on mainstreaming gender and social inclusion (GSI) into CSA and climate actions in agriculture and land use sectors.
- Capacity development on Climate Change Benefit Analysis (CCBA) for empowering the staff of MoAC's departments and private sector in planning, budgeting, and developing project ideas on climate actions and CSA related activities.
- Development of the Agriculture Strategic Plan on Climate Change (ASPCC) 2023 – 2027 *(Note: The title of the plan will be changed to be 'Climate Change Action Plan for Thai Agriculture (CCAPA) 2023 – 2027')*, including the systems for monitoring and evaluation of implementation.
- Development of MRV and M&E systems for agriculture sector of the country and capacity building.
- Development of business models on CSA and private sector engagement plans in agriculture sector addressing to climate change and capacity building.

4.2.4 Actors of change

There is a need for the involvement of the different stakeholders from the following groups:

- Government agencies: The key partners include the OAE, LDD and different departments of MoAC (such as the Department of Agricultural Extension and its decentralized offices), ONEP (MoNRE), Thailand Greenhouse Gas Management Organization (TGO), and so on.
- Private sector: Potentials partners include the Board of Trade of Thailand (BTT), the Federation of Thai Industries (FTI), Thailand Business Council for Sustainable Development (TBCSD) and Global Compact Network of Thailand (GCNT).
- Academic and universities: Potential partners include Kasetsart University (KU), Thailand Development Research Institute Foundation (TDRI), Asian Institute of Technology (AIT), King Mongkut's University of Technology Thonburi (KMUTT), Chiang Mai University (CMU) and others
- Communities and local organizations, such as civil society groups, NGOs, farmer or women groups.

4.2.5 Theory of transformative change for Thailand

Figure 9 presents the theory of transformative change framework (see also FAO and UNDP, 2022b) that brings together information presented in this chapter.

In short, against the **climate context** of persistent risks and vulnerabilities as well as mitigation potentials in agriculture and land use - both recognized and translated into forward-looking goals under the NDC and NAP priorities – SCALA aims for Thailand to have translated their NDC and/or NAPs into actionable and transformative climate solutions in land-use and agriculture with multi-stakeholder engagement (**goal**). This would entail the enhancement of sustainable agriculture via a system-based '**Climate-Smart Agriculture Approach'** (CSA, see 4.2.1).

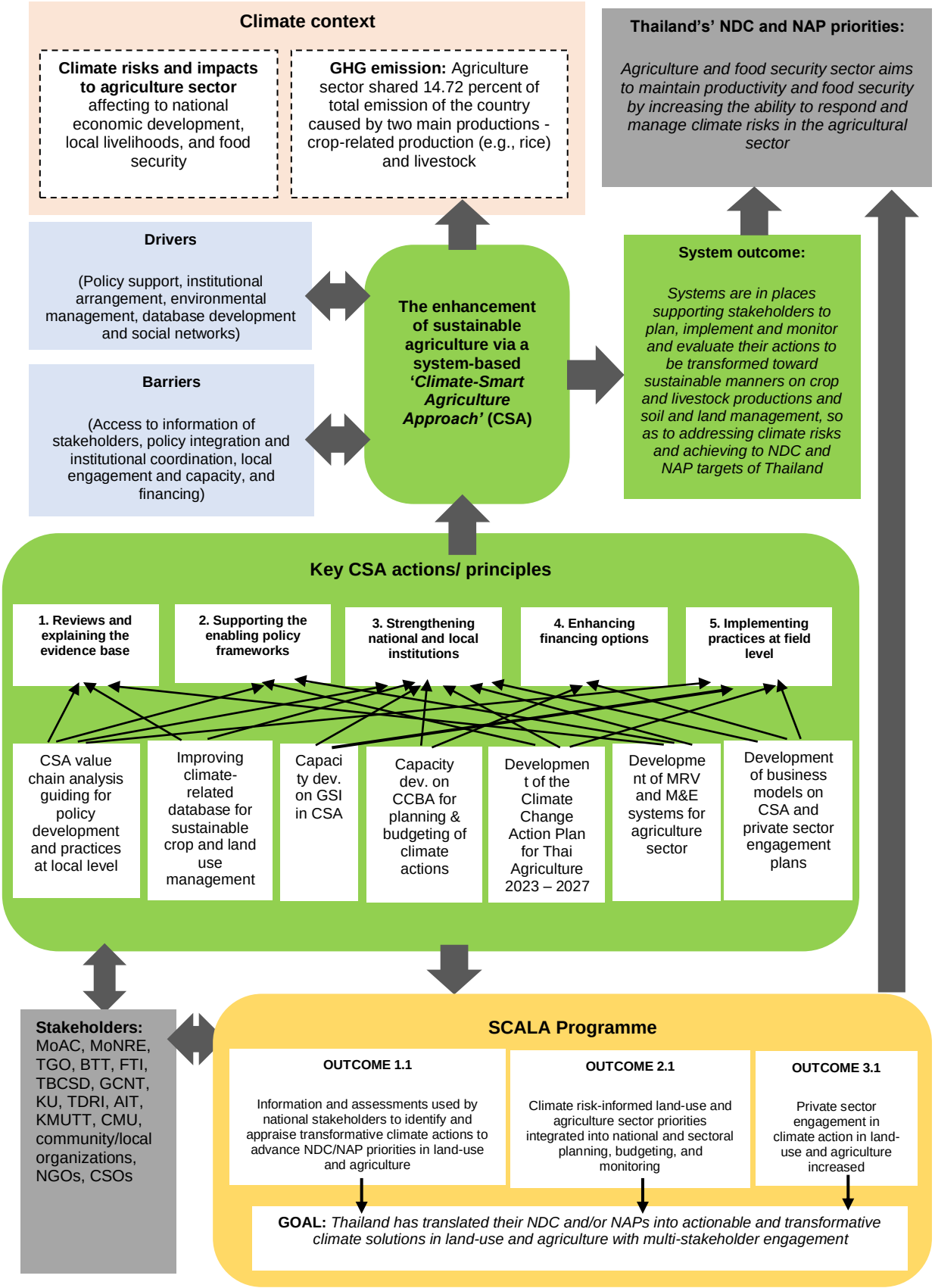
From a systems-level perspective, this is to be achieved by a) enabling or putting in place *systems* that are supporting stakeholders to plan, implement and monitor and evaluate their actions. This, in turn, is intended to b) lead to the wider-reaching long-term sustainability transformation of selected crop and livestock production *systems* as well as soil and land management *systems* (**systems outcome**). These crop, livestock and soil and land management systems (specific crops, value chains and/ or geographical areas and sub-systems remain to be defined based on information contained in this report) suffer from vulnerabilities (see section 2.2) and are themselves a source of GHG emissions, offering mitigation potentials.

Key planned **interventions** (based on five **CSA actions/principles** and corresponding to the three **outcomes of the SCALA programme results framework,** see 4.3 and Annex 4) to achieve this include the following:

- CSA value chain analysis guiding policy development and practices at local level.
- Improving climate-related database for sustainable crop and land use management.
- Capacity development on GSI in CSA.
- Capacity development on CCBA for planning & budgeting of climate actions.
- Development of the Climate Change Action Plan for Thai Agriculture 2023 – 2027.
- Development of MRV and M&E systems for agriculture sector.
- Development of business models on CSA and private sector engagement plans.

These interventions correspond to the SCALA impact chain and aim to transform the selected systems towards sustainability outcomes. In line with the CSA definition introduced above, livestock, crop and soil and land management systems are then expected to be truly climate smart. The interventions furthermore aim to address the identified **barriers** while capitalizing on the presented **drivers and opportunities** (see 4.2.2). Lastly, project design and implementation is to follow an inclusive multi-**stakeholder** approach involving a broad array of partners and actors for wider reach and impact (see 4.2.4).

Figure 9. Theory of transformative systems change framework for Thailand linking to the implementation of SCALA programme



4.3 WORKPLAN

As set out in section 1.2, the global SCALA programme works towards three distinct outcomes. This section details how the SCALA Thailand project addresses these three outcomes, based on the areas of work identified and described in the preceding report sections. This information is summarized in the SCALA Thailand workplan which will guide the project implementation during the implementation period.

Annex 4 contains the full programme results framework and baseline information. An Excel-based workplan also exists. The list of planned activities and the achievements against each outcome can be summarized as follows:

4.3.1 Outcome 1: Information and assessments used by national stakeholders to identify and appraise transformative climate actions to advance NDC/NAP priorities in land-use and agriculture

Based on the analysis undertaken and introduced in section 3 (Climate Action Review), activities have been carefully developed that will enable appropriate selection of sub-systems, geographies and specific transformative actions to achieve the objectives of the overall project. Scientifically sound and rigorous assessments that further the evidence frontier are expected to support the identification of concrete implementation options for the identified climate actions. Assessments using contextually appropriate methods to appraise alternative options will be used to prioritize, all while being inclusive of government counterpart and stakeholder perspectives. The adopted systems-level approach will require this work to be interdisciplinary in nature.

As a specific next step, the SCALA Thailand team is planning to conduct further desk research and to develop a concept note and framework to **conduct a CSA value chain analysis** with stakeholder mapping. Since FAO also worked with the Department of Agriculture (DOA) to develop **a CSA country profile** (to be published soon), the SCALA Thailand team will adopt and build up on this previous work for identifying the scope for further CSA development for Thailand.

In terms of selection of specific cropping sub-systems, **maize** and **sugarcane** could be potential commodities to be focused on in the further study on CSA value chain analysis as discussed with the OAE and an expert from KU. Considering the vulnerability (maps) and climate risk context of Thailand, the specific geographical areas for promoting pilot CSA could potentially be in the climate risk hotspots such as the **Upper Chao Phraya River Basin** and the **Upper Mun River Basin**, which comprise the lower part of northern region, the upper part of the central region and the lower part of the northeastern region of the country.

4.2.1 Outcome 2: Climate risk-informed land-use and agriculture sector priorities integrated into national and sectoral planning, budgeting and monitoring

Work under outcome 2 will focus on consolidating the identified evidence-based actions (under outcome 1) into practice, and on laying the foundation for long-term systems transformation via the sustainable integration of the adopted solutions into national policy and planning.

In terms of policy and planning, as stated above, the key priorities indicated in Thailand's NDC, and NAP are to enhance sustainable agricultural production and to build resilience and readiness of the agriculture sector in coping with climate change issues. A key SCALA workplan element under outcome 2 (Activity 2.1.1) is to support MoAC in the **translation of the NDC and NAP priorities into an updated action plan**. These priorities were hence considered as the foundation for the development of the new **CCAPA (2023 to 2027)** of MoAC, support to which has been provided by the SCALA programme. The final draft of this CCAPA is expected to be submitted for the approval of the MoAC's committee in early 2023, and SCALA will support the implementation and monitoring of the plan in line with the project's systems approach over the remainder of the implementation period. There are five strategic areas identified in this draft (see section 2.3.2). The enhancement of CSA development (the selected transformative systems change) was also adopted as key climate action under this new plan.

Furthermore, **support on the development of MRV and M&E systems** in the agriculture sector is also envisaged, responding to the needs and requirement of the government counterparts.[2] Against this backdrop, the collaboration between SCALA Thailand team and ONEP are crucial for strengthening the development of MRV and M&E systems. The focus of specific measures and frameworks for MRV and M&E systems will be identified in subsequent steps, in consultation with OAE and LDD teams.

Last but not least, different **capacity building needs** and programs were identified by targeting the relevant staff working on climate actions of the MoAC's departments, the line ministries and other stakeholders. Specific capacity building efforts have the potential to fill their capacity gaps for better implementation of climate actions. These envisaged capacity building programs include mainstreaming GSI in climate actions, CCBA for designing and developing budget for climate actions implementation, MRV and M&E reporting under the Enhanced Transparency Framework.

4.2.1 Outcome 3: Private sector engagement in climate action in land-use and agriculture increased

Under outcome 3, private sector engagement for climate action in the selected cropping, livestock, and soil/ land management (sub-)systems (outcome 1) will be sought to complement public sector efforts (outcome 2) and solidify truly transformative, self-sustaining systems change.

Planned project activities under this outcome comprise the identification of **policy and financial de-risking measures and business opportunities**, as well as the **development of specific project concept notes** in collaboration with selected private sector partners. As an initial step, desk research was conducted to review and search for potential private sector partners to be engaged with the SCALA programme. The key potentials of private sector groups in Thailand included BTT, FTI, TBCSD, GCNT, etc. The team recently discussed with the Thai Livestock and Aquatic Consortium (TLAC) – the members of the BTT. The scope of these discussions is to identify and find out the collaboration potential for enhancing the engagement of private sector in addressing climate change issues in the agriculture sectors.

4.4 STAKEHOLDER MAPPING

The SCALA Thailand team is working through close collaboration, guidance and technical support from the SCALA Global Team to achieve the goals and outcomes under the umbrella SCALA Programme at global level.

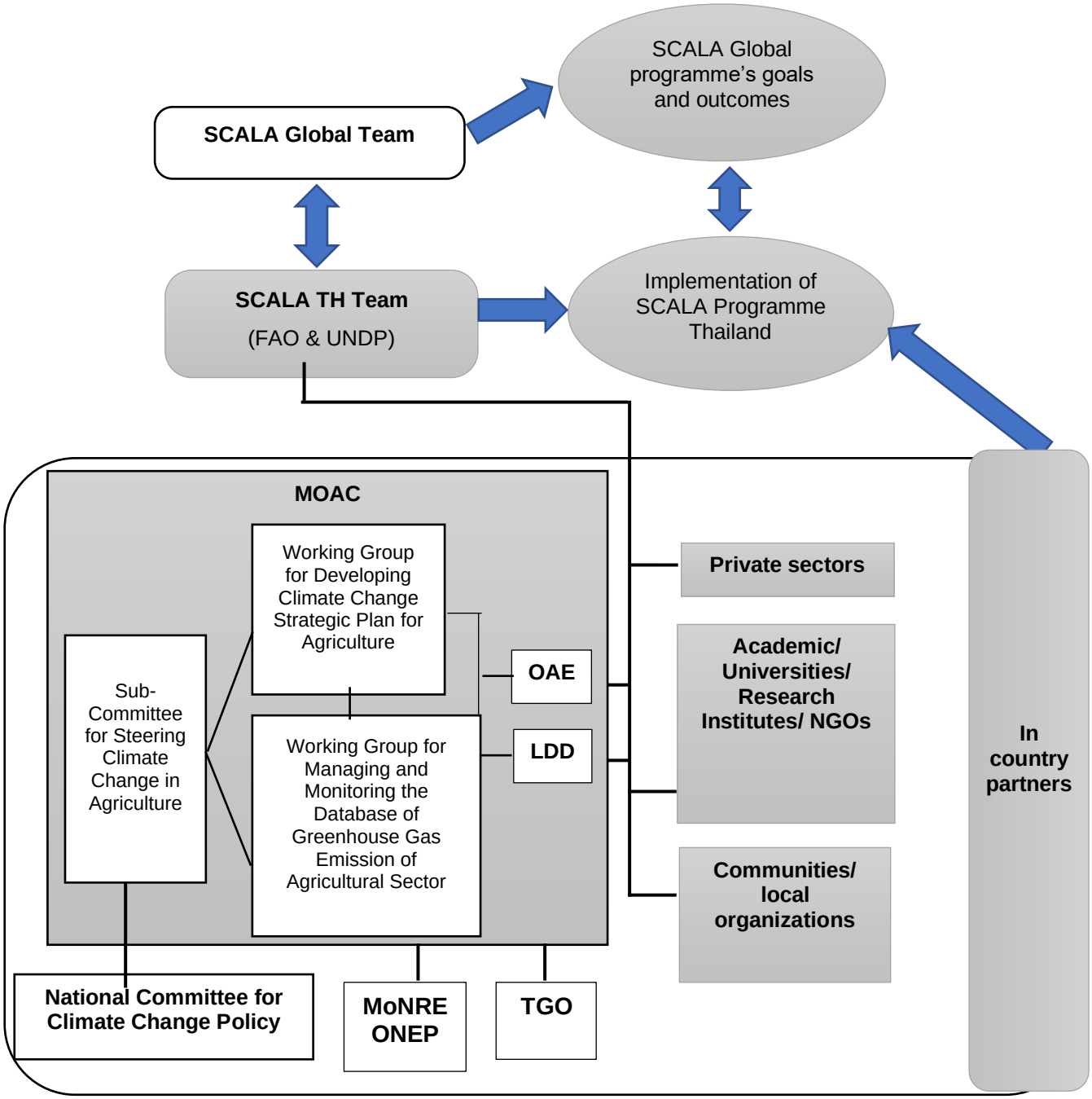
For in country implementation, SCALA Thailand has partnered with the relevant government agencies as described above (see section 2.3.1). The lead organization is the MoAC. Under MoAC, the SCALA Program Thailand supported the Working Group for Developing Climate Change Strategic Plan for Agriculture, which in turn has served as the project's steering committee. This working group compiles different government departments of the MoAC and other relevant agencies. Particularly, the assigned two focal agencies under this working group are the OAE and LDD, which coordinate in order ensure the effective collaboration of MoAC and the SCALA programme Thailand. The OAE and LDD have performed as the advisory group, and they have provided advice in planning and making decisions for implementation of the in-country activities. Ms. Sairak Chailanggar (Director of Economic, Technology, Agricultural Resources and Environment Research Division) was appointed as the project coordinator from OAE for advising SCALA programme implementation and Ms. Pimpilai Nuanlaong was assigned as the project coordinator from LDD.

Additionally, there are other non-government agencies that play important roles supporting the implementation of SCALA programme in Thailand. For instance, the private sector and other key sectors are expected to be engaged in the implementation of the activities under outcome 3. The SCALA Thailand team also has planned

[2] ONEP is the main responsible unit for monitoring and evaluating the country efforts in achieving the Thailand Greenhouse Gas Reduction Roadmap of the national level. The Handbook on Measurement, Reporting and Verification (MRV) of Greenhouse Gas Inventory of Thailand on the agriculture sector was developed by ONEP in 2019 in guiding the actions and responsibilities of relevant organization on MRV efforts. OAE has led this effort and worked closely with ONEP. Currently, OAE is working to set up the target for GHG reduction of agriculture sector to be indicated in the new CCAPA. The (tentative) target is expected to consist in a reduction of 1 million tCO_2-e, for different departments of MoAC and relevant stakeholders to achieve through the implementation of the new CCAPA in the next five years.

to involve the academic/ universities and research institutes in the country as think-tanks and to provide consultancy in various technical areas. Figure 10 illustrates the involvement of the relevant stakeholders.

Figure 10. The involvement of the relevant stakeholders for the implementation of the SCALA Programme Thailand



5. OPERATIONS

5.1 COUNTRY AND GLOBAL TEAM COORDINATION

The SCALA Thailand team comprises of the FAO and UNDP country and the regional offices for Asia and Pacific, with additional support from the technical global team. The team regularly attends webinar programmes, training events, and calls organized by the global team for gaining a better understanding on key technical approaches of the SCALA programme. Additionally, the communication team also provides recommendations to strengthen project communication and outreach.

The SCALA Thailand team is comprised of technical advisory staff and the coordination staff. The technical advisory staff are Krib Sitathani (UNDP), Beau Damen (FAO) and Janek Toepper (FAO). The technical advisory staff provide supervision, guidance and monitoring of the project implementation. The national coordinator is Bussabongkot Deewaja, whose main responsibilities include coordinating with the partner organizations and consultants, managing and facilitating the meetings, workshops, and project activities, and managing overall implementation of the project. The program support staff are from the programme/project assistants of the UNDP and FAO. The in-country communication units of UNDP and FAO also contribute for the project outreach and communication products development.

In addition, the SCALA Thailand team has engaged consultants, both individuals and teams from universities and research institutes, to contribute in some tasks during the inception phase. The tasks involved the situational reviews and background research and the development of the MoAC's CCAPA (2023 to 2027).

5.2 PROJECT STEERING COMMITTEE (PSC) OR ADVISORY GROUP (PAG)

Upon consultation with the MoAC, the SCALA Programme Thailand agreed not to establish any specific bodies to serve as the project steering committee (PSC) and/ or the Advisory Group (PAG). The SCALA Programme Thailand will connect and participate in the existing steering committee and working groups, established under the MoAC, to reduce the overlapping of works. This approach will be taken because these groups have direct roles working and supervising the climate change tasks in agricultural sector of Thailand.

According to the stakeholder mapping chart (Figure 8), the Working Group for Climate Change Strategic Plan for Agriculture acts as an equivalent to a PSC of the SCALA programme Thailand. The OAE and LDD have taken roles equivalent to the PAG.

The PSC will involve and attend key events such as the inception workshop to receive the updates on the project activities and provide guidance for further implementation. The PAG will meet regularly through monthly meetings and consultation workshops, to provide inputs, monitor and take a participatory decision-making approach with the SCALA Thailand team.

Additionally, SCALA Thailand team also works closely with the ONEP of MoNRE, as they are the focal point on climate change initiatives in the country. In particular, the team will build collaboration and synergies between the project activities and aim to strengthen Thailand's institutional and technical capacities to comply with the Enhanced Transparency Framework of the Paris Agreement project of ONEP which the Global Environment Facility (GEF) has is providing funding support for. This collaboration will support the SCALA Thailand team to enhance and develop the MRV and M&E systems in agriculture sector for MoAC. The Thailand Greenhouse Gas Management Organization (TGO) is another agency which the team will engage in this effort.

5.3 MONITORING AND EVALUATION (M&E) AND REPORTING

The progress of project implementation is regularly updated internally in weekly FAO and monthly global call of SCALA as well as documented in the quarterly and biannual reports.

Participatory processes and adaptive management are the key mechanisms employed for taking forward the SCALA programme Thailand. For project monitoring, the SCALA Thailand team works closely with the focal government agencies. A series of team meetings and consultation meetings are regularly organized to update the progress, and to plan and make decisions for further activities. Effective engagement with the focal government agencies helped the SCALA Thailand team to adjust and contextualize the activities to respond well considering specific country contexts and the needs of local partners.

The SCALA Thailand team developed and identified a workplan (see section 4.3) with the inclusion of and consultation with the OAE and LDD coordination teams to make sure that the identified key activities can benefit and respond to the strategies of MoAC in addressing climate change issues. This workplan also lists target indicators and deliverables to be reached. By being time-bound, these targets and timelines identified will be used as the indicators to track implementation progress. The team also meets regularly internally to make sure that all tasks run smoothly.

5.4 KNOWLEDGE MANAGEMENT AND COMMUNICATIONS

To strengthen knowledge management and communication, the SCALA Thailand team pays close attention to knowledge exchange and effective communication, particularly two-way communication with the focal government agencies. The team is eager to ensure that the OAE and LDD coordination teams will gain a clear understanding and be on the same page along the entire pathway of implementation.

Team meetings and consultation workshops are used as learning and exchanging information platforms among the project teams, including for providing knowledge and resource sharing with the relevant organizations. Additionally, the National Coordinator continually communicates and shares any technical materials regarding concepts and approaches of the SCALA to the two focal government agencies. Day-to-day communications are conducted through different communication channels, such as a LINE group, telephone call and e-mail correspondences. Besides knowledge sharing with the OAE and LDD coordination teams, the SCALA Thailand team plans to have annual meetings with the representatives of different departments of MoAC and other organizations to share progress and lessons learned including the know-how and new knowledge development from the implementation of SCALA programme.

During the inception phase, the SCALA Thailand team strengthened dissemination and outreach of the project through support by the communication teams at global and country level. The team has developed two communication products: a press release and a news article. The *press release* was written to provide an overview of the achievements and results gained from the inception workshop. For the news article, the team sent request letters to the OAE and LDD, for interviewing and learning from their perspectives for Thailand to move forward the climate actions and CSA development. The results of these interviews will be the inputs for developing the news article to be published on the SCALA webpages of UNDP and FAO and beyond. Further technical knowledge products are planned to be developed and disseminated both to a national and global audience over the course of the project. A further such product includes an infographic highlighting key actions, results and objectives of SCALA Thailand, available on the project webpage.

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ANNEX 1: A SERIES OF MEETINGS AND WORKSHOPS ORGANIZED IN THE INCEPTION PHASE OF SCALA THAILAND PROGRAMME

TYPE OF EVENT	D/M/Y	OBJECTIVE	NO. OF PARTICIPANTS	KEY OUTPUTS/ DECISIONS
Consultation workshop	12 July 2021	Introduced the project and got to know the representatives of key agencies of MoAC.	12 – 15 people from different department of MoAC	The ideas for developing the approaches for situational reviews of Thailand's climate actions on agricultural and land use activities.
Team meeting	1 June 2022	Updated the progress, planned for the inception workshop.	9 people (4 people from UNDP&FAO, 1 people from LDD, 4 people from OAE)	The tentative dates and week for organizing the Inception workshop.
Team meeting	7 June 2022	Presented the idea for conducting climate action review and updated for workshop preparation.	6 people (2 ppl from UNDP&FAO, 4 ppl from OAE)	Finalized the date and agenda for the inception workshop and selected the key climate actions for the assessment/analysis.
Consultation workshop	15 June 2022	Conducted the pre-test of the assessment of the climate actions.	12 people (2 people from UNDP&FAO, 3 people from LDD, 7 people from OAE)	Improved and identified for the method for the assessment of climate actions and adjusted the inception workshop process.
Inception workshop	24 June 2022	Introduced the SCALA programme Thailand, identified the prioritized climate actions.	48 people (8 people from UNDP&FAO, 31 people from MoAC, 5 people from other Ministries, 3 people from private sector and 1 people from academic)	Built the networks, the results of climate action assessment and the identification of key priorities of climate actions, including the drivers and barriers analysis.
Team meeting	29 June 2022	Discussed to finalize the key transformative climate actions for Thailand and planned for the next step.	3 people (1 people from UNDP&FAO, 2 people from OAE)	Finalized and selected the Climate-Smart Agriculture (CSA) as the potential transformative climate actions.
Team meeting	4 July 2022	Follow up the progress of the study of the Strategic Plan Development.	4 people (1 people from UNDP&FAO, 2 people from OAE, and 1 people from KU)	Identified the timeline of the activities to be implemented in July – September.
Consultation workshop	11 July 2022	Validate for the selected transformative climate actions (i.e., CSA) and the draft of workplan.	10 people (3 people from UNDP&FAO, 4 people from LDD, 3 people from OAE)	Developed the key approaches of CSA in two aspects: Climate Smart Crop Production and the Sustainable Soil and Land Use Management for CSA. Agreed on the workplan to be adjusted.

Notes:

- *Team meeting: A meeting of team members of FAO&UNDP, OAE and LDD for planning and making decisions for the implementation and updating the progress.*
- *Consultation workshop: An event for team members and other agencies to discuss and brainstorm over any technical topics and issues required for better implementation.*
- *Inception workshop is a key event providing an interactive learning platform for the relevant agencies to exchange idea, and identify the key priorities on climate actions of Thailand and the support required from the SCALA Programme Thailand.*

ANNEX 2: THE RESULTS OF CLIMATE CHANGE ANALYSIS

Scoring of the potential transformative climate action:

N.	Action	Score							AVG. SCORE
		Climate rationale	Systems-thinking	Private sector eng.	Gender & Social incl.	Sustainable dev.	Whole-of-government	Innovation	
1	Managing crop production systems in line with climate change	7.4	8.0	7.0	5.5	7.7	6.3	6.4	**6.9**
2	Water management in agricultural areas to cope with the impacts of floods and droughts	7.3	7.0	6.0	6.0	7.7	6.2	5.8	**6.6**
3	Conservation, restoration, and management of soil in agricultural areas as well as manage land use to mitigate the impacts of climate change	7.4	7.0	5.5	5.6	7.9	6.1	6.0	**6.5**
4	Managing livestock production systems in line with climate change	7.1	6.5	6.8	4.3	7.2	5.6	6.2	**6.2**
5	Managing fishery production systems in line with	6.4	6.3	6.7	4.7	7.2	6.1	6.5	**6.3**

	climate change								
6	Development of warning mechanisms and forecasting of climate change impacts in agriculture sector	6.6	7.1	6.4	5.4	6.6	6.4	6.3	**6.4**
7	Development of research, technology, and innovation in agriculture sector to cope and adapt to the impacts of climate change	7.3	8.4	7.6	6.3	7.5	6.6	7.0	**7.3**
8	Promoting food stability and food availability in natural disaster situations	7.1	8.1	7.1	6.4	7.5	7.2	6.1	**7.1**
9	Increasing the capacity of all stakeholders in the agriculture sector to adapt to the impacts of climate change	6.9	7.9	7.1	6.8	7.5	7.1	6.0	**7.0**

TRANSFORMATIVE POTENTIAL (SCALE FROM 0-10)	
VERY HIGH	7.5-10
HIGH	5-7.4
MODERATE	2.5-4.9
LOW	0-2.4

ANNEX 3: INCEPTION WORKSHOP AGENDA AND LIST OF PARTICIPANTS

The workshop agenda is detailed as the table below:

TIME	PROGRAM
09.00 – 09.15 am.	Registration
09.15 – 09.40 am.	• Welcome and Opening Remark, by the representatives of UNDP/FAO • Introduction of the participants and the workshop objectives and process, by the representatives of MoAC/OAE
09.40 – 10.00 am.	Presentation of the overview of SCALA program: The objectives, outcomes, and the approaches of the implementation • By the representatives of UNDP/FAO
10.00 – 10.30 am.	Presentation of the situations of climate change impacts and the climate actions on the agricultural, food security and land use sectors of Thailand • By Dr. Kannika Thampanichvong, Senior Research Fellow, Thailand Development Research Institute (TDRI)
10.30 – 10.45 am.	Morning break
10.45 am. – 12.00 pm.	The assessment of the climate actions on the agricultural, food security and land use sectors of Thailand, under the approach of SCALA program
12.00 – 13.15 pm.	Lunch
13.15 – 14.45 pm.	Breakout group discussion and presentation • Prioritising the climate actions on the agricultural, food security and land use sectors of Thailand • Identifying of the enabling environment and constraints for implementing the prioritised climate actions
14.45 – 15.00 pm.	Afternoon break
15.00 – 16.15 pm.	Breakout group discussion and presentation • The development of workplan for SCALA programme Thailand
16.15 – 16.30 pm.	Wrap-up and closing • By the representatives of UNDP/FAO and OAE

The list of participants attended is presented as the table below:

NAME	GENDER	ORGANIZATION
Sairak Chailanggar	Female	Office of Agricultural Economics
Nitipa Worrapantakul	Female	Office of Agricultural Economics
Punnapha Pissakul	Female	Office of Agricultural Economics
Nichapa Suttirak	Female	Office of Agricultural Economics
Opas Santaweesuk	Male	Office of Agricultural Economics
Pawaret Muangsombat	Male	Office of Agricultural Economics
Patchara Meethawee	Male	Office of Agricultural Economics
Chaiyaporn Chutisilp	Male	Office of Agricultural Economics
Thitipong Srisombat	Male	Office of Agricultural Economics
Kanoknop Klinlaaor	Male	Rice Department
Fuanglada Tanachote	Female	Rice Department

Suttipong Ngu-ngaine	Male	Royal Irrigation Department
Supaporn Pansuk	Female	Royal Irrigation Department
Monthalop Puruan	Female	Department of Fisheries
Wiparat Thong-ngoke	Female	Department of Fisheries
Atcharapun Sukpom	Female	Department of Livestock Development
Tithipong Kaewtammanoon	Male	Department of Livestock Development
Payattika Polsakoo	Female	Land Development Department
Pilpilai Nuanla-aong	Female	Land Development Department
Somjin Wanichasathiean	Female	Land Development Department
Margaret Yoowattana	Female	Department of Agriculture
Kannawee Trakoolsaeng	Female	Department of Agriculture
Supawadee Nernkana	Female	Department of Agricultural Extension
Sakaoduan Khayhanying	Female	Department of Royal Rainmaking and Agricultural Aviation
Pongpakorn Piyawatpapada	Male	Cooperative Promotion Department
Bantaree Chotimanotham	Female	The Queen Sirikit Department of Sericulture
Pachara Sanlha	Male	Agricultural Land Reform Office
Aisawan Arayataweekul	Female	Agricultural Land Reform Office
Wiwat Songprasert	Male	Agricultural Land Reform Office
Pisutkarn Sangwisut	Female	National Bureau of Agricultural Commodity and Food Standards
Nattapat In-yham	Male	National Bureau of Agricultural Commodity and Food Standards
Anuchart Tangbhumirapeewong	Male	Office of Natural Resources and Environmental Policy and Planning
Chanida Saensaard	Female	The Office of National Higher Education Science Research and Innovation Policy Council
Chanika Sukawattanavijit	Female	Geo-Informatics and Space Technology Development Agency (Public Organization)
Paramet Kaewmeesri	Male	Geo-Informatics and Space Technology Development Agency (Public Organization)
Nichakarn Chanintornthape	Female	Thailand Greenhouse Gas Management Organization
Vazzan Tirangkura	Male	The Federation of Thai Industries
Suphasit Termpornlert	Male	Office of the Cane and Sugar Board
Jiranee Chanroong U-thai	Female	The Thai Chamber of Commerce and Board of Trade of Thailand
Krib Sitathani	Male	UNDP
Sukanya Thongthumrong	Female	UNDP
Bussabongkot Deewaja	Female	UNDP
Vasan Narang	Male	UNDP
Piyanuch Phinyophanuwat	Female	UNDP
Korndanai Paridanont	Male	UNDP
Beau Damen	Male	FAO
Kanchana Wiset	Female	FAO
Kannika Thampanichvong	Female	Thailand Development Research Institute Foundation

ANNEX 4: PROGRAMME RESULTS FRAMEWORK AND BASELINE INFORMATION

RESULTS CHAIN	ACTIVITY	INDICATOR	UNIT	BASELINE	TARGET
Outcome 1: Information and assessments used by national stakeholders to identify and appraise transformative climate actions to advance NDC/ NAP priorities in land use and agriculture					
Output 1.1. [3] **Evidence base for implementation of transformative climate action in land-use or agriculture strengthened**	**Activity 1.1.1** *Conduct participatory technical reviews of NDCs and/or NAPs to identify priority land-use and agriculture actions with transformative and systems-change potential*	• Consultation meetings organized with focal gov. agencies for identifying finalizing transformative systems change • Inception workshop organized (with having at least 40 participants of different MoAC's departments, private sector and academic attend) • Background studies conducted (e.g., baseline survey, stocktaking report, climate action review matrix) • Inception report developed • Transformative theory of change report developed *(Note: Climate-smart agriculture was selected as transformative systems change of Thailand)*	• No. of meetings and workshops and minute of meetings • No. of studies • No. of reports		• 2 - 3 meetings • 1 inception workshop • 5 studies/ reports
	Activity 1.1.2. *Conduct*	• Synthesis report developed on	• No. of reports		• 1 report

[3] Global programme indicator for Output 1.1: Number of an assessments (i) conducted on transformative, gender-responsive climate actions in a food, landscape or other related systems identified through NDC and/or NAPs reviews and (ii) assessed through inclusive multi-stakeholder consultations that address the needs and priorities of women and men.

	participatory systems-level assessments to define evidence-based transformative and inclusive implementation options	system-level assessment (CSA value chains analysis of key potential commodities and CSA pilot models) • CSA learning programs and networks established in pilot sites (with having 20 - 25 farmers participate) • Climate-related database development for guiding for land use management and agricultural productions addressing to climate risks.	• No. of training/ learning events • No. of database system		• At least 2 learning events • 1 database system
OUTCOME 2: CLIMATE RISK-INFORMED LAND-USE AND AGRICULTURE SECTOR PRIORITIES INTEGRATED INTO NATIONAL AND SECTORAL PLANNING, BUDGETING AND MONITORING					
Output 2.1.[4] **NDC and NAP priorities for land-use and agriculture enhanced and integrated into sectoral planning and budgeting**	**Activity 2.1.1** *Support MOAC in the process to update Thailand's Agriculture Strategic Plan on Climate Change (ASPCC) (2017-2021) for the period beyond 2021 through the identification of subnational level priorities.*	• Final draft of the Agriculture Strategic Plan Development submitted for the approval of the committees of MoAC • Capacity development program implemented for the MoAC's departments on the development of gender	• No. of capacity building workshops and reports • No. of policy recommendation/ guidance document		• 2 workshops with reports • At least 1 policy recommendation/ guidance document

[4] Global programme indicators for Output 2.1: 1) Number of ministries having adopted sectoral plans and/or budget submissions that (i) incorporate gender-responsive NAPs and NDC land-use and agriculture priorities and (ii) are based on consultations that increase the participation of women and women's representatives in decision-making; 2) Number of MRV and/or M&E systems are operationalized at national and/or sectoral level for monitoring and reporting on mitigation and/or adaptation in land-use and agriculture, including sex-disaggregated data; and 3) Number of NDCs and/or NAPs enhanced with updated land-use and agriculture priorities and gender-responsive targets.

		mainstreaming and social inclusion (GSI) responsiveness plans for climate actions in agriculture and land use sectors at national and local levels (with having at least 30 participants from MoAC's departments and relevant agencies attended) • Policy recommendation/ guidance on the integration of GSI in climate actions in agricultural and land use sectors and CSA development • Capacity development implemented for the MoAC's departments and others (e.g., private sector) in integrating Climate Change Benefit Analysis (CCBA) approach in their climate actions-related project development			
	Activity 2.1.2. *Improve/develop MRV and M&E systems at national and/or sectoral level for monitoring and reporting regarding mitigation and/or adaptation in*	• Consultation workshop organized to review the gaps and needs for MRV and M&E development (with having at least 30 - 40 participants from	• No. of consultation workshops and reports • No. of synthesis reports • No. of capacity building workshops and reports		• 2 consultation workshops (reviews for MRV and M&E) with workshop reports • A synthesis report of MRV and M&E systems of agriculture sector

	land-use and agriculture, including collection of gender disaggregated data	MoAC's departments and relevant agencies attended) • Synthesis reports/ strategic papers developed guiding a roadmap to implement MRV and M&E systems for agriculture and land use sectors • Capacity building provided for the MoAC's departments and others to implement the data collection and reporting for MRV and M&E			• 2 capacity building workshops (MRV and M&E) with 2 reports
	Activity 2.1.3 *Enhance NDCs and/or NAPs by integrating transformative and inclusive land-use and agriculture priorities*	• Multi-stakeholder consultation workshops organized (with at least 30 - 40 participants from different sectors attend) – combined with Activity 2.1.1 and 2.1.2 • Specific studies/ policy recommendation on enhancing transformative and inclusive land-use and agriculture priorities in achieving NDC and NAP targets -– combined with Activity 2.1.1 and 2.1.2	• No. of consultation workshops and reports • No. of studies and policy recommendation		• Specific studies such as a policy recommendation on the integration of gender mainstreaming and social in CSA and agriculture sector inclusion and a review for developing MRV and M&E system

OUTCOME 3: PRIVATE SECTOR ENGAGEMENT IN CLIMATE ACTION IN LAND-USE AND AGRICULTURE INCREASED					
Output 3.1.[5] **Enabling environment and incentives enhanced for private sector engagement in NDCs and NAPs implementation**	**Activity 3.1.1** *Identify policy and financial de-risking measures and business opportunities*	• Consultation workshops organized with private sector and government agencies (with having at least 30 - 40 participants attended) • Synthesis report/ strategic paper developed on the identification of risks, barriers and solutions for private sector investment and the key business models for CSA options/value chains identified under output 1, including GSI responsiveness in business models	• No. of consultation workshops and reports • No. of reports/ strategic papers		• At least 1 workshop and proceeding/report • 1 report/ strategic paper
	Activity 3.1.2 *Develop project concept notes to leverage investment for transformative and inclusive action in partnership with the private sector*	• Synthesis report developed on a stakeholder mapping and identification of potential private sector actors at local and national levels in each CSA value chain identified under output 1 • Consultation workshop organized for identifying possible	• No. of reports • No. of consultation workshops and reports • No. of strategic papers		• 2 reports (National level and local level) • At least 2 workshops with reports • 1 strategic paper

[5] Global programme indicators for Output 3.1: 1) Number of gender-responsive de-risking strategies validated by existing institutional coalitions of public, civil society and private sector actors considering well-being of local communities/different actors along value chain and 2) Number of project concept notes for transformative and gender-responsive climate action with public private partnerships

		investments of the identified private sectors in each identified CSA value chain under output 1 • Strategic paper developed on private sector engagement plans in each identified CSA value chains for achieving target of NDC and NAP			

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Information
UNDP website
FAO website