Final Evaluation and Learning Exercise of the Thai Rice Project

Project Evaluation and Learning Exercises for the Mitigation Action Facility

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Final Report

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Preface

The Mitigation Action Facility is a joint initiative of the German Federal Ministry for Economic Affairs and Climate Action (BMWK), UK's Department for Energy Security and Net Zero (DESNZ), the Danish Ministry of Climate, Energy and Utilities (KEFM), the Danish Ministry of Foreign Affairs (MFA), the European Union and the Children's Investment Fund Foundation (CIFF). The Mitigation Action Facility evolved from the NAMA Facility, which was established in 2012. The Mitigation Action Facility's vision is to accelerate decarbonisation to keep temperature rises below 1.5 degrees Celsius by financing measures that shift priority sectors in a country towards a sustainable, carbon-neutral pathway. All projects with an overall duration of more than three years are subject to a mid-term and a final evaluation and learning exercise.

The Technical Support Unit (TSU) functions as the secretariat of the Mitigation Action Facility. The TSU commissioned AMBERO and Oxford Policy Management to conduct mid-term and final Evaluation and Learning Exercises (ELEs). Each ELE is conducted using the same Theoretical Framework (FW), which involves the application of a document review, participatory workshops, and stakeholder interviews to collect evidence about projects' results and lessons analysed using a Theory-based approach centred on the use of contribution analysis reinforced by elements of process tracing.

This document presents the findings of the **Final ELE of the Thai Rice project.** The report has been reviewed by Luca Petrarulo (Technical Lead, project ELE team). For further information, please contact davita.steinemann@ambero.de.

Executive summary

This document presents the findings of the **Final Evaluation and Learning Exercise (ELE) of the Thai Rice project.** The ELE was undertaken during the period March - May 2024. In accordance with its Terms of Reference, this ELE sought to address the following questions:

- Has the project achieved its planned results?
- Has the project started to trigger transformational change?
- What can be learnt from the project?

More information about the focus of this ELE and the methodology followed can be found in Section **Error! Reference source not found.** and Section 2, respectively. The rest of the executive summary provides the highlights of the ELE's findings and key lessons. Please refer to Section 0 and 4 for the detailed findings and conclusions, and Section 0 for the full lessons and recommendations. A mid-term ELE of the project was conducted in 2021, and it can be found on the Mitigation Action Facility website.

The Thai Rice project was planned and implemented to enable a shift towards low-emission rice production in Thailand (final outcome) through a combination of three causal pathways, each sustaining three intermediate outcomes:

- Intermediate Outcome 1 aims to enable farmers to implement low-emission rice farming;
- Intermediate Outcome 2 foresees entrepreneurs providing mitigation services (land laser levelling (LLL), alternate wetting and drying (AWD), site-specific nutrient management (SSNM), and straw and stubble management (SSM)) to farmers;
- Intermediate Outcome 3 aims to have in place policy formulation and supporting measures promoting low-emission production at the national political level.

The Implementation Organisation (IO) is the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. The main implementing partners are the Thai Ministry of Agriculture and Cooperatives (MoAC), specifically the Rice Department (RD), the Ministry of Natural Resources and Environment (MoNRE), specifically the Office of Natural Resources and Environmental Policy and Planning (ONEP), the Bank of Agriculture and Agricultural Cooperatives (BAAC) and the Sustainable Rice Platform (SRP).

The project works via six main intervention areas (outputs): (1) promoting the adoption of low-emission, irrigated rice production in the focus provinces of Chainat, Ang-thong, Pathum Thani, Singburi, Ayutthaya, Suphanburi (CAPSAS), (2) introducing mitigation services on the market, (3) leveraging additional public and private funds for low-emission investments, (4) demonstrating good practice examples of innovative financing and incentive mechanisms, (5) strengthening national capacities and local structures and (6) demonstrating the sustainable co-benefits of the Thai Rice project.

The final ELE reflects the below key findings across the evaluation criteria and the ELE theoretical framework:

- **The Thai Rice project goals are aligned with the Thai Government's existing policies and have informed future policies towards reduction in GHG emissions**. The project implementation structure comprising a Technical Cooperation (TC) and a Financial Cooperation (FC) component offering a 'package of services' was found to be relevant to farmers and service providers.

- **The project has been effective in reducing GHG emissions** through the promotion of low-emission rice cultivation technologies and the provision of financial instruments. The reduced GHG emissions were driven by the adoption of AWD across farmers and the improvement of local and federal government capacity towards implementation and monitoring.

- **The Revolving Fund (a financial mechanism promoted by the project) and the mobilisation of private and public funding have had limited effectiveness**. The Revolving fund envisioned to receive contributions from farmers, service providers, and millers could not take action as anticipated; further, due to delays in the execution of the financial mechanism, the contributions received as payback have also been limited, not reaching the target. This affected the sustainability of the FC Component as originally envisioned by the project. Nevertheless, **the project was able to prove its effectiveness and secure continuity through Green Climate Fund's funding for scaled-up implementation**.

- **The project was able to successfully drive transformational change in the Thai Rice sector** by demonstrating as a pilot the reduction of GHG emissions through low-emission practices and technologies. Additionally, solid Measurement, Reporting and Verification (MRV) of GHGs and evidence base have been established to inform future policies and commitments to emission reductions. Furthermore, the project has improved local and federal capacities and informed policy development in climate action, agriculture and sustainable development.

- **The project benefits are likely to be sustained** due to its own success in improving the capacity of multiple stakeholders, provided additional service providers are onboarded before project closure.

Several lessons have been identified through the ELE. Here are reported the most significant ones, referring the reader to Section 5 for the full list and more details:

- The combination of TC and FC Components has been crucial to promoting the adoption of new technology, which was perceived as high risk by farmers. Demonstration and packaging of services were important to identify cost savings at the individual farmer level.

- Multi-stakeholder coordination, while strenuous, can play an important role in ensuring ownership of projects in complex interlinked systems like agriculture. However, decision-making levels could be multi-tiered (demarking provincial level approval and decision-making versus project level approval) to ensure speedy implementation.

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List of abbreviations

ACFS	National Bureau of Agricultural Commodity and Food Standards
ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
AWD	Alternate Wet and Dry
BAAC	Bank of Agriculture and Agricultural Cooperatives
BCG	Bio-Circular Green Economy
BMWK	German Federal Ministry for Economic Affairs and Climate Action
CAPSAS	Provinces Chainat, Ang-thong, Pathum Thani, Singburi, Ayutthaya, Suphanburi
CCAPA	Climate Change Action Plan for the Agriculture Sector
CIFF	Children's Investment Fund Foundation
Covid-19	Corona Virus Disease 2019
DAC	Development Assistance Criteria
DESNZ	UK's Department for Energy Security and Net Zero
DoAE	Department of Agriculture Extension
ELE	Evaluation and Learning Exercise
ELEQ	Evaluation and Learning Exercise Question
GAP	Good Agricultural Practices
GCF	Green Climate Fund
GESI	Gender Equality and Social *I*nclusion
GHG	Greenhouse Gases
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IRRI	International Rice Research Institute
LDD	Land Development Department

LLL	Laser Land Levelling
LT-LEDS	Long-Term Low Greenhouse Gas Emission Development Strategy
KfW	KfW Development Bank (KfW – Kreditanstalt für Wiederaufbau)
MAF	Mitigation Action Facility
MoAC	Ministry of Agriculture and Cooperatives
MoNRE	Ministry of Natural Resources and Environment
MRV	Measuring, Reporting and Verification
NAP	National Action Plan
NDC	Nationally Determined Contributions
ONEP	Office of Natural Resources and Environmental Policy and Planning
RF	Revolving Fund
RID	Royal Irrigation Department
SRP	Sustainable Rice Production
SSM	Straw and Stubble Management
SSNM	Site-Specific Nutrition Management
TAS	Thai Agricultural Standards
TCMF	Transformational Change Measurement Framework
TGCP	Thai-German Climate Program in Agriculture
TSU	Technical Support Unit, Mitigation Action Facility
UNFCCC	United Nations Framework Convention on Climate Change

1 Introduction

This document presents the findings of the **Final Evaluation and Learning Exercise (ELE) of the Thai Rice project.** The ELE was undertaken during the period March - May 2024. A mid-term ELE of the project was conducted in 2021, and it can be found on the Mitigation Action Facility website.

The Thai Rice project has been implemented from April 2018 till June 2024. The Implementation Organisation (IO) is the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. The main implementing partners are the Thai Ministry of Agriculture and Cooperatives (MoAC), specifically the Rice Department (RD), the Ministry of Natural Resources and Environment (MoNRE), specifically the Office of Natural Resources and Environmental Policy and Planning (ONEP), the Bank of Agriculture and Agricultural Cooperatives (BAAC) and the International Rice Research Institute (IRRI). The project is delivered through two components: a Technical Cooperation (TC) Component and a Financial Cooperation (FC) Component.

1.1 Overview of the project

Thailand ratified the Paris Agreement in September 2016, thereby officially committing to its Nationally Determined Contributions (NDC). Agriculture is the second-largest greenhouse gas (GHG) emitting sector in Thailand after energy, with rice production responsible for almost 60% of emissions from agricultural activities. Thailand is the 4th largest emitter globally of rice-related GHGs – mainly methane. A lack of incentives for farmers is preventing their transition to low-emission rice production. Farmers lack the financial resources to take on capital-intensive practices, and there is a lack of mitigation service providers (SPs). Systemic barriers include gaps in existing national standards, regulations regarding mitigation in agriculture, and a lack of suitable large-scale incentive mechanisms to target the rice value chain (Project Proposal 2018).

The expected impact of the project is a reduction in methane and nitrous oxide emissions through farmers switching from conventional to low-emission rice production. It expects to achieve this through the development of the Government of Thailand's "Good Agricultural Practices (GAP)++" Standard[1], an enhanced version of the GAP standard with strengthened environmental and social aspects to enable farmers to distinguish their rice from conventional production and thus sell it to higher-value markets. Increased market demand for sustainable rice should sustain farmers' interest in switching to low-emission production, leading to a long-term impact on the Thai rice sector.

The project expects to deliver this impact through six main intervention areas (outputs): (1) promoting the adoption of low-emission, irrigated rice production, (2) introducing mitigation services on the market, (3) leveraging additional public and private funds for low-carbon investments, (4) demonstrating good practice examples of innovative financing and incentive mechanisms, (5)

[1] The existing national GAP standard is enhanced regarding social and environmental aspects in line with the criteria of the standard from the Sustainable Rice Platform (SRP). This enhanced standard is referred to as GAP++ to show it builds on existing approaches.

strengthening national capacities and local structures, and (6) demonstrating sustainable co-benefits of the Thai Rice project.

For the purposes of the mid-term ELE, three intermediate outcomes, which represent the immediate results of the delivery of the six outputs, had been agreed with the project team: (1) low-emission rice production is in place, (2) mitigation service provision is in place, and (3) supportive policy formulation is in place.

Ultimately, these feed into the expected project outcome, i.e. that the Thai Rice project demonstrates that climate finance can effectively transform the Thai rice sector towards reduced GHG emissions and a low-carbon profile. For the purpose of this Final ELE, this outcome statement has been broken down into two parts: (1) having achieved reduced GHG emissions from the rice sector in the focus provinces of Chainat, Ang-thong, Pathum Thani, Singburi, Ayutthaya, Suphanburi (CAPSAS); and (2) having mobilised increased public and private investments in low-emission rice production.

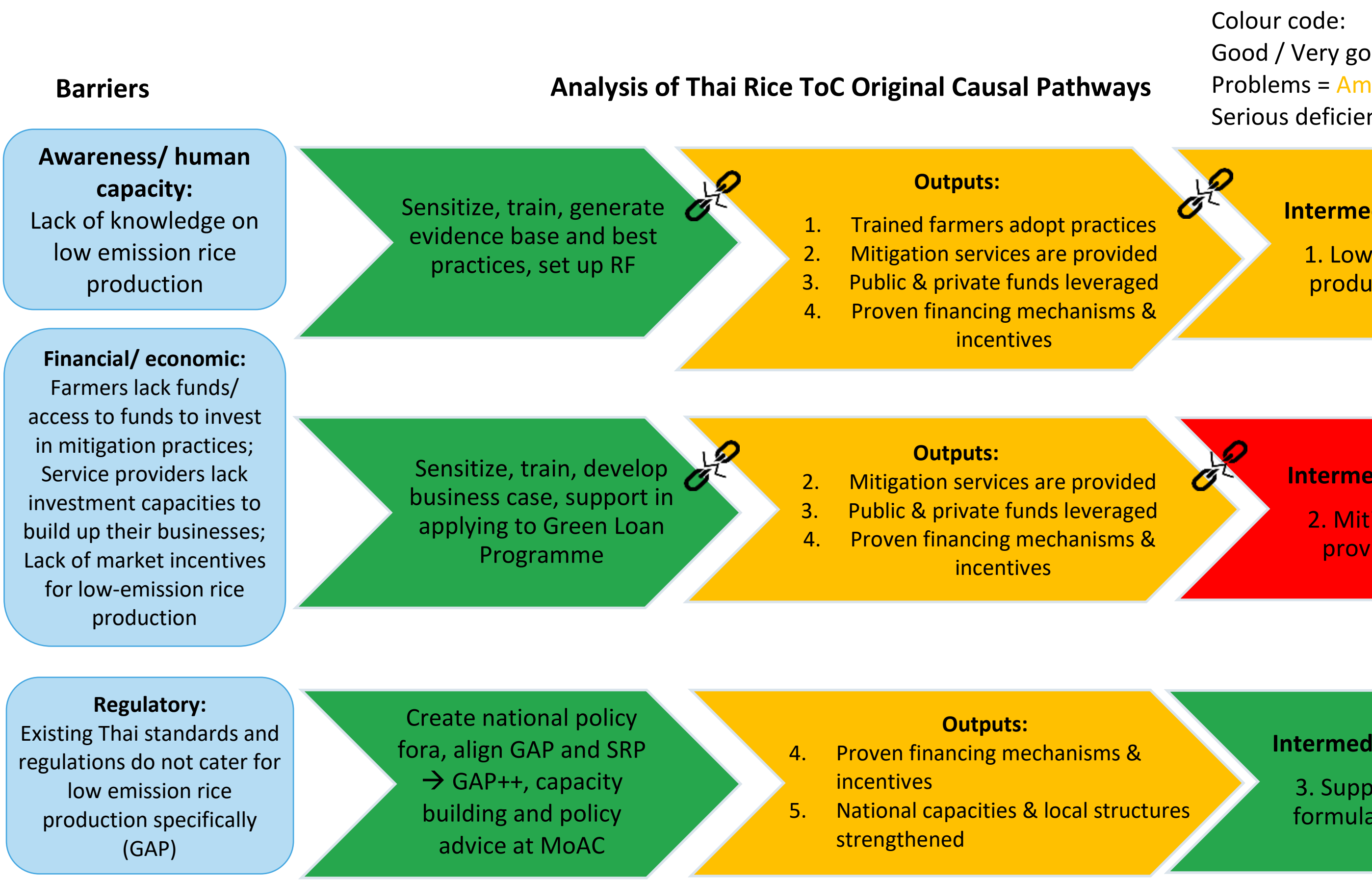
During the Mid-Term ELE, the robustness of the original causal pathways underpinning the project’s strategy to move from the initial problem and barriers to the achievement of the intended outcomes were assessed. The Mid-term ELE identified the following causal pathways sustaining each of the Intermediate Outcomes and final Outcomes of the project:

- **Causal pathway supporting Intermediate Outcome 1:** If mitigation services are provided (Output 2), if farmers are trained (Output 1), if public and private funds are leveraged (Output 3), and if innovative financing mechanisms and incentives are proven (Output 4) low-emission rice production will be in place (IO 1). This will enable reduced GHG emissions in the CAPSAS region (Outcome 1) and motivate further public and private investments (Outcome 2).

- **Causal pathway supporting Intermediate Outcome 2:** If service providers are trained and available to provide mitigation services (Output 2), if public and private funds are leveraged (Output 3), and if innovative financing mechanisms and incentives are proven (Output 4), mitigation service provision will be in place (IO 2). This will enable reduced GHG emissions in the CAPSAS region (Outcome 1) and motivate further public and private investments (Outcome 2).

- **Causal pathway supporting Intermediate Outcome 3:** If good practice examples of innovative financing and incentive mechanisms are demonstrated (Output 4), if national capacities and local structures are strengthened to maintain national mitigation actions (Output 5), and if sustainable co-benefits (such as adaptation) of the Thai Rice project are demonstrated (Output 6) supportive policy formulation will be in place (IO 3). This will enable reduced GHG emissions in the CAPSAS region (Outcome 1) and motivate further public and private investments (Outcome 2).

Figure 1. Overview of the project's Causal Pathways Assessment at Mid-Term



The results of the mid-term assessment of the project's causal pathways are illustrated in

Figure 1. The figure uses a Red-Amber-Green (RAG) rating to illustrate the strength of causal pathways according to the evidence collected by the Mid-Term ELE following the scale: Good / Very good = Green; Problems = Amber; Serious deficiencies = Red; Not enough info to rate = Grey.

1.2 Focus of the Evaluation and Learning Exercise

In accordance with its Terms of Reference, this ELE seeks to address the following General ELE Questions (ELEQs):

- Has the project achieved its planned results?
- Has the project started to trigger transformational change?
- What can be learnt from the project?

The General ELEQs presented above were broken down and operationalised into Specific ELEQs that are answered in this report. In Table 1, the General and Specific ELEQs are mapped against the Organisation for Economic Co-operation and Development's Development Assistance Committee's (OECD DAC) evaluation criteria[2], which are widely used as international standards for evaluations of development interventions. Reference to the relevant report section where each ELEQ / evaluation criterion is treated is also given. Finally, the specific ELEQs were broken down further into sub-questions, which are included in the official ELE Matrix, approved by the Mitigation Action Facility Technical Support Unit (TSU), and reported in Annex B.

Table 1. General and specific ELE questions and their link to the ELE Report sections

General ELE Question	Specific ELE Question	Evaluation criteria (relevant ELE Report section)
Has the project achieved its planned results?	Q1. To what extent does the project address an identified need (of the Thai government, mitigation service providers and rice farmers)?	Relevance (Section 3.1)
	Q2. To what extent has the implementation of the project achieved the intended outcomes?	Effectiveness (Section 3.2)
	Q3. To what extent is the relationship between inputs and outputs timely and to expected quality standards?	Efficiency (Section 3.3)
Has the project started to trigger transformational change?	Q4. What evidence is there that the project is likely to contribute to the intended impact (incl. transformational change)?	Impact (Section 3.4)
	Q5. What is the likelihood that the outcomes will be sustained after the end of the project funding period?	Sustainability (Section 3.5)
What can be learnt from the project?	Q6. What key lessons and practices can be learnt to the benefit of this project or other projects or projects in achieving their results for mitigation projects in Thailand and beyond?	Learning (Section 5.1)

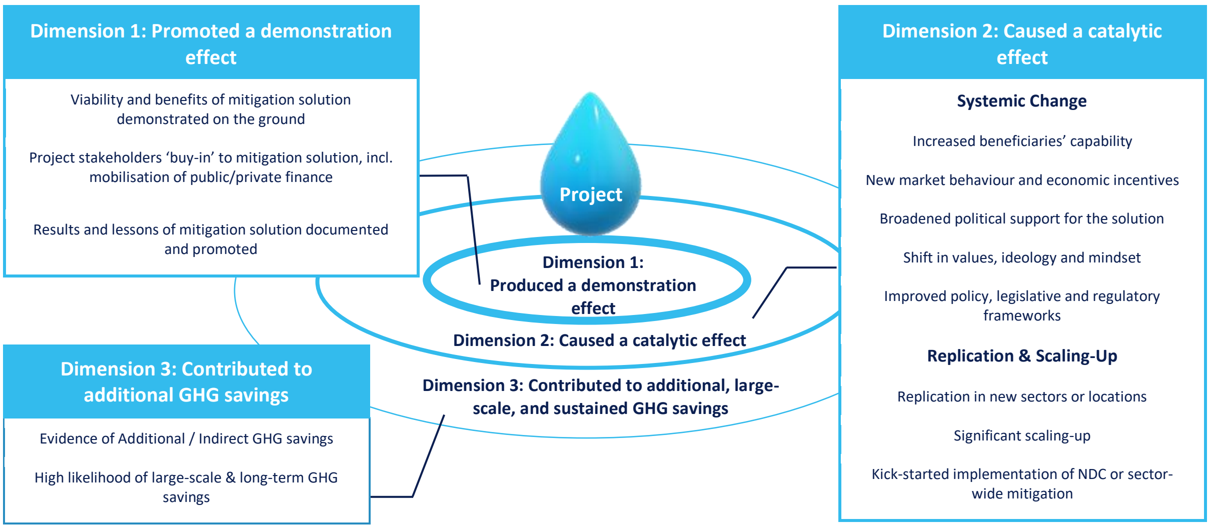
[2] Relevance, Effectiveness, Efficiency, Impact, Sustainability. The ELE Team added a 6th criterion, namely Learning.

1.2.1 The Mitigation Action Facility Transformational Change Measurement Framework

Some words need to be spent on the concept of transformational change, which is included in the General and Specific ELEQs. The enabling of transformational change is one of the key aims of the Mitigation Action Facility and, therefore, of projects. The Mitigation Action Facility defines Transformational Change as "*Catalytic change in systems and behaviours resulting from disruptive climate actions that enable actors to shift to carbon-neutral pathways."*[3] The Mitigation Action Facility Theory of Change explains how transformational change is expected to be achieved through its outputs and outcomes. The Theory of Change is broad, and there are different ways in which transformational change can be achieved through the projects. Figure 2 illustrates three dimensions that interact and reinforce each other to produce project-induced transformational change. Each project will work on different elements of the three dimensions to define its own pathway to or "recipe" for transformational change. A more detailed explanation of the ELEs' Transformational Change Measurement Framework (TCMF) summarised in Figure 2 is presented in Annex A.

The ELE used the TCMF to assess the project's progress towards its impact in Section 3.4. In particular, in the evidence gathered through the ELE, the evaluators have looked for "signals" of the materialisation of the three dimensions and classified them as early, interim, and advanced signals according to the definitions in Table 2. Table 3 shows the minimum level of signals of each of the three transformational change dimensions that projects are expected to have achieved by respectively their mid-line and end-line.

Figure 2. Transformational Change Measurement Framework for projects



[3] https://mitigation-action.org/wp-content/uploads/Mitigation-Action-Facility_TC-factsheet.pdfhttps://www.nama-facility.org/concept-and-approach/transformational-change

Table 2. Transformational Change “Signals” assessment by ELEs

Signal level	Definitions
No evidence	Evidence suggests little to no progress is being made in line with the ToC causal pathways to Transformational Change.
Early signals	There is emerging evidence of the transformation related to the dimension, or the foundations for the transformation have been laid by the project, but no signals of the change are present.
Interim signals	Evidence shows some signals that the transformation related to the dimension is underway and it is likely to continue.
Advanced signals	Evidence shows strong signals that the transformation related to the dimension is underway, and there is little doubt that it will continue.

Table 3. Minimum expected signals of project-induced transformational change

Dimension	Mid-point	End-point
1: Promoted a demonstration effect	Interim signals	Advanced signals
2: Caused catalytic effect	Early signals (of one or more of the types of possible changes)	Interim signals
3: Contributed to additional GHG savings	None	Early signals

2 Methodological approach

The ELE entailed activities under four main phases: inception, fieldwork, analysis, and reporting.

During the inception phase, the ELE team conducted a review of key project documentation, including the Project Proposal, Annual and Semi-Annual Reports, the Monitoring and Evaluation (M&E) Framework, and public documents such as Thailand's Roadmap to the NDC and the SRP Standard for Sustainable Rice Cultivation (see the full list of documents reviewed in Annex C). Following that, the team used the information from the document review to **update the retrospective Theory of Change (ToC) diagram developed during the mid-term ELE**.

The data from the document review and the ToC served as a reference point to **develop a tailored matrix, including the ELEQs** (ELE Matrix – see Annex B), which the ELE team **integrated with the initial hypotheses** to be tested by the fieldwork. At the same time, the ELE team worked on the organisation of the fieldwork interviews. For that, **they applied a *purposive sampling* approach of the key informants according to their level of involvement with the project**. In this way, the ELE team grouped them into **3 general categories: (i) project team**, i.e. members of the project Implementing Organisation and key delivery partners, the performance of whom is directly assessed by the ELE; **(ii) project Stakeholders**, i.e. individuals who have actively supported one or more project activities and beneficiaries (e.g. farmers and service providers); and **(iii) Third Parties**, i.e. who were not involved with the project, but are working on similar or relevant issues – these interviews served to verify context-specific elements. This helped the ELE team to test and triangulate the evidence and to assess its strength. Table 4 summarises the number of interviews and people interviewed (some calls had multiple interviewees) by each sampling category. For a detailed list of the institutions and organisations interviewed, refer to Annex C.

Table 4. Overview of number of interviews and interviewees by sampling category

	Project team	Project Stakeholders	Third Parties	TOTAL
No. interviews	4	20	3	**27**
No. interviewees	6	37	3	**46**

The fieldwork began with a **kick-off workshop** with the project team, representatives from the Mitigation Action Facility's Technical Support Unit (TSU) and the ELE team. The purpose of the workshop was to review, clarify and validate: (i) the purpose, scope, and expectations of the ELE and (ii) the project's ToC. The workshop included alignment of ELE scope and questions with the project team to clarify expectations, followed by a project team presentation and Q&A from the ELE team to clarify understanding. Finally, a ToC walkthrough and review were undertaken by both teams to identify changes needed. The ToC was then validated with the project team.

The kick-off workshop was followed by **primary data collection**, as detailed in Table 4. The general final ELE Interview Guides were prepared in advance and tailored to each stakeholder group along with the context after the finalisation of the interviewee. The ELE team undertook daily debriefs to align key findings and insights followed by continuation of the insights to subsequent interviews. **Field trips** were conducted in Suphanburi, Chai Nat and Ang Thong with the support of the project team.

Following the field work phase, a **validation workshop** was conducted on March 29th in RD premises with the attendance of BAAC, IRRI, RD, the project team, TSU representatives and the ELE team. The purpose of the workshop was to review, discuss and validate the preliminary ELE findings, and identify lessons learned and further application of lessons**.** The validation workshop received active participation from project stakeholders and was helpful in validating the preliminary findings.

Post fieldwork, the team initiated the analysis using the methodology summarised in Table 5.

Table 5. Summary of the ELE Analysis Methodology

Integrating Primary & Secondary Data	Evaluating Strength of Evidence	Draft Contribution Story
Tailor analytical tools	Assess strength of evidence of common themes	Draft contribution stories in the ELE report for each ELEQ and causal pathway
Tidy up notes	Identify concurrent / alternative explanations in ToC causal pathways	Final QC / QA
Data mining and evidence mapping from interviews and docs along ELEQs	Agreement on contribution of Project vs Context	
Extract positive and negative common themes for each ELEQ	Perform process tracing formal tests of causal pathways	
Consolidate and cross-check common themes	Develop figure with RAG rating of causal pathways	
1st Quality Control (QC) / Quality Assurance (QA)		

For drafting the contribution story, a Red-Amber-Green (RAG) rating was used. Section **Error! Reference source not found.** of this report uses the evidence and emerging themes discussed above to present the ELE team's findings in terms of the performance of the project against the OECD DAC criteria (relevance, effectiveness, efficiency, impact, and sustainability) and (under the effectiveness criteria) its performance against the ToC intermediate and final outcomes. Performance is summarised for each DAC criterion and/ or ToC outcome in the form of a RAG score, as follows: Green – good/ very good performance; Amber - some progress but problems also identified; Red - serious deficiencies in the performance.

To assess the strength of the evidence behind the emerging themes extracted from the interview notes or documents, the ELE team cross-referenced each emerging theme with its sources according to the scorecard in Table 6.

Table 6. Scorecard for assessing the strength of evidence

		Variety (number of types of sources (TS) reporting the evidence)		
		1 TS only	**2 TSs**	**3 TSs**
Quantity (number of sources reporting the evidence)	**1 interview only**	Single source		
	2 interviews	Weak evidence	Medium evidence	
	3+ interviews	Medium evidence	Strong evidence	Very strong evidence

During the final ELE phase, i.e. reporting, the ELE team compiled this report, which has undergone internal quality assurance and one round of comments from the project team, the MAF TSU and its Donors.

2.1 Limitations

Operational constraints. The ELE lead could not travel to Thailand due to a visa processing delay. This led to the national expert and the International Expert B leading all the in-person discussions with stakeholders. This challenge was mitigated by converting some of the discussions, kick-off and validation workshops into a hybrid format. While the team made efforts to mitigate challenges, the ease of discussion was impeded due to the mixed format.

Sample limitations. The study sample included project stakeholders, non-project stakeholders and third-party stakeholders. Compared to the mid-term, the project included higher province-level stakeholders, including Suphanburi, Ang-thong and Chainat provinces. The selection of locations was based on logistical feasibility to ensure the fieldwork was completed within the planned duration. The inclusion of scaled-up/new provinces would have been helpful in understanding the continuity and replication of the project. However, secondary review and stakeholder discussions were utilised to gain insight into the scale-up of the project.

Conformity bias. The ELE included TSU representatives[4] and project staff as part of the field study, accompanying the ELE team during stakeholder discussions. The presence of the project staff with pre-existing relationships with stakeholders and the funder team had led to relatively positive responses due to courtesy and conformity bias among multiple interviews, especially among federal stakeholders. The ELE team attempted to mitigate the bias by requesting uninterrupted time during discussion. Further, during the final stakeholder discussions, the project team conducted introductions and exited the interview rooms, resulting in reduced bias.

[4] Inclusion of TSU representatives during ELEs is not a standard practice. However, this ELE was also used as an internal learning exercise to identify any finetuning needed for the evaluation processes.

3 Key Findings

In this section, the ELE team presents the main findings of the ELE. These are structured according to the ELE Questions in Table 1. At the beginning of each section, a RAG rating of the strength of the project’s contribution story to the ToC and the OECD DAC criteria is included, following the scale: Good / Very good = Green; Problems = Amber; Serious deficiencies = Red; Not enough info to rate = Grey.

3.1 Relevance of the project

Relevance	**1. To what extent did the project address an identified need (of the Thai government, mitigation service providers and rice farmers)?**

The Mid-term evaluation assessed the relevance of the project by examining its past alignment with the Thai government’s needs, public priorities, and financial mechanisms. It observed that despite the historical significance of addressing GHG emissions in the rice sector, Thailand's NDC lacked specific targets for agriculture at that time. The project was fittingly aimed at informing the government’s mitigation efforts by focusing on agricultural practices like Laser Land Levelling (LLL) and Alternate Wetting and Drying (AWD), which offered both emission reductions and adaptation benefits. However, the project faced challenges due to low farmer demand for mitigation services, exacerbated by droughts and the Covid-19 pandemic. The proposed financial mechanisms, including a Revolving Fund (RF) and BAAC's Green Loan Programme, encountered hurdles such as farmers’ existing debts and land ownership issues. While the public sector showed interest in promoting practices like reduced burning, motivations varied. Overall, the project's relevance was deemed partially appropriate, marked as "amber" by the ELE team.

As part of the final evaluation, the ELE team examines the relevance of the Thai Rice project in relation to the national policy framework, implementing partners and direct beneficiaries.

Relevance to the needs of the Thai government

Firstly, the project supports the Thai government's strategies to mitigate greenhouse gas emissions within the rice sector by introducing and subsidising low-emission agricultural technologies such as LLL and AWD. These practices align with the strategic priorities of the Department of Agriculture Extension (DoAE), which focus on cost reduction and improved water management—thereby enhancing Thai rice farmers' productivity and supporting environmental sustainability goals.

The primary beneficiaries of this project are the rice farmers, who access advanced agricultural technologies and financial support facilitating the adoption of sustainable practices. This support includes critical subsidies for technologies, sustainability training, and capacity building, which are vital for new practice adoption and the promotion of long-term sustainable agriculture. Furthermore, the project's goals are closely aligned with national and subnational policies aimed at environmental sustainability and GHG reduction. This alignment involves key stakeholders like the Ministry of Agriculture, local agencies, and international cooperation initiatives, ensuring a thorough approach to sustainable agricultural practices.

In terms of alignment with specific stakeholder objectives, the project dovetails with the goals of key entities such as the Bank for Agriculture and Agricultural Cooperatives (BAAC) and the DoAE through several strategic initiatives. For BAAC, the project incorporates financial models that facilitate sustainable agricultural practices among farmers. This approach includes subsidies and financial incentives that enable farmers to invest in technologies like LLL and AWD, aligning with BAAC's mission to promote green finance and sustainable agricultural practices as part of its broader mandate to support Thailand's agricultural sector sustainably.

For the DoAE, the Thai Rice project promotes low-emission rice cultivation techniques crucial for reducing costs and enhancing water management. The project facilitates the adoption of LLL and AWD technologies, aligning with DoAE's goals to implement sustainable agricultural practices and reduce GHG emissions in the rice sector. This support helps DoAE achieve its environmental stewardship targets and bolsters its programs aimed at enhancing the capacity of local agricultural officers and farmers through targeted training sessions and demonstrations. The project further supports DoAE’s capacity-building efforts by providing extensive training to farmers and agricultural officers, which is crucial for the successful adoption and sustained use of introduced technologies. This training develops local expertise and ensures that sustainable practices are well understood and effectively implemented across the farming community, aligning with DoAE’s objectives of fostering knowledge and skills development in sustainable agriculture.

Relevance of the project to farmers and service providers

Farmers and service providers (SPs) recognise the relevance of low-emission technologies both in terms of reduced emissions and farm economics. The FC Component of the project has been altered based on learning during project implementation and the mid-term evaluation. The mid-term ELE observed that zero-interest loans were still considered a risk by farmers and experienced high reluctance to adopt LLL. The change in financial mechanism to include pre-financing and package structure[5] of financial mechanism made the financial mechanism relevant to Thai Rice farmers. The pre-financing component played a crucial role in reducing the perception of risk among farmers and increased uptake of LLL along with AWD and straw management techniques. The selection criteria of farmers, i.e., targeting adoption-ready farmers and pre-formed groups, has been identified as a recommendation from the mid-term ELE to tackle risk-averse behaviour and demonstrate adoption. This change in targeting also contributed to increased uptake among farmers.

The project team recognised the importance of offering a package of technologies to the farmers, explaining that if the field is not levelled, there is limited usefulness in AWD application, iterating that these packages are an important factor in improving adoption. The relevance of the techniques could be improved by ensuring that the approval of financial subsidies for LLL applications is completed well in advance of the wet season.

The project has aimed to improve mitigation services available in the market by training and providing financial incentives to individuals who will, in turn, operate as mitigation service providers (SP). The

[5] Package structure to include for farmers prefinancing and a 50% subsidy to invest in land preparation and LLL services, and for service providers to include a 50% subsidy to invest in LLL machines.

project has aimed to increase demand among farmers for mitigation services that could be met by SPs, leading to a successful and sustainable business model.

Service providers have reported improved knowledge of mitigation services through training and offering these services in the market. However, the business model's limited viability is only partially successful because the SPs incur subjective costs when they customise their implementation efforts. These costs include additional time and expenses to level small plots, deal with sloped land within a single farm plot, and address variations in land texture, all of which lead to increased levelling time. Although the SPs face these additional costs based on the specific plots they work on, they still operate by offering standard pricing, which in turn affects their profitability. There is a recognised need for increased promotional activities and awareness campaigns concerning the service providers to ensure a higher number of service providers are available to reach the demand from farmers. Further, it is necessary to better synchronise technical and financial support with agricultural cycles to foster deeper community engagement.

In addition, while the project was not specifically aimed at addressing the needs of women and vulnerable groups, it did take into consideration the traditional roles of both women and men from different age groups. This ensured that the relevant technical aspects catered to the specific audiences. For example, the project acknowledged the division of labour, where men usually work on the farm, and women assist in preparing fertiliser. By providing training on sustainable agricultural practices for men and effective fertiliser preparation techniques for women, the project ensured that both genders received pertinent and practical training tailored to their specific roles and responsibilities within the community.

Overall, the ELE team assigns a ‘Green’ rating to the relevance evaluation criterion based on the evidence discussed above, highlighting the relevance of the project to the Thai Government, farmers and service providers. We also note that the degree of relevance is stronger for government and broader GHG emission priorities in comparison to service providers and farmers.

3.2 Effectiveness of the project

Effectiveness	**2. To what extent has the project achieved intended (and unintended) outcomes?**
	FO 1: Reduced GHG emissions in focus provinces (CAPSAS)
	FO 2: Increase public and private investments in low-emission rice production

The mid-term findings showed that the project had made efforts to promote four mitigation practices in Thai rice farming: AWD, LLL, site-specific nutrient management (SSNM), and straw and stubble management (SSM). It observed that low-emission rice production was promoted and implemented through farmer groups but was below the target in terms of farmers and farmer groups reached. The low adoption rates were attributed to farmers' reluctance due to perceived hidden costs and lack of perceived benefits. The project’s bundling of practices under the low-emission rice production banner aimed to differentiate rice in the market. However, uptake of LLL had been hindered by supply issues and farmers' risk-averse behaviour. Covid-19 restrictions and financial constraints had delayed training and implementation. The promoted technologies aligned with Thailand's revised GAP++ standard, aiming to meet international sustainability criteria set by the Sustainable Rice Platform (SRP). SRP/GAP++ production and disaggregation were piloted, followed by a selective drive to market (promotion of low-emission rice). Overall, the project's performance on Effectiveness was rated "amber", falling short of farmer group targets but exceeding SRP-compliant rice production goals.

Based on the mid-term ELE recommendations and management response, some of the outputs, outcomes and mechanisms were amended to enable better execution of the project. Implementation timelines were adjusted to include an additional year, i.e. for the project to end in June 2024. Further, a project grant under the FC Component has been planned to subsidise the LLL service and land preparation cost by 50 per cent.

The final ELE assesses the effectiveness of the project in achieving the intended outcomes through the activity areas planned, focusing on both the intermediate and final outcomes.

3.2.1 IO 1: Low-emission rice production in place

According to the Final ELE findings, the project on low-emission rice production not only aimed to integrate sustainable farming techniques but also sought to address the environmental impact of traditional rice cultivation. Techniques like LLL and AWD were central to this initiative, each playing a critical role in reducing GHG emissions.[6]

Mitigation techniques adopted

The strength of the project's offering has been providing AWD and LLL as a self-reinforcing package of agriculture practices. The project has effectively combined AWD and LLL into a cohesive set of agricultural practices that enhance each other. Prior to the project, the Royal Irrigation Department (RID) had already been implementing AWD. Additionally, the Land Development Department (LDD) has been conducting soil testing at no charge. AWD had previously been adopted by farmers as promoted by RID. On the other hand, LLL has been previously attempted by the agricultural departments, but with low success. Nevertheless, the two together have driven the successful implementation of the Thai Rice project. In fact, uneven terrain in some parts of the farm can cause waterlogging, which can make AWD application ineffective in the absence of LLL. In Thailand, although water prices are not based on the amount used, farmers have noticed that using AWD and LLL reduces the frequency and amount of water needed for irrigation. The time spent by farmers in pumping and electricity savings have been reduced, resulting in a decrease in costs for pumping water[7]. They also use less water and spend less time pumping during the dry season due to these methods.

SSNM and SSM have been in practice through government initiatives, with free soil testing provided by LDD to support SSNM. Although SSNM was one of the technologies originally proposed by the Thai Rice project, the implementation had a higher focus on LLL because soil testing was already being provided for free. Farmers find soil testing and analysis valuable as it helps them use fewer nutrients by tailoring their usage according to soil quality. However, they face challenges with the timeliness of

[6] LLL helps in optimising water use by ensuring that the fields are perfectly levelled, which minimises water wastage and reduces methane emissions from standing water. AWD, on the other hand, involves the periodic drying and re-flooding of rice fields, drastically cutting down on water usage and methane production compared to traditional continuous flooding methods.

[7] The region does not follow volumetric pricing, meaning the cost reduction due to low water consumption is not applicable.

receiving analysis results. The project could have played a role in improving these efficiencies to ensure timely support.

As part of the SSM, straw baler machines were introduced and adopted by a few farmers and service providers as a way to generate income. Training from government departments and the project increased awareness about the benefits of reducing stubble burning. The project acknowledges the potential benefits and opportunities associated with straw baling, such as its potential to be developed as an enterprise activity. It also suggests coupling straw baling with LLL to reduce seasonal income risks. However, the widespread adoption of straw baling has not yet occurred. The evaluation team identifies the potential for further promotion and adoption of this technology in the future, with a particular focus on targeting SPs or farmer collectives as key participants. Overall, the project has played a key role in bringing about change in the availability of LLL services in the market, thereby improving the effectiveness of AWD. The project has also dove tailed with relevant departments and promoted other low-emission technologies AWD, SSNM and SSM techniques. This project was able to reach 2,544 farmer groups[8] (villages) on basic low-emission rice farming practices, representing a total rice cultivation area of approximately 319,526 Ha. In addition to the basic techniques, the project supported site-specific sustainable agriculture practices through GAP, SRP and TAS sustainable standards among 665 farmer groups[9].

Outreach, training, and low-emission production

Training of trainers through **volunteer/Smart[10] farmers (4,599 reached, 100% of target**) and targeting megafarms have been crucial in increasing the uptake of practices through demonstration. These outreach and training activities were implemented in alignment with respective agricultural departments. In comparison to the mid-term situation, the project has been able to improve the target reach signified by **reaching 437,891 farmer household members and 276 service provider members, i.e., overall, 438,167 against the project target of 452,100** (97%) (Mitigation Action Facility, 2023)**.** While the number of farmer household members reached does not directly translate to the adoption of low-emission practices, the project has focussed on improving awareness through demonstrations among farmer groups and trickle-down training provided by group members and volunteers to other farmers in the village. Farmer group members who have adopted practices shared that farmers outside of the group take lower risks and will be willing to adopt once the economic benefits are made visible through demonstration.

In addition to promoting four mitigation practices among farmers and driving mitigation service through service providers, the project introduced policy-level change by supporting the development of Thai Rice Standards through its technical capacity. Additionally, it piloted the adoption of the standards at the farmer level, supporting **co-benefits among 700 megafarm groups comprising 20,989 farmers**. The production of low-emission rice through megafarms has been brought to market

[8] The scale cannot be attributed purely to the project as the groups were pre-formed, and the project contributed to technical material.
[9] The farmer groups are part of villages within Mega Farms
[10] Smart farmers are village-level community volunteers who are part of the Mega Rice Farm project by the RD. They are responsible for undertaking training for Mega Farm members and other farmers in the village.

through partnerships with private buyers but has not yet led to the rice being sold as a distinct product (i.e. low-emission rice) in the market.

Overall, the low-emission technologies collectively help in maintaining or even enhancing agricultural productivity by improving crop health and yield. Addressing the economic barriers that farmers face, the project implemented financial mechanisms like the Revolving Fund and Green Loan Program. These initiatives were designed to make the adoption of sustainable practices more affordable and feasible for farmers. The Revolving Fund provided a sustainable source of financial support, allowing farmers to invest in necessary technologies and equipment without the burden of unmanageable costs. The Green Loan Program offered loans at favourable terms, encouraging farmers to make the transition to sustainable practices by reducing the financial risk associated with such investments.

Based on the evidence, the ELE observes that the project has been successful in driving low-emission rice cultivation.

3.2.2 IO 2: Mitigation service provision in place

The project was highly effective in integrating sustainable farming techniques, specifically through the adoption of LLL and AWD. In order for the farmers to access LLL, an infrastructure and labour-heavy practice, the project targeted a shift in market behaviour. The project envisioned change through the availability of mitigation services in the market. SPs were trained on different mitigation technologies to improve awareness, which were combined with financial incentivisation to initiate the practice. The project introduced the financial mechanisms of the Revolving Fund and Green Loan Programme. Based on the low willingness of SPs to undertake large-scale investments without proven demand, the project introduced a 50% subsidy in a package structure to de-risk the investment and improve availability in the market. This has partially achieved success, with **92 SPs available against a target of 210 (44%)** (Annual Report 2023).

Discussions with SPs revealed that the training was very useful in understanding different technologies and applications across various terrain types. However, the SPs face subjective costs due to variations in terrain, farmers not undertaking land preparation (despite farmer package[11] including land preparation costs), size and shape of plots, etc., which sometimes turns LLL into an intensive and long process with additional costs borne by the SP. Furthermore, due to the limited number of SPs available, there is a need to travel across provinces, incurring travel costs. Considering that LLL is a seasonal activity, it would be highly useful to support the SP structure with complimentary services. For instance, as LLL is a preparatory activity at the beginning of the crop cycle, it could be paired with the services of straw baller machines where the bales could be forward linked with wood processors.

The project has faced challenges in increasing the presence of mitigation service providers, reaching 44% of the target. However, it was able to influence change in market behaviour with high demand for LLL services from farmers.

[11] Package 1 includes Prefinance and a 50% subsidy for farmers to invest in Land Preparation and LLL services.

3.2.3 IO 3: Supportive policy formulation in place

The project's implementation structure has been underpinned by its collaborative approach, involving multiple stakeholders from government, industry, and the agricultural community. This multi-stakeholder involvement was crucial not only for pooling resources but also for creating a robust support network for farmers. It facilitated the exchange of knowledge and best practices and supported in crafting policies that support sustainable agricultural practices.

The project has played a significant role in aligning with the policy framework to ensure the smooth execution of the project. The low-emission practices have been linked with relevant departments within the MoAC, i.e., AWD with RID, SSNM with LDD, and training and capacity building with DoAE. The project aligned with national policies by dovetailing with existing schemes and practices of RD, including delivery of the project through Mega Farms, improving the capacity of agricultural volunteers/Smart farmers and enabling improved delivery of training through technical material and demonstrative practices. Furthermore, it influenced the capacity of government officials at the national and provincial levels. Stakeholders acknowledge the role of GIZ and the project team in driving the adoption of low-emission technologies through a package of services in partnership with national and provincial governments.

The project has improved the capacity of multiple departments through training and knowledge transfer. It has implemented over **144 training activities** against the targeted 160 for government officials, farmers, international organisations and other relevant counterparts. Stakeholders recall the usefulness of capacity building in the improvement of knowledge as well as connecting to other organisations and research counterparts engaged in similar scopes. In particular, the project has been effective in establishing MRV processes and building the knowledge and capacity of government departments. Department officials have been trained on relevant data measurement, SECTOR software and analysing emission data. The stakeholders acknowledged their capacity to use Gas Chromatography (GC)[12] machinery, ability to conduct demonstrations, use SECTOR[13] software and data flow[14] for emission measurement. The physical infrastructure used for emission data collection has also been transitioned to relevant government departments as part of the GHG emission monitoring capacity improvement. However, departments face challenges due to costs borne for maintenance, repairs, and fuel, which were previously borne by GIZ but not yet allocated budgets by the department.

In addition to operational project aspects, the project has been instrumental in driving the development and publication of the Thai Agricultural Standard for Sustainable Rice (TAS) as a voluntary standard in May 2022. This was developed and led by the National Bureau of Agricultural Commodity and Food Standards (ACFS) and the Rice Department, with support from the project[15]. The TAS standards were developed through a national working group on SRP, including the RD and GIZ, as

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[12] Gas Chromatography is an analytical technique used to separate and detect the chemical components of a mixture.
[13] SECTOR is the central software used for the calculation of emissions in landscapes (provided by IRRI)
[14] Farm activity is recorded in logbooks, along with farmer survey data, and emissions data is collected and analysed through GC, further loaded to SECTOR to finally produce emission measures.
[15] Multiple GIZ projects, including the Thai Rice project, contributed to the development of Thai Agricultural Standards. Other projects include Better Rice Initiative Asia, Sustainable Rice Platform and Thai-German Climate Programme – Agriculture.

part of the Thai-German Climate Program in Agriculture (TGCP). Due to GIZ's previous collaboration with the RD on implementing sustainable rice value chains in Thailand, GIZ Thailand was nominated as the initial host of the working group and provided technical inputs. After development and approval, the standards were piloted through the Thai Rice project to ensure their relevance and applicability to Thai rice farming.

The project served as a pioneering example of agricultural interventions that contributed to a reduction in GHG emissions. It also provided an evidence-based approach through MRV, supporting policy decisions as seen in the showcase of the National Action Plan for Agriculture and the Climate Change Action Plan for the Agriculture Sector (CCAPA) 2023-2027 by MoAC, as well as the Bio-Circular Green Economy Model (BCG) strategy.

The development of a supportive policy framework has been proven essential for the success of the Thai Rice project. Central to this framework is the establishment of innovative financial support mechanisms. These include the Green Loan Programme and the RF, which are facilitated by institutions such as the BAAC. Such financial mechanisms are critical as they provide necessary backing to farmers and service providers, enabling investments in sustainable technologies.

Overall, the project has been instrumental in aligning as well as supporting the development of a relevant policy framework.

3.2.4 FO 1: Reduced GHG emissions in focus provinces (CAPSAS)

The Thai Rice project aimed to significantly reduce GHG emissions in its focus provinces, collectively referred to as CAPSAS, through the promotion of low-emission agricultural practices. This ambitious goal was intended to align with broader environmental sustainability targets and mitigate the impact of traditional rice farming on climate change.

To achieve this reduction in GHG emissions, the project introduced and promoted several innovative agricultural technologies, as discussed in Section 3.2.1.

Despite the project's efforts to disseminate these technologies among the farming communities in CAPSAS, the uptake was moderate and fell short of the project's targets, with less than 60% of the intended adoption rate achieved. Several factors contributed to this shortfall. Primarily, the high costs associated with deploying these technologies were a major barrier. Many small-scale farmers found it financially challenging to invest in new equipment and modify existing farming practices without substantial external support.

Through the implementation of the project and the achievement of intermediate outcomes, the project was successfully able to reduce GHG emissions. It has **achieved 1,613,38 TCO_2 (Annual Report 2023), i.e., 93% of targeted reductions of 1,730,10 TCO_2 by the project's promotion of low-emission practices on 319,526 hectares**.

As mentioned in Section 3.2.1, the project monitoring data show that low-emission practices were adopted by 2,544 farmer groups[16] (villages) on basic low-emission rice farming practices, representing a total rice cultivation area of approximately 319,526 Ha. In addition to the basic techniques, the project supported site-specific sustainable agriculture practices through GAP, SRP and TAS sustainable standards among 665 farmer groups[17].

The endline survey study of the Thai Rice project conducted by the Faculty of Education and Development at Kasetsart University highlights that 72.82% of the sample had analysed soil before applying fertiliser (part of SSNM). Also, 100% of farmers harvested by using SSM, which included selling straw, leaving straw in the field for decomposition with stubble, followed by burning. Emission measurement conducted by IRRI identified an 80% application rate of AWD through multiple drainages (Data source: Farm activity database).

During stakeholder discussions, it was observed that AWD was the most widespread technique adopted by the majority of the farmers in target provinces, while the combination of LLL during the dry season has improved its effectiveness. From that, it appears that the significant reduction in GHG emissions was predominantly driven by the AWD technique rather than the combined effect of all four promoted practices. AWD's prior implementation by RID before the project likely contributed to its effective integration and significant impact on emission reductions compared to the newer or less familiar technologies like LLL. Given AWD's proven effectiveness and established use within local farming practices, focusing future efforts on enhancing and expanding AWD could be a strategic move to further reduce emissions. This approach leverages existing familiarity and infrastructure, potentially increasing the project's overall impact on sustainable agriculture and emission reduction.

Overall, the project has been successful in achieving the targets through planned mechanisms and the ELE assigns a Green rating to its effectiveness towards Outcome 1. Nevertheless, this result was influenced by the initial cautious estimates set during the baseline assessment, which considered the potential savings from adopting the promoted agricultural practices. These conservative estimates helped the project achieve close-to-target emissions reductions. The absence of cultivation during the dry seasons of 2019 and 2020 significantly reduced overall emissions in the rice sector. This reduction aligns with the project's objectives but was due to external circumstances rather than the project's strategies.

To determine the extent of this external effect, a detailed analysis comparing emissions during active project periods and non-cultivation periods would be needed, which is something this ELE cannot provide. While the reduction complements the project's goals, it should be seen as an incidental benefit and not directly attributed to the project's activities. This aspect highlights the importance of considering external environmental and economic factors that can significantly impact project outcomes (see Section 3.2.6), emphasising the need for flexible and adaptive project management to accommodate such variables.

[16] The scale cannot be attributed purely to the project as the groups were pre-formed and the project contributed to technical material.
[17] The farmer groups are part of villages within Mega Farms

3.2.5 FO 2: Increase public and private investments in low-emission rice production

The Thai Rice project set an ambitious target to leverage additional public and private funding to support low-emission practices in rice production. This was designed to be achieved by establishing a Revolving Fund, ensuring farmers and SPs have access to BAAC's Green Loan programme, and integrating project plans into government work plans and budgets. The aim was to create a financial ecosystem that would enable and encourage the adoption of sustainable farming technologies and practices, thereby reducing the environmental impact of rice cultivation. Increasing public financing was defined as the project outcome instrumental to buy-in and advancement from the Thai government towards climate action in agriculture, specifically towards low-emission production.

The analysis of project activities and project stakeholder discussions shows that this outcome was achieved through public partnerships with RD, LDD, DoAE and RID along with research centres. These partnerships and funding were prominently oriented towards capacity building and training for government officers and farmers. The project was able to mobilise 8,199,657 EUR (Annual Report, 2023) against a target of 10,400,000 EUR (78%), with in-kind contributions based on shared human and financial resources that align with government plans. While the project activities have been dove-tailed well with the government departments, explicit budgets and work plans for low-emission activities have not been developed, limiting the mainstreaming of public climate investment. As reported by government stakeholders, while there is a buy-in from the department staff at the provincial level, they are significantly limited by human and financial resources allocated and have, in turn, suggested a need for explicit budgeting so that low-emission cultivation does not depend heavily on resource reallocation and adjustment.

Similarly, the final outcome of the project was oriented to promote sector-level change through an increase in private financing towards low-emission production. To facilitate this, the project capitalised on BAAC's Green Loan Programme, which was designed to provide financial support to farmers and service providers wishing to invest in environmentally friendly technologies. The inclusion of this programme was strategic, aiming to lower the financial barriers that typically prevent small-scale farmers and local service providers from adopting sustainable practices.

The project aimed to achieve this by developing a financial structure that included payback on the loans provided to rice farmers and SPs. The profit contributions and loan payback from service providers, farmers and other value chain players were envisioned as a Revolving Fund (RF) that could sustain the project activities and business model. This financial sub-component, which was designed as an innovative financing and incentive mechanism, faced difficulties in achieving traction.

During the examination of the private investment-related final outcome, the ELE team observed that 5,014,326 EUR was mobilised as private finance against the target of 10,000,000 EUR, i.e., about 50%. (Annual Report, 2023). As an extension of this outcome, the project aimed to ensure that at least EUR 5 million remains in the RF maintained by BAAC to ensure its forecasted financial sustainability and functioning. However, both these outcomes were limited due to two factors. The grant agreement between BAAC and the project was delayed by more than a year due to lengthy processes and discussions related to developing common legal structures before the formalisation of the grant agreement. Further, the stringent eligibility criteria of BAAC for service providers impeded the onboarding of SPs. The delays resulted in late disbursements and, hence, repayments. The RF does include the payback from farmers and SP through the disbursed BAAC loans. However, profit contributions from SPs did not materialise as the mitigation services business model did not gain the anticipated traction, with 92 SPs active against the target of 210. Further, profit contributions from millers, procurers and other value chain players to the RF were not realised due to minimal market involvement in the segregation of low-emission rice. These challenges suggest that while the RF was a well-intended component of the financial strategy to support sustainable rice farming in Thailand, its practical implementation faced significant hurdles that prevented it from fulfilling its potential role as a sustainable financial engine for the project. The challenges encountered, particularly regarding the acceptance of the FC Component by farmers and SPs, were tackled in the latter part of the project through a modification in the financial mechanism (pre-financing, enhanced support in package structure, identification of farmers, and targeting group farmers with a stronger financial profile), as discussed in Section 3.1.

Notwithstanding the challenges in mobilising the anticipated level of private finance, the project successfully generated increased interest in BAAC's Green Loan Programme, which is perceived as a positive indicator of the growing willingness among the agricultural community to move towards sustainable practices.

Service providers, crucial for the deployment and maintenance of new technologies, also faced challenges in scaling their operations to meet the growing demand from farmers. One of the primary issues was the limited availability of the necessary financial products and services. Compared to the first half of the project, there was increased interest among SPs towards accessing financial support and service provision. Individuals who had previously undertaken other agricultural services and enterprising activities accessed financial services while also sharing that the financial mechanism was not a necessity for them to operate.

Individuals who were interested or started undertaking low-emission service provision only through the project faced challenges with stringent eligibility criteria, and the limited scope of products tailored specifically for low-emission technologies. For example, both old and new SPs required tractors with different capacities for LLL as the operating land sizes were small. Similarly, additional travel costs were incurred by the functioning SPs to cover a larger region at a province level (as demand from farmers was higher than the number of SPs available). Further, due to variations in plot terrain, the time and effort required for LLL showed significant variation and additional costs. The financial products available were not sufficiently customised to address the above-mentioned unique needs and risks associated with adopting low-emission technologies.

Lastly, the project may have suffered from insufficient funding towards the TC Component directed towards identification, training and mobilisation of individual farmers which limited the scope of interventions and support available, hindering the widespread adoption of sustainable practices. The TC Component's targeting of group-based farmers and partial subsidy through the FC Component enabled increased take-up. However, the uptake has been significantly concentrated among farmer groups and mega farms, and has not yet transferred to adoption among individual farmers. These issues suggest a misalignment between the project's design and its implementation, highlighting the need for more inclusive criteria and better-tailored financial products. When considering the financial needs of scaling up new technologies, it is essential to factor in the working capital expenses related to customising and serving large geographical areas[18]. While it may not be feasible to include operational customisation in the definition of capital-based financial instruments, providing term loans for working capital based on the level of services offered could be beneficial. This support can help SPs meet their working capital requirements and avoid financial losses.

The project defined increasing private investment as contributions from farmers and service providers through BAAC loans, leading to a sustainable RF. Despite the limitations discussed above, the project has been successful in demonstrating the effectiveness of low-emission practices in reducing GHG emissions and creating a change in the availability of mitigation services.

This proven model has been instrumental in obtaining a project grant of 40 million EUR requested from the Green Climate Fund (GCF). The GCF funding is intended to be attached with co-financing from public partners, including RD and BAAC, as well as five private partner companies.

Overall, based on the evidence discussed and the significant step of obtaining a GCF grant for project continuation and scaling, the project's effectiveness towards outcome 2 is given an "Amber" rating by the ELE team.

3.2.6 How external factors impacted the project's effectiveness

The Thai Rice project experienced both positive and negative external impacts on its effectiveness and implementation. On the positive side, financial support through the Green Loan Programme provided by BAAC offered essential financial backing to farmers and service providers. This support was crucial in enabling the adoption of sustainable technologies like LLL, which promoted low-emission and eco-friendly rice production. Additionally, the project benefited from the active involvement of government agencies and local communities. This collaboration aided in scaling sustainable agricultural practices and integrating them with local policies, proving essential for the success and sustainability of the project initiatives.

Conversely, the project faced significant challenges that negatively impacted its effectiveness, many of which were already described in the mid-term ELE report. Covid-19 disrupted training and capacity building by making it difficult to gather farmers, drought-affected financial capacities, increased interest in water-saving practices, and strict criteria from the BAAC's Green Loan Programme hindered the development of a market for mitigation services.

The Thai Rice project has evolved significantly in response to varying external factors since its beginning. Initially, it benefited from structured support like financial aid from BAAC and active involvement from the government and communities, which helped integrate sustainable technologies such as LLL into local agriculture. However, as the project progressed, it faced new, unpredictable challenges, including the Covid-19 pandemic and natural disasters like droughts. These challenges disrupted essential project activities and redirected farmers' focus from long-term sustainability to

[18] The validation workshop generated various responses to address the issue. The ELE team and project staff emphasised the need to include additional costs incurred by new services, while BAAC representatives pointed out that these are market risks that should be transferred to SPs. Further discussion revealed that the risk of customisation and costs cannot be passed on to farmers, as doing so would result in selective adoption and reduce the effectiveness of the technology (LLL and AWD are most effective when all farmers in the region adopt them. Adoption at the plot level is not as effective as scaled adoption).

immediate survival needs. Farmers have been trained and mobilised to understand the long-term importance of sustainable practices, low-emission agriculture, and mitigation actions. However, the adoption of new technologies at the farmer level has been primarily influenced by farm economics. External conditions and reduced risk-taking ability have served as entry barriers during the initial project stages, but the demonstration of application and reduction in costs through demo farms have helped overcome these barriers. Initial financial and technological hurdles, along with crises brought on by health and environmental issues, illustrate a complex dynamic in the agricultural sector that project stakeholders must navigate to adapt and succeed.

3.3 Efficiency of the project

Efficiency	3. To what extent was the delivery of outputs timely and to expected quality standards?

At mid-term, the ELE reported the project implementation of both project components to be delayed by around one year. Reasons cited for the delays in the FC Component included lengthy processes and discussions with BAAC on the formalisation of the grant agreement before the actual implementation. Covid-19, as well as drought, were cited as factors for delays under the TC Component. Further, project steering was reported to be complex, involving multiple stakeholders and committees. Some of the stakeholders also perceived the coordination structure as partly inefficient and considered themselves rather disconnected from the project, while some others were highly committed to supporting the project.

The project appears to have made considerable progress in implementing the outputs of both components, performing on schedule through timely and high-quality delivery. One of the primary reasons identified at mid-term for low implementation of the FC Component was the lack of uptake of the financial instruments by farmers due to indebtedness and low risk-taking ability. The project team sought changes in the FC component (adding a 50% subsidy and prefinancing) and the number of farmers targeted by the project. The revised FC component was cited as a significant factor in contributing to the uptake of LLL among target farmers, with the 50% subsidy reducing the risk borne by them. The identification of farmers, the BAAC registration and application activities supported by the project team contributed to the uptake of the Green Loan Programme. Within the TC Component, implementation of group-level training through SMART farmers, targeting of “adoption ready” groups and undertaking demonstration practices have been influential in reaching the target farmers in the project area. The low-emission technologies promoted by the project (LLL, AWD, SSNM and SSM) were implemented in coordination with the relevant departments. The project contributed to improvement in the capacity of relevant agricultural departments through training on low-emission practices and emission measurement methods.

However, some of the outputs of the project have not achieved the same level of success. While the demand for LLL has been high in the target provinces, the number of SPs available has not been able to meet all the demand. This is attributed to the slow uptake among SPs during the first half of the project due to anticipated risk borne, without proven use cases and financial instruments available for investment.

In addition, while farmers have adopted sustainable cropping practices, disaggregation and certification of rice have not come into practice. The demand from millers and exporters, i.e., private sector participation, for high-quality climate-smart rice has been lower than anticipated in project design, contributing to a lack of disaggregation. Further, the RF envisioned to receive contributions through profit payments had limited success partly due to delays in implementation.

Overall, the project has been managed through a comprehensive coordination structure including all relevant departments, albeit contributing to some delays. The project includes a comprehensive steering structure with five levels of coordination, i.e., Policy Advisory Committee, Project Steering Committee, Working Groups, Provincial Sub-Steering Committee, and Provincial Working Groups for each province. This management structure encompasses all of the relevant agricultural departments (MoAC, MoNRE, RD, DoAE, BAAC, RID, LDD, etc.) and other project stakeholders. The steering structure partially contributed to the increased ownership related to project activities and outcomes, as observed during the stakeholder interviews. The Provincial Working Group have been observed to play a significant role in the project's success. The Working Group was pivotal in driving the high level of ownership that was observed among the governors, who also emphasised the need for shared resources at the last level of implementation. Province-level presence of GIZ staff played a significant role in coordinating with relevant departments, which face resource limitations in terms of human and financial resources. Identification and inclusion of experienced professionals at the province level (e.g. retired officials) have been reported as a practice that influenced strong coordination with departments and smooth implementation.

However, few project stakeholders have indicated that decision making from convening stakeholders of different departments took time and led to some project delays. Similarly, approval of Green Loan applications also gets delayed due to the multi-tiered approval process. Service providers shared that approval and machinery delivery have taken 3 months post-application. The timeliness of approval plays a significant role in project execution, especially in LLL technology, as levelling can be done only during the dry season. As part of SSNM (implemented by LDD), farmers recalled soil sample collection and received analysis results. However, they reported delays in receiving results, which limited the usage of results during the time of nutrient application.

Internal and external risks faced by the project are reported to be recognised and managed by the project team. The project faced significant risks during the first half of the implementation, including delays in coordination, Covid-19, and changes in the socio-political context. Province-level learnings and implementation feedback have been actively received and addressed, contributing to the successful implementation of project activities. Specifically, revisions in the financial mechanisms, active coordination between departments, and tailoring of the targeting criteria to include farmer groups and SMART farmers mitigated the delays in implementation. Further, the inclusion of multiple bilateral and group learning sessions has contributed towards relationship management with all partners.

Overall, the project has been successful in achieving most of the outputs in a timely manner through a well-coordinated structure. However, due to partial delays on a few outputs explained above and mixed feedback on the steering structure, the ELE team assigns an "Amber" rating to the efficiency criterion.

3.4 Impact of the project

Impact	4. What evidence is there that the project has been contributing to the intended impact in the ToC (incl. transformational change)?

The project's trajectory towards impact is discussed below within the framework of the three dimensions of transformational change, as explained in Section 1.2.1 and further detailed in Annex A of this report.

3.4.1 Dimension 1: Promoted a demonstration effect

Viability and benefits of mitigation solution demonstrated on the ground: The project has demonstrated the economic benefits of low-emission rice cultivation practices. Farmers who applied the mitigation practices saw a reduction in water consumption, pumping time and quantity of nutrient usage. Further, the benefits gained by the service providers and farmers have served a demonstrative effect, leading to increased adoption by other farmers in the region. SMART farmers and farmer group leaders who have adopted these practices, along with provincial-level agricultural department officials, have observed an increase in interest among farmers towards the adoption of the LLL technology. In addition, province-level implementation has led to the establishment of target provinces as demonstration grounds for best practices to be replicated at the national level.

Project stakeholders' 'buy-in' to the mitigation solution, including the mobilisation of public or private finance: Stakeholder discussions have shown high ownership among provincial governors, research institutes, BAAC, and the Department of Agricultural Extension. The buy-in among stakeholders is demonstrated in the utilisation of the project knowledge outside the project area. KIIs demonstrated a strong recall of climate-smart practices and tie-in to training conducted by DoAE. Further, the DoAE regional team reported improvement in staff capacity and knowledge regarding low-emission technology. The mobilisation of finance through government departments has been largely through in-kind resources, i.e., shared office spaces, training materials, personnel deployment for implementation, etc. The province and community-level government staff shared that the activities from before Thai Rice still continue, while resource allocation to Thai Rice translates to additional responsibilities and resource crunch at the ground level rather than additional resource availability. In such resource crunch, Chainat Governor reported that the project activities were prioritised at the province level through re-adjustment of human resources and financial resources to ensure smooth implementation of target activities.

There is a need for deliberate allocation of budgets for climate-smart agriculture activities. In addition to implementation activities, the project has improved monitoring and measurement methods for GHG emissions in rice cultivation through knowledge and infrastructure transfer to relevant departments, which has overall contributed towards increased ownership. On the other hand, maintenance costs were previously covered by GIZ. However, after the infrastructure was transferred, there are currently no allocated resources for maintenance by the department. As a result, the infrastructure is only partially utilised. Although there has been an improvement in knowledge, ownership, and buy-in, there is still a need for explicit resource allocation by government departments to align project activities with standard work plans.

Results and lessons of mitigation solution documented and promoted: The results of the project have been well planned and documented through a defined monitoring and evaluation mechanism capturing Mitigation Action Facility and project-level indicators and sub-indicators. The M&E system has been updated to reflect and capture the changes from the project conception. The results of the project across all core and project performance indicators are updated periodically, sourced accurately, and reported in annual reports for internal consumption. The monitoring system could have included disaggregation between first-time/practising farmers and repeat/continuation farmers, which could have been helpful in identifying the attribution to project activities.

As part of the implementation, the project has produced multiple factsheets and learning materials suitable for diverse stakeholder groups, including farmers, service providers, and the broader audience in the agricultural sector. The material produced during implementation was shared with all implementing partners.

Further, the project has embedded its learnings in the design through informal and formal knowledge-sharing sessions organised during steering group meetings and coordination structures. The results of the Thai Rice project have also been documented in multiple publications, including some from ASEAN, SRP, and LT-LEDS, as a showcase for wider learning and knowledge dissemination in climate mitigation practice.

While the project has undertaken significant internal learning and cross-shared demonstrated case studies, there is further scope for wider dissemination of lessons learned and information-sharing across projects funded by diverse donors, including the Asian Development Bank (ADB) and The United Nations Framework Convention on Climate Change (UNFCCC), who are operating with the same implementing partners towards the same goal of enabling the Thai government in complying with its NDCs.

3.4.2 Dimension 2: Caused a catalytic effect

Systemic change

Increased beneficiaries' capability: There is clear evidence that the project has increased beneficiaries' capability for farmers, service providers as well as government partners. Farmers report an increased awareness of proper application practices, including AWD and the use of LLL. Additionally, farmers demonstrate a clear technical awareness of the influence of terrain type, slope, and soil fluffiness on the effectiveness of LLL. Service providers across all provinces have reported a significant improvement in their knowledge and capacities. Most of these providers had prior experience in service provision, but they have reported that the training and demonstration they received from the project have led them to take up the activities with improved clarity and understanding.

Based on the interviews conducted, a noteworthy improvement in the capacity and knowledge of government partners has been reported due to the training and demonstrations provided within the project. Notably, the project experience was reported as unique by the stakeholders on account of its focus on practical approaches to address climate change rather than merely developing plans. Indeed, the project played a pivotal role in establishing a foundation for mitigating the effects of climate change on the agricultural sector. MRV capabilities of the trained team have also been reported to be improved. However, the need for continued budget and investment to ensure utilisation of the established infrastructure is essential, coupled with periodic refresher training.

New market behaviour and economic incentives: The FC and TC components of the project successfully influenced new market behaviour among target stakeholders. Specifically, the “package” of services and change in the financial structure to include pre-financing has led to substantial de-risking at the household level. This has induced uptake and increased demand for high-cost services like LLL. The training provided to service providers, along with the Green Loan Programme, has led to the increased availability of mitigation services in the target provinces and beyond. The financial mechanism was instrumental for take-up among some SPs. Among SPs who were engaged in entrepreneurial activities and farm services prior to the project, technical training and demonstration of techniques were reported to be more useful. In addition, the demonstration of adopting mitigation technologies by farmer groups has led to proof of economic viability and increased demand among farmers of target provinces as well as beyond.

The project’s sustainable rice market segmentation and certification objective has been partially achieved. During the design phase, the goal was to promote low-emission rice production and create price incentives for the market. Initiatives such as the establishment of farmer groups for Thai Rice standards and SRP practices have been partially put into place. Discussions with farmers indicate that creating successful examples will encourage individual farmers to also adopt these practices. On the demand side, there has been no significant shift in market behaviour towards higher demand for climate-smart rice or incentivisation for low-emission rice. This is partly due to limited involvement from market players and low interest from exporters and millers in low-emission rice. Since segregation is not carried out during processing, this has not resulted in price incentives for the farmers. The project team acknowledges the necessity for greater involvement from private players and millers, and this is becoming a more prominent focus for the project's future development. Similarly, the profit contribution to RF by the target stakeholders (millers and buyers) has been revised.

Farmers have expressed a positive inclination towards continuing low-emission cultivation as they find it more suitable for their consumption. Additionally, current rice prices in Thailand have remained high regardless of cultivation practices. However, for long-term adoption and cultivation, it is crucial for the well-being co-benefits to translate into financial incentives.

Improved policy, legislative and regulatory frameworks: The introduction of nationally aligned GAP practices, i.e., Thai Agricultural Standard Sustainable Rice (TAS 4408-2022) and certification mechanism, has been brought into practice with the coordination of ACFS and RD. This, along with the SRP platform, will incentivise the change in market behaviour towards differentiation of the low-emission rice variety. While it has been piloted with farmer groups, there is an additional need for the active participation of millers and private sector procurement value chain players to ensure economic incentives and, hence, lead to sustainable change.

Further, the Thai Rice project has contributed as a pilot to the Ministry of Agriculture's climate change mitigation goals. It also contributes towards Thailand’s Long-term Low Emission Development

Strategy[19] wherein it is showcased as the agricultural intervention that has focussed on low-emission agriculture with clear emission reductions and indicates the potential for scale-up.

The introduction of the National Action Plan for Agriculture has led to the inclusion of agriculture as one of Thailand's mitigation sectors, thereby expanding beyond the NDC's focus on the energy and infrastructure sectors. The role of the Thai Rice project in directly contributing to these regulatory changes is ambivalent. However, the project goals and activities are completely aligned with these changes, and the project is considered to have served as a valuable pilot. The project was also critical to demonstrate the national MRV system's application in the agriculture sector. The quantification of GHG emissions reduction has served as an important tool to influence policy through evidence and examples.

Broadened political support for the solution: Stakeholder interactions and policy document review clearly showcase that the Thai Rice project has garnered support federally and at the province level across MoAC, RD, DoAE, RID and BAAC. Importantly, some of the challenges recognised during the Mid-Term ELE, including coordination difficulties and lack of ownership among key stakeholders, have been largely addressed by the time of the Final ELE.

Further, government stakeholders recognise Thai Rice as being able to ground the climate change discussion to the agriculture sector and provide contextual evidence on the feasibility of reducing GHG emissions in the sector, thereby enabling government policy to work towards the same goals.

Shift in values, ideology, and mindset: Awareness regarding the effects of climate change and the need for low-emission practices has been recognised by farmers in the target areas. Stakeholders recognised the Thai Rice project as one of the first projects that raised awareness amongst the farmers about climate change. Behavioural change is demonstrated through some practices among farmer groups. Despite the lack of certification and price differentiation, the farmers have cultivated applying GAP++ practices and have reported they use it for their own consumption since it is healthier.

Among implementation partners and other stakeholders, the biggest shift observed is in terms of the scope for mainstreaming climate mitigation actions as part of the general policy guidelines and frameworks at the Ministry level. Provincial-level stakeholders also highlighted the need for mainstreaming mitigation, implying dedicated financial and human resource allocation for implementation.

Replication and scaling-up

Replication in new sectors or locations: The project has been implemented in target provinces and has faced increasing demand for mitigation services in neighbouring provinces, highlighting the potential for scale-up. During the implementation period, the project was replicated in the upper Chao Phraya River basin[20] Kampangpetch, Lopburi, Nakorn Ratchasima, Nakorn Sawan, and Pichit provinces, reaching 438 farmers. At the end of the implementation, the project is aimed for significant up-scaling through the Green Climate Fund (GCF).

[19] https://unfccc.int/sites/default/files/resource/Thailand%20LT-LEDS%20%28Revised%20Version%29_08Nov2022.pdf
[20] Annual Report 2023.

Kick-started implementation of NDC or sector-wide mitigation: The Thai Rice project and GIZ, through a combination of projects, have played a significant role in the mainstreaming of climate change in the National Action Plan for Agriculture and the development of the Climate Change Action Plan for the Agricultural Sector (CCAPA). Furthermore, the project extension funded by the GCF aims to significantly expand the geographical coverage. This highlights the potential for sector-wide mitigation and contributes to the NDC.

3.4.3 Dimension 3: Contributed to additional GHG savings

Evidence of Additional / Indirect GHG Savings: There has been documented evidence through project monitoring and independent verification that the Thai Rice project has achieved the intended impact in terms of emission reduction.

Based on the observations at the time of the Final ELE, the FC Component is planned to be implemented by BAAC to the extent of remaining funds available in RF. The demand among farmers for mitigation services also suggests that additional GHG savings are likely to be achieved. Furthermore, in provinces out of the target area, as demand for LLL has increased, it is plausible that indirect GHG savings could occur based on BAAC’s continuation of the Green Loan Programme and pre-financing mechanisms.

High likelihood of large-scale and long-term GHG savings: The project served as a proof of concept and has obtained a GCF grant for geographic upscaling across 27 provinces in Thailand and an extension of additional mitigation and resilience measures. In view of this, the likelihood of additional long-term and large-scale GHG savings is very high. Further, policy-level changes during the implementation of the project, specifically the climate action plans for agriculture, are likely to produce long-term savings.

Concerning the Mitigation Action Facility's project, the collaboration and activities on the demand side to ensure the engagement of private players with farmers had been underestimated. Specifically, any changes in pathways for profit contributions from millers and market buyers were not anticipated. The scale of farmers included in this project is not considered overly ambitious according to the current study results. In fact, most of the targeting has been shifted to "entrepreneurial farmers" and farmers who have previously engaged in similar activities rather than individual new farmers. Considering the project's reach and the likelihood of continued cultivation practices, the Mitigation Action Facility's project is likely to result in large-scale savings and can continue in the long term if demand-side involvement increases and market-side interventions are continued.

3.4.4 Assessment of overall Impact

Overall, the project **produced advanced signals of demonstration effect** by validating the economic and mitigation benefits of low-emission rice cultivation practices. Furthermore, it has achieved strong buy-in from all the stakeholders involved in the project and external stakeholders, as evidenced by the public and private finance mobilised. The project has caused a systemic change by garnering political support, increasing capabilities among beneficiaries and driving changes in the political and regulatory framework. Change in market behaviour and economic incentives has been partially evidenced, signifying **interim signals of causing a catalytic effect.** Finally, the project has been upscaled and served as a proof of concept, notably influencing the mainstreaming of climate effects mitigation in agricultural planning and large-scale planned projects. This shows **interim signals that the project is likely to create additional GHG savings.**

Core Mandatory Indicator M3 Score: Following the instructions from the TCMF in Annex A, the ELE team has assessed the evidence to assign a value to the Core Mandatory Indicator M3[21] and compare it with the indicator's self-assessment given by the project team, i.e., a score of 3 (Annual Report 2023). Based on the examined evidence and discussion above, the ELE team provides a rating of 3, i.e., **transformation judged likely**. **Therefore, based on the matrix in Table 10 in Annex A, the Impact criterion is given a "Green" rating.**

3.5 Sustainability of the project

Sustainability	5. What is the likelihood that the outcomes will be sustained after the end of the project funding period?

Showcasing clear cost and environmental incentives has driven sustained behaviour change and led to the adoption of specific technologies. Farmers sustain practices once they witness or experience cost savings first-hand. Interviewees have clearly reported the positive impact of technology demonstrations on 'first-mover' peers, or 'Smart farmers' leading to their adoption and continued use of technologies, specifically LLL and AWD. This has not necessarily held true for SSM and SSNM, where external factors such as delayed or unclear soil testing protocols and a poor enabling market environment for straw management dissuaded farmers from continued use. There is also a regulation at the national level that prohibits burning, even though the GAP standards discourage the practice.[22] **Service providers have also indicated that they have received requests for LLL from farming groups outside of their own province**. Therefore, there is an indication that the Thai Rice project has resulted in the organic spread of the new technologies beyond the CAPSAS region. Additionally, interviewees report an element of newfound pride in the household consumption of self-produced rice, which was previously deemed to be of low quality and fit only for sale.

It is expected that the capacity of institutions built up during the project will remain available and on offer beyond the project duration. As described in Section **Error! Reference source not found.**, the project has provided relevant capacity-building support to 144 institutions.[23] However, the turnover of staff members who have received training as part of these capacity-building interventions is a risk to ensuring continued gains from capacity building within institutions. Institutionalising knowledge will require periodic refresher training and regular hands-on workshops for knowledge transfer. The project has built a knowledge base for technology deployment for government stakeholders. This is especially true for LLL, which has been successfully introduced for the first time

[21] The Core Mandatory Indicator M3 reads: "Degree to which the supported activities are likely to catalyse impacts beyond the projects (potential for scaling-up, replication and transformation)". The project team is asked to self-assess it using the following 0 to 4 scale: 0 = Transformation judged unlikely; 1 = No evidence yet available; 2 = Some early evidence suggests transformation likely; 3 = Tentative evidence of change – transformation judged likely; 4 = Clear evidence of change – transformation judged very likely.

[22] Section B.4.1.2.2 of the Thai Good Agriculture Practices for Rice (2008) indicates that "Rice stubbles and straws should not be burnt after harvest"

[23] Annual Report 2023.

in the context of the rice sector. Training modules for LLL service providers can be further disseminated with no or limited additional costs. Interviewees have expressed that they would continue using the knowledge and learnings produced for their own programming for deployment in the future.

Similarly, GHG emission measurement processes and related infrastructure have both improved at the provincial level. However, the gas chromatographs (deployed as part of the project in four out of the six provinces) require consistent upkeep and maintenance, along with a dedicated staff member to operate the machine, both of which are not part of the budget allocated by the agricultural departments. This was reported by one of the provincial Rice Science Institutes, where an additional government budget line has not yet been created for this purpose. Delays in lab analysis and GHG calculations due to the lack of committed resources could stall overall progress in measuring and reporting emissions, as well as building further capacity at the provincial level.

There is a clear political commitment towards an overall objective of reducing GHG emissions in Thai rice farming. This is reflected in national and international provisions, including Thailand's 2nd Updated NDC, the Thailand National Adaptation Plan, the Thailand Mid-century, Long-term Low Greenhouse Gas Emission Development Strategy and the latest Climate Change Strategic Plan for the Agriculture sector (2023–2027). This could be further sustained by a specific emissions reduction target for the agriculture sector, which has not been set yet by the government.

The national and regional policy framework is well placed to drive large-scale implementation of SRP and market changes in sustainable agricultural production. The GAP++ standard for low-emission rice farming practice has become a national voluntary standard, with the ACFS now working on developing the Thai Agricultural Standard for Sustainable Rice (TAS) certification scheme to be implemented. The practices promoted as part of the project directly feed into meeting international sustainability criteria set by the SRP. Therefore, it is expected that focus will be put on promoting these practices and technologies even after project closure. The Rice Department continues to push for low-emission rice research as an agenda for its six research stations. Other government stakeholders have expressed their interest in broadening the reach of AWD as part of their own mandate and improving soil testing mechanisms. The DoAE is working with farmers towards setting up Community Pest Management Centres, with a clear focus on implementing Integrated Pest Management. This commitment is also reflected in BAAC's new dedicated policy unit to work on similar donor-led programmes, their incremental disbursement of green loans and the launch of a schematic loan (Bio-Circular Green Economy).

New multi-donor partnerships and projects are either in the pipeline or being developed using the Thai Rice project as a baseline, indicating an opportunity to bridge gaps, scale up, and deepen existing interventions. This includes the recently approved GCF project 'Thai Rice: Strengthening Climate-Smart Rice Farming' across 27 provinces, which focuses on six new technologies/practices in addition to the four covered under the Thai Rice project.[24] Another example is the Global Environment Facility's Inclusive Sustainable Rice Landscapes in Thailand project 'to transform the Thai rice value chain for environmental sustainability by upscaling the Sustainable Rice Platform (SRP) Standard through an Integrated Landscape Management approach,' which aims to upscale sustainable rice

[24] fp214-giz-thailand_1.pdf (Green Climate.Fund).

production, strengthen policy and improve the management of forest, land and water for maintaining environmental integrity and productivity of agricultural landscapes, including rice.

There is mixed evidence on whether the uptake of LLL will be sustained beyond the life of the project. If BAAC expands the offering on its own, customers would still have to take on the full loan. BAAC will also be limited in its capacity to assess applications for this product. Therefore, the lack of a financial incentive (subsidy and pre-financing) beyond the life of this project would be a barrier to the scale-up of LLL technology. Members of megafarms who can afford the unsubsidised cost would continue to opt for LLL, but this would leave behind individual farmers. The price mechanism offered through the project remains an important factor for farmers. On the supply side, the number of service providers might not grow at the same pace either, if the project no longer facilitates ease of access to credit. Furthermore, associated costs for LLL service provision remain high; this includes the cost of purchasing or renting a compatible tractor. The GCF project extension has also acknowledged the importance of continuing financial incentives[25] and is therefore offering incentive payment package. The support levels depend on whether the climate-smart agriculture packages include LLL or not. For instance, the project is expected to pay THB 7,000 (ca. EUR 180) in years 2 or 3 to participating farmers from the central plains and north-east, if the package includes LLL. This will also be complemented by activities focusing on providing farmers with supportive financial training to increase demand for new technologies.

In conclusion, the Final ELE finds that the main conditions for the project outputs to be sustained are in place for the TC Component but not for the FC Component. There is continued political commitment of key stakeholders at the national and provincial levels. There is good evidence of sustainable agricultural behaviour shifts with respect to new technology adoption enabled by the project's demonstration pilots and other promotional activities. The institutional capacity and knowledge built during the course of the project are also expected to outlive the project. However, there is limited evidence that LLL technology would continue to ramp up at the same scale in the absence of a continued subsidy. **For these reasons, the ELE team assigns an "Amber" rating to the Sustainability criterion.**

[25] https://www.greenclimate.fund/sites/default/files/document/fp214-giz-thailand_1.pdf.

4 Conclusions

Now that the evidence collected and analysed by the ELE has been explored, this section goes back to the project's Theory of Change to test to what extent the original causal pathways and assumptions behind them (see Section **Error! Reference source not found.**) have held.

Figure 3 below presents an overview of the progress of the project along its ToC causal pathways towards its intended outcomes. The RAG rating uses the same scale as the previous section (i.e. Good / Very Good = Green; Problems = Amber; Serious deficiencies = Red; Not enough info to rate = Grey), and the colours of the Outcomes' shapes are the same colours used in Section 3.13.2 to rate the project's achievements for each Outcome. This is to be read as an assessment of the project's situation at this point in time, i.e. at the endline.

The causal pathways are mapped for the endline to reflect the ToC and set of activities and outputs that influence the achievement or non-achievement of Intermediate Outcomes followed by the Final Outcomes of the Thai Rice project.

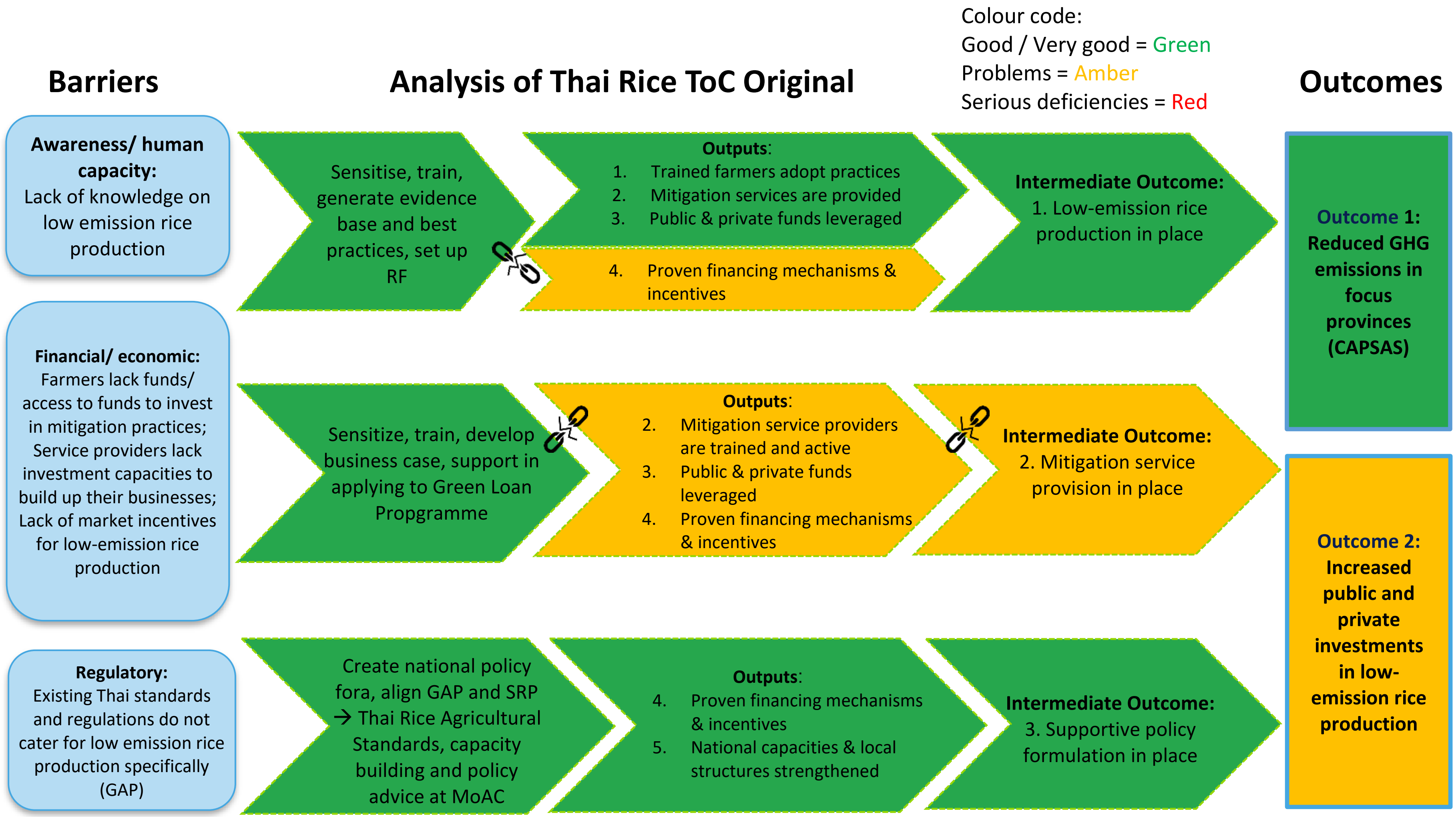
What transpires from

Figure 3 is that **Intermediate Outcome 1 "Low-emission rice production in place" holds well despite a few challenges in the causal pathway**. A set of activities planned for achieving this outcome were implemented by providing training for farmers, leveraging public funds through dovetailing with existing government department programmes and providing mitigation services. These activities were instrumental in enabling the application of low-emission technologies, which have resulted in reduced GHG emissions.

However, there are missing links between inputs and outputs, farmers' reluctance towards adoption, perceiving risk, lack of service providers mobilised, and perceived investment risks. While IO 1 is met substantially, contributing to Outcome 1 "Reduced GHG emissions", the reduction in GHG emissions is also influenced by conservative estimates during baseline calculations. The financial mechanism, which was originally designed as RF to provide incentives, had limited success, impacting the rate of adoption of technologies. While the GHG emissions have reduced as per the target, the adoption of technologies was significantly driven by Mega Farms and existing farmer cooperatives rather than permeating village-level farmers through the financial mechanism.

Intermediate Outcome 2 "Mitigation service in place" faced problems. The pathway is driven by training, mobilisation, the Gren Loan Programme, subsidy and developing a business case. While all the planned project activities were implemented, the business case and associated financing mechanism were not able to establish the scale required for service providers to have a self-sufficient provision of LLL. The change in the financial mechanism by providing a 50% subsidy during the later part of the project partially resolved the difficulties in changing market behaviour. However, while the demand from farmers had increased in target provinces and beyond, mitigation services have been made available in the market, the number of service providers mobilised was not sufficient to meet the demand.

Figure 3. Overview of Project Causal Pathways Assessment at Endline



Intermediate Outcome 3 "Supporting policy formulation in place" holds one of the strongest causal pathways with the project's success in influencing policy formulation related to climate change in agricultural and sustainable rice production. The stakeholders recalled capacity building related to GHG emissions measurement, LLL technology and support in developing standards led by the AFSC. The strength of this causal pathway is reflected in the showcase and consideration of the Thai Rice project as a pilot example demonstrating GHG emission reduction feasibility in rice cultivation. Capacity building on MRV and monitoring also plays a significant impact on Outcome 1.

Outcome 2 "Increase in public and private investment in low-emission rice production" was planned through a multi-pronged approach. Some investment was anticipated from farmers, service providers and millers/procurers as part of the RF to induce mitigation services' market change. However, **the delay in the implementation of the RF and lack of contributions negatively influenced the RF availability to sustain the effects of the project.** The contributions gained through government departments have been oriented towards in-kind investments, i.e., shared human resources and infrastructure, rather than financial resources influencing the ability of provisional government agencies to implement the project-related activities. Nevertheless, the project still had a demonstrative effect and was able to secure a GCF grant for the continuation of project activities at a larger scale. Based on the analysis of the ToC, the ELE team suggests the inclusion of a broader definition for private investment[26] rather than solely limiting it to the defined financial mechanism.

[26] The Project design document defines private investment as the investment from private sector participants in the rice value chain, i.e., contributions from millers, exporters, and other procurers into the revolving fund to attain sustainability. While GCF investment into the project does ensure the impact of the project is sustained, as per the project definition of "private investment", GCF and other donor investments are not included.

5 Lessons and recommendations

5.1 Key lessons

The evidence gathered during the ELE, along with the key findings presented in Section **Error! Reference source not found.** and the conclusions in Section 4, have been used by the ELE Team to draw the lessons below:

5.1.1 Lessons for government implementing partners for sustaining the Thai Rice Project's legacy

- **Lesson 1: Working on climate change issues in agriculture needs a combination of adaptation and mitigation approaches.** The project was envisioned as a large mitigation initiative and did lead to a shift in the thinking that the rice sector requires mitigation targets. However, as also discussed in the Mid-Term ELE report, less emissions do not necessarily translate to farmers adapting to climate change needs. A focus on farmers' livelihoods in the context of increasing incidences of climate shocks resulting in loss of income needs to go hand in hand with setting appropriate mitigation targets for the sector. While communication to farmers has been focused on cost reduction through the use of the advocated practices, the costs incurred with respect to climate shocks can also be emphasised to receive due attention.

- **Lesson 2: There is a need to continue focusing on improving GHG emission measurement capacity at the institutional level.** The project has served as a good demonstration case of GHG measurement in target provinces.[27] The work on GHG emission measurement through the Thai Rice project and adjacent IRRI projects is a starting point to establish evidence of GHG emission reductions based on sustainable practices. To sustain the GHG emission monitoring capacity through measures such as staff training and continued infrastructural investments, emission measurement needs to be embedded under the policy framework with allocated financial resources to maintain/ improve the required infrastructure.

5.1.2 Lessons for the project partners and other stakeholders relevant to the GCF-funded continuation of the Thai Rice project

- **Lesson 3: Building market linkages is critical to ensure differential product pricing for SRP/Thai Agricultural Standards for Sustainable Rice.** Future projects that introduce new technologies or practices should also have a dedicated component where stakeholders promote strong connections for sustainable practices throughout the supply chain between farmers, processors, distributors, and consumers. By establishing transparent and inclusive supply chains, stakeholders can facilitate fair pricing mechanisms that recognise the added value of sustainably produced rice. This is a critical missing piece because farmers, especially in smallholder settings, do not yet see merit in investing resources (such as time spent on documentation and verification processes) to shift towards sustainable rice production

[27] One key finding in this regard has been that the initial emission assumptions were quite underestimated, and the resultant reduction has been higher than previously expected, making the mitigation potential of new technology adoption quite high.

practices. This should also be supplemented with targeted consumer and public awareness campaigns, including focusing on the narrative that SRP rice is good for self-consumption, which seems to be a selling point amongst project farmers. The role of the private sector and demand for low-emission/sustainable rice is critical in establishing a business case for the production and consumption of sustainable certified rice.

- **Lesson 4: Targeting criteria could risk working as exclusion criteria.** The project included a focus on Smart farmers to ensure higher adoption of new practices and megafarms, which are more entrepreneurial. Similarly, training and demonstrations were provided to Smart farmers and megafarms with the idea of Training of Trainers and trickle-down adoption of low-emission technologies. While it was necessary for the focus to identify targeting criteria as "adoption ready" farmers or farmer groups, it is necessary that these practices turn into demonstrative examples for other farmers in the region, irrespective of their age. The demographic context of the rice sector needs to be taken into consideration where the average age of Thai farmers is 58, and there is concern regarding the need to address this ageing trend among rice farmers head-on. This means focusing on introducing climate-smart agricultural practices through activities that engage youth but also addressing other age groups through differential strategies.

- **Lesson 5: Devise and offer a broad selection of practices with contextual relevance.** The contexts of the rice sector vary significantly across geographies, even within the CAPSAS region. While thinking about expanding the adoption of practices to newer provinces, these contextual changes need to be taken into consideration. For instance, LLL is best suited to the central plains and north-east, but other land levelling approaches will need to be identified for other provinces. Similarly, access to irrigation is also a determinant in the uptake of specific technologies and practices. Farmers would, therefore, benefit from context-specific offerings of technologies and practices. Farmers have also indicated an interest in technologies such as the Internet of Things (IoT)[28], water management sensors.

- **Lesson 6: Operating in the complex and interlinked agriculture sector with multiple departments requires persistent structures with adequate responsibilities aligned.** The project's steering structure was deemed rigid and bureaucratic during the mid-term with insights into lack of ownership and awareness regarding project. The final ELE shows high ownership among most participating stakeholders while also highlighting the challenges of bringing a vast stakeholder group from different levels, where delays impact decision-making and speediness of implementation. While the merits of a comprehensive steering structure are recognised, the decision-making process could be converted into a multi-level to avoid delays.

- **Lesson 7: Additional consideration for Service Provider financing in LLL:** Challenges have been recognised both with respect to SPs accessing capital (albeit partially addressed through 50% subsidy) to buy the requisite machinery that supports LLL as well as with recouping costs through the price offered by the project for LLL service provision. Service providers have had to face challenges with respect to terrain, land size, seasonality, and rising fuel prices. The

[28] In IoT-based smart farming, a system monitors the crop field using sensors (such as light, humidity, temperature, and soil moisture) and automates the irrigation system. The farmers can monitor the field conditions from anywhere. IoT-based smart farming is highly efficient when compared with the conventional approach (source: www.iotforall.com).

outcome, as well as the cost and timelines, therefore, depend on these factors. These are not yet reflected in the baseline pricing of LLL offered through the FC Component. Service providers have provided examples where they have had to operate with losses and faced delayed payments from BAAC.

5.1.3 Lessons for the Mitigation Action Facility for the review, approval, and management of future interventions

- **Lesson 8: Continue with Evaluation and Learning Exercises.** In the context of the Thai Rice project, the mid-term ELE observed significant delays. The challenges recognised during the Mid-term ELE and the management response to the changes have had a significant impact on the progress of implementation. In particular, targeting the adoption-ready farmers and the need for the introduction of economic incentives or risk reduction financial instruments to mobilise both farmers and service providers were well recognised and addressed.

5.1.4 Lessons for improving other or future projects' design and implementation

- **Lesson 9: While the package offering of complimentary TC and FC Components has been one of the key strengths of this project, there is scope to increase the capacity of government stakeholders to promote non-LLL practices.** The project has demonstrated a holistic approach, with targeted training, capacity building, and extension services for LLL, AWD, SSM and SSNM on the technical side, alongside an FC Component tailored to boost the demand and supply of LLL as a service. However, there is room to improve the capacity of agencies already engaged in promoting these practices. For instance, soil testing results as part of SSNM are often reported to be delayed – and further working with the LDD to remove such bottlenecks, would increase the uptake of the practice.

- **Lesson 10: A cross-donor working group at the national level for cooperation and learning would be useful.** There has been significant demand from stakeholders to ensure that best practices and learnings are shared between various donors working in rice production. Considering the number of donors and projects operating in Thailand in the context of climate finance and climate-compatible agricultural practices, mitigation and resilience, there is a great opportunity to identify best practices and facilitate cross-sharing of lessons learned.

- **Lesson 11: Continue to maintain flexibility in the project focus to respond to contextual changes.** One of the key findings is that the project has been highly adaptive and has responded timely to findings from the ground. For instance, targeting has been managed based on focusing first on megafarms and Smart farmers. Changes to the FC Component, through the introduction of the 50-50 subsidy, were timely and well received. However, there is scope for adaptive programming to be proactive and a result of deliberate and regular feedback mechanisms, and not as a response to unexpected challenges faced in the field.

- **Lesson 12: Capturing lessons learnt systematically and institutionalising knowledge is important.** The project team should document lessons learnt, highlighting successes and barriers to implementation, and share these with diverse project stakeholders. For instance, it is evident that a common steering structure and working group are essential for coordination. Garnering provincial-level support through the governor's office has been catalytic for execution. These are findings that merit detailed documentation for learnings on effective governance in future projects. Project stakeholders have also indicated that they would benefit from the dissemination of both implementation and programming-related learnings, as well as an overall package of the knowledge products produced during the course of the projects.

- **Lesson 13: There is a need to improve visibility, dissemination and communication.** Government agencies have indicated that they find the products generated during the project to be useful and of good quality and could potentially use these products to further promote technologies through avenues such as promotional videos, demonstration plots, and phone chat applications.

- **Lesson 14: There is a need for continued policy advocacy and alignment with the government stakeholders.** The project was an early model project and, therefore, involved a huge undertaking with respect to mapping the policy angle and priorities of each stakeholder. As has been indicated by sub-national government stakeholders, getting policy buy-in at the national level was quite important to positively impact the pace of implementation. Therefore, continued engagement with institutions at the national level, such as the RID, RD, ACFS, LDD, MoAC, and DoAE, is essential for future programming. This would ensure continued alignment with stakeholder interests.

5.2 Recommendations

5.2.1 Recommendations for the Mitigation Action Facility

- **Facilitate knowledge sharing to ensure a smooth transition to GCF extension activities.** As reflected in the learnings and as indicated by project stakeholders, there is room to institutionalise the knowledge generated through the project and the findings of the ELE. This includes any implementation lessons learnt that could be utilised by government agencies involved or to promote the extension project to new provinces. For example, through a short briefing document highlighting challenges, successes and areas for growth. This is also a useful exercise to ensure that stakeholders who participated in the ELE process are also in the know regarding results and next steps.

- **Push for a stronger focus on gendered programming for the agriculture sector across the Mitigation Action Facility's portfolio.** There is scope for additional thinking on how best to incorporate gender considerations in programming for the facility's cross-sectoral projects involving agriculture. For instance, the current idea of equity, as indicated by project stakeholders, is the provision of equal access to knowledge and finance. However, a focus on gender-specific approaches is instrumental in increasing the adoption of sustainable rice farming practices in Thailand, ensuring both agricultural productivity and social equity. While gender roles are deeply entrenched in the sector, there is still a need to recognise the critical role of women in rice production; interventions that consider gender dynamics can lead to more inclusive and effective strategies. While the project provides equal access to resources and training for technologies such as AWD and integrated pest management, more focus could be put on equitable solutions such as tailoring agricultural extension services to address the specific needs and constraints faced by female farmers. Support could also be provided to improve the representation of women in entrepreneurial roles (e.g. LLL) in the rice sector.

5.2.2 Recommendations for government implementing partners to sustain the legacy of the Thai Rice project

- **To sustain the GHG emission monitoring capacity, mainstream GHG emission reduction within the broader national agricultural policy framework as part of NDC targets.** This would assist in bolstering the required public finance and resources to aid in ramping up the institutional capacity through staff training, infrastructure maintenance and additional investments.

- **Ensure trickle-down of LLL, AWD, SSNM and SSM training for knowledge transfer from trained trainers to individual farmers.** Continue the demonstration plots, highlighting the economic incentives, to maximise the trickledown effect in adoption at the individual farmer level.

5.2.3 Recommendations for GCF-funded continuation of the Thai Rice project

- **Better define the role of large-scale private producers in the market segregation of low-emission rice.** While GAP practices are recognised by farmers as fit for consumption and are used for self-consumption by farmer groups, the decision-making related to the adoption of new practices or time investment continues to be focused on farm economics. In order to establish GAP/Thai Agricultural Rice Standards cultivation, segregation of rice variety and differentiated pricing serves as a mandatory factor that influences change. In order to drive the market towards segregation and high-value pricing, the role of large-scale private procurers and their involvement needs to be well defined from the start of implementation.

- **Continue with practical demonstrations but pay attention to differentiate the training and knowledge transfer activities.** Demonstration has been the most effective mechanism for knowledge transfer and training to farmers and service providers, for the new technologies. There is a recognised need for differential training and knowledge transfer approaches, both in terms of medium and training content. Thai Rice content has been well-received by all stakeholders with different backgrounds, including research partners, implementing partners, service providers and farmers.

Annex A Capturing project-induced Transformational Change

Introduction

This is a brief guidance developed by AMBERO/OPM outlining a framework to consistently evaluate Mitigation Action Facility-funded projects' progress towards bringing about transformational change.

Transformational change is embedded in the Mitigation Action Facility's goals, and Theory of Change (ToC), and projects are the main way through which the Mitigation Action Facility will achieve this transformational change. Therefore, the projects need to be aiming to achieve this level of change, and the Evaluation and Learning Exercises (ELEs) of such projects should evaluate their progress.

In a way, key elements of transformational change are already monitored through the project's Mandatory Core Indicators M1-M5, part of the Mitigation Action Facility M&E Framework[29]. However, they only cover partial elements of transformational change. Therefore, clearer guidance in identifying the signals or evidence of project-induced transformational change is needed.

This brief document clarifies how transformational change is expected in projects and provides guidance to both project and ELE teams on how to characterise the elements and evidence of project-induced transformational change.

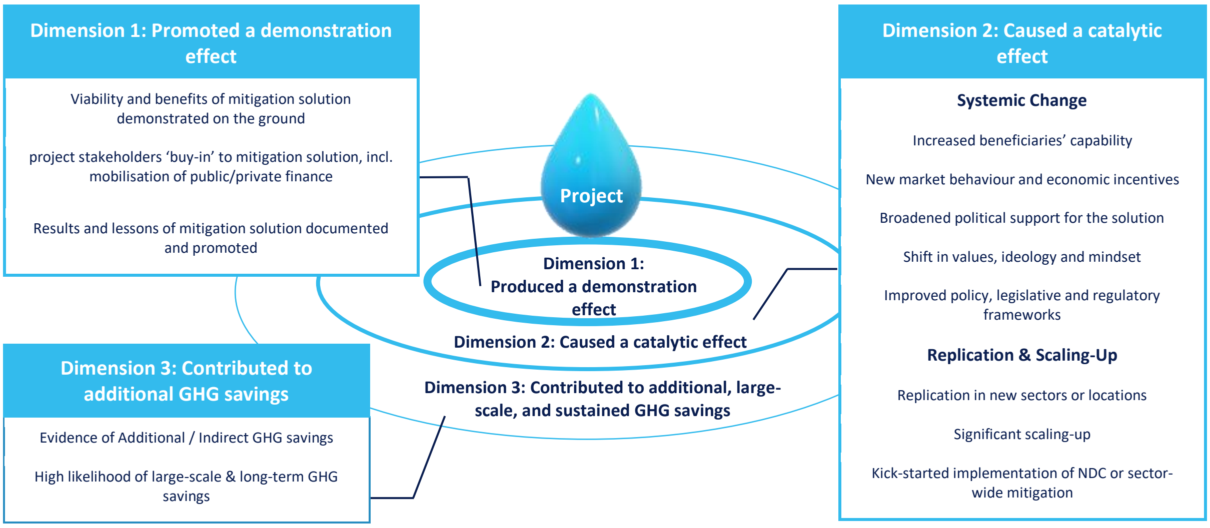
Breaking down project-induced transformational change

The Mitigation Action Facility defines transformational change as "*Catalytic change in systems and behaviours resulting from disruptive climate actions that enable actors to shift to carbon-neutral pathways"*[30].

The Mitigation Action Facility's ToC explains how transformational change is expected to be achieved through its outputs and outcome. The ToC is broad, and there are different ways transformational change can be achieved through the projects, which are simplified into the three *dimensions* summarised in the figure below.

[29] https://mitigation-action.org/our-approach/monitoring-evaluation-learning/
[30] https://mitigation-action.org/wp-content/uploads/Mitigation-Action-Facility_transformational_change-factsheet.pdf.

Figure 4. Dimensions of project-induced transformational change



Three dimensions interact and reinforce each other to produce project-induced transformational change (Figure 4). These are described below with an indication of what is expected to be achieved at the project's mid- and end-point (see Table 8 and Table 9 for more details on scoring criteria).

- **Dimension 1: Promoted a demonstration effect.** The most direct way in which a project can contribute to transformational change is to produce a demonstration effect which will imply that:
  - The project has **demonstrated** or proven the viability and benefits of a particular **mitigation 'solution' (e.g. models, practices or technologies)** through implementation on the ground (e.g. using pilot projects), thereby directly contributing to GHG emissions savings;
  - There is **evidence of buy-in by key project stakeholders**, e.g. by mobilising additional public/private finance along with the project Financial Cooperation Component;
  - The demonstrated **results and lessons of the mitigation solution have been documented** (e.g. in knowledge or communication products) **and promoted externally to a wider audience**.

  By mid-line, projects are expected to show interim signals of achieving this demonstration effect, which should have become clear evidence (i.e. advanced signals) by the end-line.

- **Dimension 2: Caused a catalytic effect.** To amplify the impact of the mitigation solution demonstrated (Dimension 1), the project needs to cause a virtuous catalytic effect in the operating country or region. This can take the form of one or more of the following catalytic changes:
  - **Replication and/or significant scaling-up** of the project's demonstrated solution in other sectors or locations, or of the project itself. This could include kick-starting sector-wide mitigation or the NDC; and/or
  - As a result of the project improving enablers and/or eliminating barriers to the uptake of the mitigation solution, it will result in wider **'systemic' change**, which could be supported by one or more of the following: a) Increased beneficiaries' capability; b) new market behaviour and economic incentives; c) improved policy, legislative and

regulatory frameworks; d) broadened political support for the solution; e) shift in values, ideology and mindset.

By mid-line, projects are expected to have produced some early signals of one or more of these changes (or that they are likely in the near future), which by the end of the project should have been strengthened into interim signals.

- **Dimension 3: Contributed to additional GHG savings**. As a result of contributing to Dimension 1 and Dimension 2, the project will indirectly influence *additional, large-scale and sustained GHG savings*[31].

  During the project's lifetime, projects are not expected to have achieved this. Yet, by the end of the project, there should be early signals of additional (i.e. indirect) GHG savings and evidence that these will become large-scale and sustained GHG savings in the future.

Box 1: Connection between transformational change Measurement Framework and Knowledge Management and Learning Strategy
One of the key objectives of the Knowledge Management and Learning Strategy (KMLS) is to ensure that learning from both successes and failures is taken into account, changes are implemented accordingly, and innovative approaches are replicated. There is therefore an important connection between the ELEs and this strategy, and the learning documented through the ELEs is expected to be used by the Mitigation Action Facility in its function of 'Knowledge and Learning Hub' for the international climate finance community explained in the strategy. In particular, project-specific learning should be proactively shared and discussed with other projects (at least with those funded by the Mitigation Action Facility). The KLMS also expects to engage with and influence international debates on climate finance and transformational change. The Mitigation Action Facility will use and synthesize learning on supporting transformational change, documented through the ELEs, to inform this engagement.

Measuring project-induced transformational change

As shown, the transformational change dimensions come directly from the Mitigation Action Facility ToC. As the projects are expected to be aligned to the overall Mitigation Action Facility ToC, it should be possible to map the dimensions of transformational change in the project ToCs. All projects must monitor their progress using their Monitoring and Evaluation (M&E) Plans which include Mandatory Core Indicators and project-specific indicators.

The ELE teams will be evaluating and learning from the projects' progress in supporting transformational change, which will include reviewing progress against the indicators and milestones set out in their M&E Plans. In addition, this can be complemented (and verified) with more qualitative ELE questions and data sources. **Error! Reference source not found.** below provides some guidance to ELE teams in terms of criteria and evidence for assessing the project-induced transformational

[31] Additional = the GHG savings achieved are in addition to those achieved by the direct implementation of the project.
Large-scale = the additional GHG savings will have a significant impact on overall GHG savings in the geography/sector.
Sustained = there is no chance of the GHG savings being reversed.

change. This includes the three dimensions but also the scoring for the Core Mandatory Indicator M3, which can be seen as the summation of results for the three dimensions.

Table 7. Guidance for ELE teams for measuring project-induced transformational change

transformational change Dimension	Element within transformational change Dimension	Alignment with OECD DAC Criteria / ELE report section	Where should it feature in project ToC and M&E Plans	How to measure success	Expectations at mid-line and final ELE
1: Promoted a demonstration effect	**Viability and benefits of mitigation solution demonstrated on the ground**	Effectiveness	• Milestones set for outputs and/or Intermediate Outcomes (if used) should represent the scale of uptake needed to demonstrate the solution is viable (meaning it has been shown to work in practice at a large scale in diverse contexts, and provide the expected economic, social and climate benefits) • Also aligns with M1: Reduced Direct GHG emissions and M2: Number of people directly benefiting	*Quant*: Achievement of project milestones for the adoption of the mitigation solution by target users and resulting direct GHG emission savings Qual: Feedback from target users that viability and benefits have been demonstrated.	• Mid-line: Interim Signals • End-line: Advanced Signals
1: Promoted a demonstration effect	**Results of mitigation solution documented and promoted**	Effectiveness	• Milestones set for outputs on producing knowledge and learning documents and engaging with wider stakeholders to share this insight. • Seek alignment with the KMLS.	*Quant:* Achievement of project milestones for knowledge and communication products/activities *Qual*: Feedback from other stakeholders (e.g. other funders) on their awareness and understanding of the project and solution.	• Mid-line: Interim Signals • End-line: Advanced Signals
1: Promoted a demonstration effect	**Project stakeholders 'buy-in' to mitigation solution**	Effectiveness	• Milestones set for outputs and/or Intermediate Outcomes for the volume of finance expected to be mobilised and/or other examples of 'buy-in' (e.g. policy statement). • Also aligns with M4-5: Public and Private finance mobilised	*Quant*: Achievement of project milestones for public and private finance mobilised Qual: Feedback from government and other stakeholders that they are convinced of the viability and benefits of the solution	• Mid-line: Interim Signals • End-line: Advanced Signals

transformational change Dimension	Element within transformational change Dimension	Alignment with OECD DAC Criteria / ELE report section	Where should it feature in project ToC and M&E Plans	How to measure success	Expectations at mid-line and final ELE
2: Caused a catalytic effect	**Systemic change underway to enable widespread adoption of mitigation solution** • Improved policy, legislative and regulatory frameworks • New market behaviour and incentives • Increased institutional capacity and management practices • Shifts in values, ideology and mindset • Broadened political support for the solution	Effectiveness	• Milestones set for outcomes should indicate specifically what needs to change to enable widespread uptake of the mitigation solution.	*Qual*: Evidence of contribution to achieving expected systemic change and unexpected changes.	• Mid-line: Early Signals • End-line: Interim Signals
2: Caused a catalytic effect	**Replication and scaling-up of mitigation solution and/or project** • Replication in new sectors of the mitigation solution and/or project itself • Significant* scaling-up of the mitigation solution and/or project itself • Kick-starting and influencing sector-wide mitigation ** Significant compared to the size of the project and the overall target user group. For example, if the project promoted the installation of 2,000 Solar PV systems (representing approximately 2% of all target users), significant replication would imply that it has reached around 20% of target users. However, there is no quantitative target to meet, and a rationale can be provided to justify it meeting this criterion.*	Effectiveness Sustainability	• Milestones set for outcomes for replication/ scaling-up by others of project activities.	*Quant*: Volume of scaling-up (e.g. # of new geographies/ beneficiaries or $ of new funding) *Qual*: Feedback from other funders and programmes on the influence of project in their decision to scale-up activities and/or invest in the project's sector.	• Mid-line: Early Signals • End-line: Interim Signals

transformational change Dimension	Element within transformational change Dimension	Alignment with OECD DAC Criteria / ELE report section	Where should it feature in project ToC and M&E Plans	How to measure success	Expectations at mid-line and final ELE
3: Indirectly contributes to additional, large-scale and sustained GHG savings	**As a result of the changes from dimensions 1 and 2, there is evidence of additional and potentially large-scale and sustained GHG emissions savings**	Impact	• Milestones set for Impact should represent the scale of GHG emissions savings required for sector decarbonisation. • Also aligns with M1: Reduced Indirect GHG emissions and	*Quant:* Achievement of project milestones for indirect additional GHG emissions savings *Qual*: Given progress for dimensions 1 and 2, an assessment of the likelihood that this will result in additional GHG savings in the future. This is informed by feedback from wider stakeholders in the sector.	• Mid-line: No signals • End-line: Early Signals
Overall Transformational Change potential	**M3: Degree to which the supported activities are likely to catalyse impacts beyond the projects (potential for scaling-up, replication and transformation)**	Impact		*Mixed*: Based on whether the expected minimum level of signals for each transformational change dimension is found, the ELE gives: 1) a RAG rate to the 'Impact' evaluation criterion; and 2) a rate from 0 to 4 to the M3 indicator.	

Guidance for describing and scoring progress towards transformational change in ELE reports

Although transformational change is ultimately related to the project's Impact, **evaluating progress towards it cuts across different parts of the ELE report related to Evaluation Questions on Effectiveness, Sustainability and Impact (see table above).** In particular, the Effectiveness and Sustainability sections of the ELE report will describe key aspects of dimensions 1 and 2 (which relate to the projects' outputs, intermediate outcomes and outcomes). Therefore, the Impact section will provide an analytical synthesis of the three transformational change dimensions referring to the previously described evidence and assign an overall score to the project's transformational change potential. ELE reports' authors should avoid duplications across the sections and cross-reference to other relevant parts of the report, if some of the evidence has already been discussed.

Each dimension should be described and assessed according to the following "signal levels":

Table 8. Transformational Change "Signals" assessment by ELEs

Signal level	Definitions
No evidence	Evidence suggests little to no progress is being made in line with the ToC causal pathways to Transformational Change.
Early signals	There is emerging evidence of the transformation related to the dimension, or the foundations for the transformation have been laid by the project, but no signals of the change are present.
Interim signals	Evidence shows some signals that the transformation related to the dimension is underway, and it is likely to continue.
Advanced signals	Evidence shows strong signals that the transformation related to the dimension is underway, and there is little doubt that it will continue.

ELEs would expect projects to have achieved at least the "signal levels" in Table 9**Error! Reference source not found.** by the project's mid-point and end-point for each dimension.

Table 9. Minimum expected signals of project-induced transformational change

Dimension	Mid-point	End-point
1: Promoted a demonstration effect	Interim signals	Advanced signals
2: Caused catalytic effect	Early signals (of one or more of the types of possible changes)	Interim signals
3: Contributed to additional GHG savings	None	Early signals

Within the relevant dimension's sub-sections, these signal levels should be presented and justified by referring to the evidence provided throughout the report (e.g. in the Effectiveness and

Sustainability sections). Below are some guiding questions to support this (aligned to measures presented in Table 7).

For presenting the evidence on **Dimension 1**, the report could provide a narrative answering the following questions:

- Is the project in line with the expected direct GHG savings per M1 and the number of beneficiaries reached per M2?
- Have the key project stakeholders (i.e. those closer to the project implementation) shown concrete evidence of buy-in/adoption of the project's mitigation solution? Is this demonstrated by public and private sector actors investing resources into it, as per M4 and M5?
- Is the project documenting the key results and lessons from the process of demonstrating the validity of the mitigation solution and sharing these with wider stakeholders?
- Do the answers to the above questions constitute interim/advanced signals of Dimension 1 for the mid-line and end-line ELEs, respectively?

Similarly, for **Dimension 2**, the narrative could present evidence around the following questions:

- Has the project contributed to improving/removing systemic enablers/barriers to the widespread uptake of its demonstrated mitigation solution? What wider effects might this produce?
- What is the evidence that the project's mitigation solution will be scaled-up and/or replicated in new sectors and/or locations?
- Is there evidence that the project has informed or kick-started the implementation of the NDC or sector-wide mitigation?
- Do the answers to the above questions constitute early/interim signals of Dimension 2 for the mid-line and end-line ELEs, respectively?

Concerning **Dimension 3**, as no signals are expected at mid-term, the following questions are suggested for the analysis in <u>Final ELEs only</u>:

- Is the project in line with the expected indirect GHG savings per M1?
- What is the evidence that the project's mitigation solution will generate additional and large-scale GHG savings in the long term?
- Do the answers to the above questions constitute early signals of Dimension 3?

Finally, the assessment would conclude by providing an overall rating of transformational change potential. This aligns with M3: "Degree to which the supported activities are likely to catalyse impacts beyond the projects (potential for scaling-up, replication and transformation)".

The project will likely have provided a self-score for M3 within their routine M&E reporting. Therefore, the ELE teams can discuss with the project teams their rationale for this score, and then provide their own independent judgement of it.

To do this, the ELE authors should look back on whether the expected minimum level of signals for each transformational change dimension (Table 9) was found by the ELE and, on that basis, rate from 0 to 4 the M3 indicator using the scale recommended in the Mitigation Action Facility M&E Framework:

- 0 = Transformation judged unlikely;
- 1 = No evidence yet available;
- 2 = Some early evidence suggests transformation likely;
- 3 = Tentative evidence of change – transformation judged likely;
- 4 = Clear evidence of change – transformation judged very likely.

Based on that score, a Red-Amber-Green (RAG) rating will be assigned to the Impact evaluation criterion. The RAG rating can follow the guidelines in the matrix below (Table 10), while leaving some flexibility to account for the project-specific trajectories of progress.

Table 10. Indicative project's Impact RAG rating based on its M3 indicator score

M3 score	0	1	2	3	4
Mid-term ELE					
Final ELE					
Legend: 0 = Transformation judged unlikely; 1 = No evidence yet available; 2 = Some early evidence suggests transformation likely; 3 = Tentative evidence of change – transformation judged likely; 4 = Clear evidence of change – transformation judged very likely.					

Annex B Evaluation and Learning Exercise Matrix

This ELE matrix is based on the Theoretical Framework provided (version November 2023), the additional knowledge interests of the project team/TSU and the evaluators' initial document analysis. It is a working tool that allows the evaluators to focus on a feasible target and assemble information for each question that can be synthesised in the final report, hence creating an integrative overview of the Thai Rice Project at large. The evaluation matrix is a working tool and may be adapted slightly during the evaluation if further relevant questions come up. A final version of the matrix will be included in an annex of the final ELE report.

ELEQ No.	Evaluation Question	Evaluation criteria	Original hypotheses	Who can answer this question	Source of information Data gaps
1 RELEVANCE					
1	To what extent does the project address an identified need (of the Thai government, mitigation service providers and rice farmers)?	▪ The project design responds to the beneficiaries' needs and strategic priorities at the time of adoption. ▪ The project is aligned with the needs of agricultural authorities including financial institutions (BAAC), mitigation service providers and rice farmers.	▪ Farmers lack capacity and access to finance to take up and invest in low-emission rice farming. ▪ The project is appropriately designed to address those needs (linked to ELE question 1.3) ▪ The Technical Cooperation (TC) Component of the project enables farmers and service providers to take up and invest in low-emission rice farming. ▪ The TC Component of the project advises the government to create an enabling framework for low-carbon rice production.	▪ Direct beneficiaries (government, mitigation service providers, farmers) ▪ Project Team ▪ Independent verifiers (e.g., FAO, other IKI project)	▪ In-depth interviews ▪ Semi-structured key informant interviews (KIIs) ▪ Context analysis ▪ Document review (Project concepts (logical framework matrix) and progress reports) ▪ National plans, strategies, and other policy instruments such as norms, standards, etc.
1.1	How well does the project align with government and agency priorities	▪ The project is in line with Government targets on environmental emissions (incl. NDC, sectorial plans, etc.).	▪ The project supports Thailand's overall climate strategy by providing an effective contribution to the reduction of	▪ Direct beneficiaries from government ▪ Project Team	▪ In-depth interviews ▪ Semi-structured key informant interviews (KIIs)

ELEQ No.	Evaluation Question	Evaluation criteria	Original hypotheses	Who can answer this question	Source of information Data gaps
	regarding GHG emissions from the rice sector?		GHG emissions from the agriculture sector.		▪ National plans and strategies on climate change ▪ Data from project monitoring system
1.2	Are the project's design and actions, in particular the financial mechanisms, appropriate to support investments in mitigation actions in the rice sector in an efficient manner?	▪ The project is line with financial capacities of the Thai government, service providers and rice farmers. ▪ The revised financial mechanism has improved targeting and adoption among beneficiaries.	▪ The Thai government and private sector (rice farmers and mitigation service providers) are willing and interested in investing in low-emission rice farming.	▪ Direct beneficiaries ▪ Project team ▪ BAAC	▪ In-depth interviews ▪ Semi-structured key informant interviews (KIIs)
1.3	Does the project consider gender equality and social inclusion (GESI) issues / barriers and/ or supports national gender equality goals?	▪ Considering this was not mandatory, the extent to which the project considers the specific needs of women and other vulnerable groups in the rice sector and value chain.	▪ The project is designed at least not to harm and ideally to improve the situation of women and other vulnerable groups in the rice sector and value chain.	▪ Direct beneficiaries ▪ Project Team ▪ Independent verifiers	▪ In-depth interviews ▪ Semi-structured key informant interviews (KIIs) ▪ Project proposal ▪ Progress reports
2 EFFECTIVENESS					

ELEQ No.	Evaluation Question	Evaluation criteria	Original hypotheses	Who can answer this question	Source of information Data gaps
2	To what extent has the implementation of the project achieved intended outcomes?	▪ What evidence can be found to prove reaching expected results / outcomes in the ToC: o Reduced GHG emissions in the focus provinces (CAPSAS) o Number of male and female farming households and mitigation services providers benefitting from project interventions o Number of high adoption farmer groups identified for implementation o Number of service providers offering mitigation services to targeted rice farmers o Increased demand for green loan programs of BAAC by service providers o Segregation of low-emission rice from conventional rice o Up-scaling in targeted provinces o SRP/GAP++ is recognised as national voluntary standard o RF adopted by farmers and service providers	▪ TC Component activities increase demand as well as the supply of mitigation services in rice production. ▪ The TC Component builds awareness and capacities among farmers to demand for mitigation service providers. ▪ The Financial Cooperation (FC) Component builds up structures and offers to enable mitigation service providers building up their businesses (Revolving Fund). ▪ FC Component enables farmers financially to tap into mitigation service offers (low-interest loans).	▪ Direct beneficiaries ▪ Project Team ▪ Independent verifiers ▪ BAAC	▪ In-depth interviews ▪ Semi-structured key informant interviews (KIIs) ▪ Project proposal ▪ Progress reports ▪ Data from project monitoring system / logframe

ELEQ No.	Evaluation Question	Evaluation criteria	Original hypotheses	Who can answer this question	Source of information Data gaps
		▪ The strength of the project contribution to the realisation of those outcomes (see link between outputs and outcomes)			
2.1	If the project attempted to address the GESI issues / barriers in the rice sector (not mandatory), to what extent was it effective?	▪ <u>Considering this was not mandatory,</u> the extent to which the project was able to address the specific needs of women and other vulnerable groups in the rice sector and value chain.	▪ Because of the project, the situation of women and other vulnerable groups in the rice sector and value chain improves to some extent.	▪ Direct beneficiaries ▪ Project Team ▪ Independent verifiers	▪ In-depth interviews ▪ Semi-structured key informant interviews (KIIs) ▪ Project proposal ▪ Progress reports
3 EFFICIENCY					
3	To what extent is the relationship between inputs and outputs timely and to expected quality standards?	▪ Timeliness of the delivery of outputs and outcomes ▪ If there are delays in the implementation, what has caused them (endogenous or exogenous factors) and how have they impacted the project implementation? ▪ The effectiveness of the measures adopted to reduce delays. ▪ The level of satisfaction of the project's direct beneficiaries	▪ TC Component activities are on time ▪ The project's deliverables are of good quality standards. ▪ Coordination with other interventions by the Thai government on agriculture/ rice add to the efficiency of the project (leveraging funds).	▪ Direct beneficiaries ▪ Project Team	▪ Project proposal ▪ Progress reports ▪ In-depth interviews ▪ Data from project monitoring system ▪ Semi-structured KIIs

ELEQ No.	Evaluation Question	Evaluation criteria	Original hypotheses	Who can answer this question	Source of information Data gaps
3.1	Cooperation & steering: Is the project being managed, coordinated, and implemented effectively?	▪ The chosen implementation mechanism is conducive to achieving the expected outcomes. ▪ The technical component is tailormade for achieving the planned outputs. ▪ Cooperation with the Thai government, SRP and IRRI is geared to achieving expected outcomes. ▪ Evidence of cross learning and knowledge products consumed by key stakeholders ▪ FC and TC Components are synchronised and build on each other.	▪ The project team has an enabling governance structure. ▪ Key stakeholders fully own and commit to their roles in the project. ▪ TC and FC Components are implemented in parallel and add value to each other.	▪ Direct beneficiaries ▪ Project Team ▪ Implementation partners/ stakeholders	▪ Progress reports ▪ In-depth interviews ▪ Semi-structured KIIs
3.2	What risks have/could impact the delivery of the project, and how well have these been managed by the Project team?	▪ Risks are actively identified and effectively mitigated by the Project team ▪ Risks are well documented and reported	▪ The Project team regularly identify relevant risks and document them ▪ Risk mitigation informs the evolving deign and approach of the Project delivery	▪ Project Team ▪ Direct beneficiaries	▪ Project proposal ▪ Progress reports ▪ Data from Project monitoring system ▪ Semi-structured KIIs
4 IMPACT					

ELEQ No.	Evaluation Question	Evaluation criteria	Original hypotheses	Who can answer this question	Source of information Data gaps
4	What evidence is there that the project is likely to contribute to the intended impact (incl. transformational change)?	▪ The strength of the evidence that key outcomes and impacts are going to be achieved ▪ The "level of signals" of project-induced transformational change according to the Transformational Change Measurement Framework included in the ELE FW ▪ The robustness of the causal links/pathways to the intended impact (namely proving that climate finance can transform the Thai rice sector towards reduced GHG emissions) ▪ The availability of metrics and a tradition of reporting that can indicate or verify the causal links, such as: Adoption of sustainable, low-emission rice farming practices across other projects; Additional climate finance mobilisation (public and private); Acceptance of business model among direct beneficiaries, early signals for replication outside project	▪ The Project is showing advanced signals of producing a demonstration effect (Dimension 1) ▪ The Project is showing interim signals of causing a catalytic effect, in terms of systemic change, replication or scale-up and wider sectoral mitigation or NDC implementation (Dimension2) ▪ The Project is showing early signals of or has a reasonable plan to contribute to additional, large-scale, and sustained GHG emission savings (Dimension 3)	▪ Direct beneficiaries ▪ Project Team ▪ Independent verifiers	▪ Project proposal ▪ Progress reports ▪ In-depth interviews ▪ Data from project monitoring system ▪ Semi-structured KIIs

ELEQ No.	Evaluation Question	Evaluation criteria	Original hypotheses	Who can answer this question	Source of information Data gaps
5 SUSTAINABILITY					
5	What is the likelihood that the outcomes will be sustained after the end of the project funding period?	▪ The extent of the evidence supporting the project's sustainability (e.g., evidence of self-sustaining institutional structures, and political and financial commitment of key stakeholders), such as the integration of low-emission rice farming practices into national agricultural policies and frameworks ▪ Levers endangering sustainability of project results beyond its duration are addressed ▪ Exit mechanism for TC Component (training, mobilisation) ▪ Exit mechanisms for FC Component (self-sustained by farmers and service providers with proven demand pipeline) ▪ The extent of community engagement and farmer empowerment in sustaining low-emission rice farming practices in original and up-scale locations	▪ Built up capacities will remain available and on offer beyond project duration. ▪ Financial offers by BAAC addressing mitigation service providers as well as rice farmers are maintained by a share of their profits and by paid-back loans.	▪ Direct beneficiaries ▪ Project Team ▪ Implementation partners ▪ BAAC	▪ Project proposal ▪ Progress reports ▪ In-depth interviews ▪ Data from project monitoring system ▪ Semi-structured KIIs

ELEQ No.	Evaluation Question	Evaluation criteria	Original hypotheses	Who can answer this question	Source of information Data gaps
6 LEARNING					
6	What key lessons and practices can be learnt to the benefit of this project or other projects or projects in achieving their results for mitigation projects in Thailand and beyond?	▪ The project's generation of important lessons for: 1) itself; and 2) other MAF projects and/or non-MAF projects including: ○ Financing model for mitigation ○ National capacity strengthening ○ Behavioural change towards adoption of mitigation practices ○ What have been the challenges and limitations in design and implementation of the project? ○ What are the lessons learnt that support future projects, specifically Thai Rice GCF project? ○ Extent to which learning and feedback mechanisms have been adopted within and across projects (including adoption of mid-term recommendations, generation of knowledge products?	▪ The project generates and captures important lessons for to improve its own implementation strategy ▪ The project generates and captures important lessons for other projects and/or projects	▪ Direct beneficiaries ▪ Project Team ▪ Independent verifiers ▪ Implementation partners	▪ Progress reports ▪ In-depth interviews ▪ Semi-structured KIIs ▪ Literature review

ELEQ No.	Evaluation Question	Evaluation criteria	Original hypotheses	Who can answer this question	Source of information Data gaps
		○ What successes, challenges and general lessons can be identified from the way the project team has tried to address Gender Equality and Social Inclusion (GESI) in its implementation?			

Annex C List of ELE sources

C.1 Internal documents

1. Semi-Annual Report 2019
2. Annual Report 2019
3. Semi-Annual Report 2020
4. Annual Report 2020
5. Semi-Annual Report 2021
6. Annual Report 2021
7. Semi-Annual Report 2022
8. Annual Report 2022
9. Semi-Annual Report 2023
10. Annual Report 2023
11. Thai Rice Proposal
12. Amendment 4.2023
13. Amendment 11.2021
14. Baseline Study
15. Endline Study
16. Monitoring and Evaluation data 2021 – 2023
17. Mid-term ELE report

C.2 Public documents

1. National interpretation guideline Sustainable Rice Platform (SRP) standard for sustainable rice cultivation (version 2.1)
2. Thailand's National Adaptation Plan (NAP) 2024
3. Thailand updated NDC
4. IPCC guidelines for national greenhouse gas inventories

5. Thailand's Long-Term Low Greenhouse Gas Emission Development Strategy (LT-LEDS)

C.3 List of organisations interviewed

Institution	Position
Project Team	
GIZ Project Team (Bangkok)	Project Director, Agriculture and Food Cluster Director and Coordinator, Advisor for Sustainable Rice Policy
GIZ	Field Team (Chainat)
GIZ	Field Team (Suphan Buri)
GIZ	Field Team (Ang Thong)
Project Stakeholders	
MoAC, Rice Department	Deputy Director General
MoAC, National Bureau of Agricultural Commodity and Food Standards	Secretary General
MoAC, Royal Irrigation Department	Executive Advisor on Irrigation Engineering (Operation and Maintenance))
MoAC, Department of Agricultural Extension, Bangkok	
MoAC, Department of Agricultural Extension Chainat	
Ministry of Finance, Bank of Agriculture and Agricultural Cooperatives	Vice Managing Director, Office of Foreign Affairs Director
Ministry of Finance, Bank of Agriculture and Agricultural Cooperatives Suphan Buri	
MoAC, Land Development Department	Deputy Director General
MoAC, Thai Rice Science Institute Suphan Buri	
MoAC, Thai Rice Science Institute Chainat	
Department of Climate Change and Environment	
OLAM International Ltd.	Research and Sustainability Manager
International Rice Research Institute	Country Representative - Thailand and Senior Scientist for Climate Change, Co-located GIZ CIM Expert
Governor, Suphan Buri	-
Service provider Chainat	-
Service provider Suphan Buri	-
Service provider Ang Thong	-
Farmer Group Chainat	-
Farmer Group Suphan Buri	-
Farmer Group Ang Thong	-

Third-Party	
Mekong Institute	Executive Director
German Embassy	Counsellor for Food and Agriculture, Counsellor for Economic Affairs
ADB	Senior Financial Sector Specialist