Project proposal

(1) Summary page

Mekong-ROK Cooperation Fund (MKCF)

Project Proposal

Project Classification (check all that applies)

□ Culture and Tourism

■ Human Resources Development

□ **Agriculture and Rural Development**

□ Infrastructure

□ Information and Communication Technology (ICT)

□ Environment

□ Non-traditional Security Challenges

Project Title

Sustainable and Smart Agricultural Supply Chain Development in Mekong Countries

Brief Description of the Project

The project is designed to meet the stakeholders' needs for promoting smart technology to increase productivity efficiently, reduce post - harvest losses, and increase energy efficiency in agricultural supply chains with cold chain development and smart and sustainable technologies in post-COVID situation in the Mekong countries namely Cambodia, Lao PDR, Myanmar, Thailand and Vietnam through capacity building activities arrangement on

1. Inception workshop including formation and meetings of the project steering committee, technical working group;
2. Country situation assessment studies in Mekong counties;
3. National consultative /stakeholders' workshops;
4. Regional dissemination workshop;
5. Hybrid trainings;
6. Pilot implementation activities on smart technology for agriculture supply chain in each Mekong country;
7. Workshop on supplement knowledge topic/issue for each Mekong country;
8. Forum to reflect and synthesis the project activities including consultation for policy recommendation and;
9. End of project evaluation.

Country / Region	
Cambodia, Laos, Myanmar, Vietnam and Thailand	
Estimated Budget	
USD	
Proponent	
Name	
Address	
Date of Submission	

(2)

Mekong-ROK Cooperation Fund (MKCF)

Project Proposal

Brief Project Information	
1.1. Project Title	**Sustainable and Smart Agricultural Supply Chain Development in Mekong Countries**
1.2. Country (ies) / Region	Cambodia, Lao PDR, Myanmar, Thailand and Vietnam
1.3. Date of Submission	August 25, 2021
1.4. Proponent Contact Details	
Contact person, position Organization Email address Telephone number Mailing address	
1.5. Project Area (check all that applies)	
□ Culture and Tourism ■ Human Resources Development □ **Agriculture and Rural Development** □ Infrastructure □ Information and Communication Technology (ICT) □ Environment □ Non-traditional Security Challenges	
Project Milestone	
Estimated implementation start date Estimated implementation end date Project lifespan	01/12/2021 31/05/2023 ___1___ years __6____ months
Description of Financial Elements	

Estimated cost	Year I- USD Year II (6 months) – USD Total (1.5 years) – USD

Background / Justification

Agriculture sector is the backbone of and a key contributor to the economies in all counties of the world. The world produces sufficient food to meet the demand of its current population of 7 billion. In the Mekong countries namely Cambodia, Lao PDR, Myanmar, Thailand and Vietnam (CLMTV), agriculture and food industry have been one of the fast- growing industries. Over 60% of the population of 340 million in the Mekong region are engaged in small-scale agriculture. The countries have witnessed the average annual GDP growth of 7.5% GDP since 1992.[1] They also witnessed annual urbanization growth of 3%. High-value agriculture production, in particular horticultural crops (fruit and vegetables), has played a significant role in supporting increased incomes and the resiliency of smallholder producers.

Such significant economic growth and urbanization have impacted the way consumers in these countries relate to agriculture and food production practice and which has consequently resulted in the growth of the industry. Over 1.3 billion tons of food is lost or wasted globally every year[2]. The highest levels of food loss and waste occur in perishable crops such as fruits and vegetables and roots and tubers. Post-harvest losses in fruits and vegetables across Asia and the Pacific region may be as high as 50 percent, while for rice, they vary between 12 and 37 percent. With growing incomes and changing food consumption habits in urban centres of Asian countries, food waste is an emerging issue. On average, approximately 11 kg of food per capita per year is wasted in developing Asian countries, while an estimated 80 kg of food per capita per year is wasted in developed Asian countries. Food losses and food waste not only have adverse impacts on the region's food security, but also negatively impact on the environment, labour, land, water and other resources used in food production.

Furthermore, energy is needed at every level of the agricultural supply chain, including the production of agricultural inputs, agricultural production in the field, food processing, transportation, marketing and consumption. Primary agriculture consumes only about 20% energy, while food processing including transport uses around 40%, and thereby significantly contributes to energy consumption along agricultural supply chain in Mekong countries. Transportation of fruit and vegetables to markets and to processing plants is largely dependent on diesel and gasoline inputs to fuel trucks, boats and planes in Mekong countries. The high dependency on fossil and fuels along the agricultural value chain is concerning. Further, currently energy efficiency of existing energy source has not been optimized. To reduce the postharvest loss of fruit and vegetables and development of efficient agricultural supply chains, energy inputs play a crucial role.

[1]. Mekong Eye (2018), *Pushing GMS food up the value chain,* https://www.mekongeye.com/2018/01/05/pushing-gms-food-up-the-value-chain/ (Accessed: 31 may, 2021).

[2] http://www.fao.org/3/i3657e/i3657e.pdf

Logistics management is an integrated significant element in agricultural product transportation from producers to consumers. Within this, access to affordable appropriate technologies, in particularly since the outbreak of the pandemic such as for cold chain management is an important element for maintaining agricultural productivity and efficiency. Cold chains help reduce spoilage and waste from farms to customers and contributes significantly to Mekong countries GDP.

Problems (to be addressed)

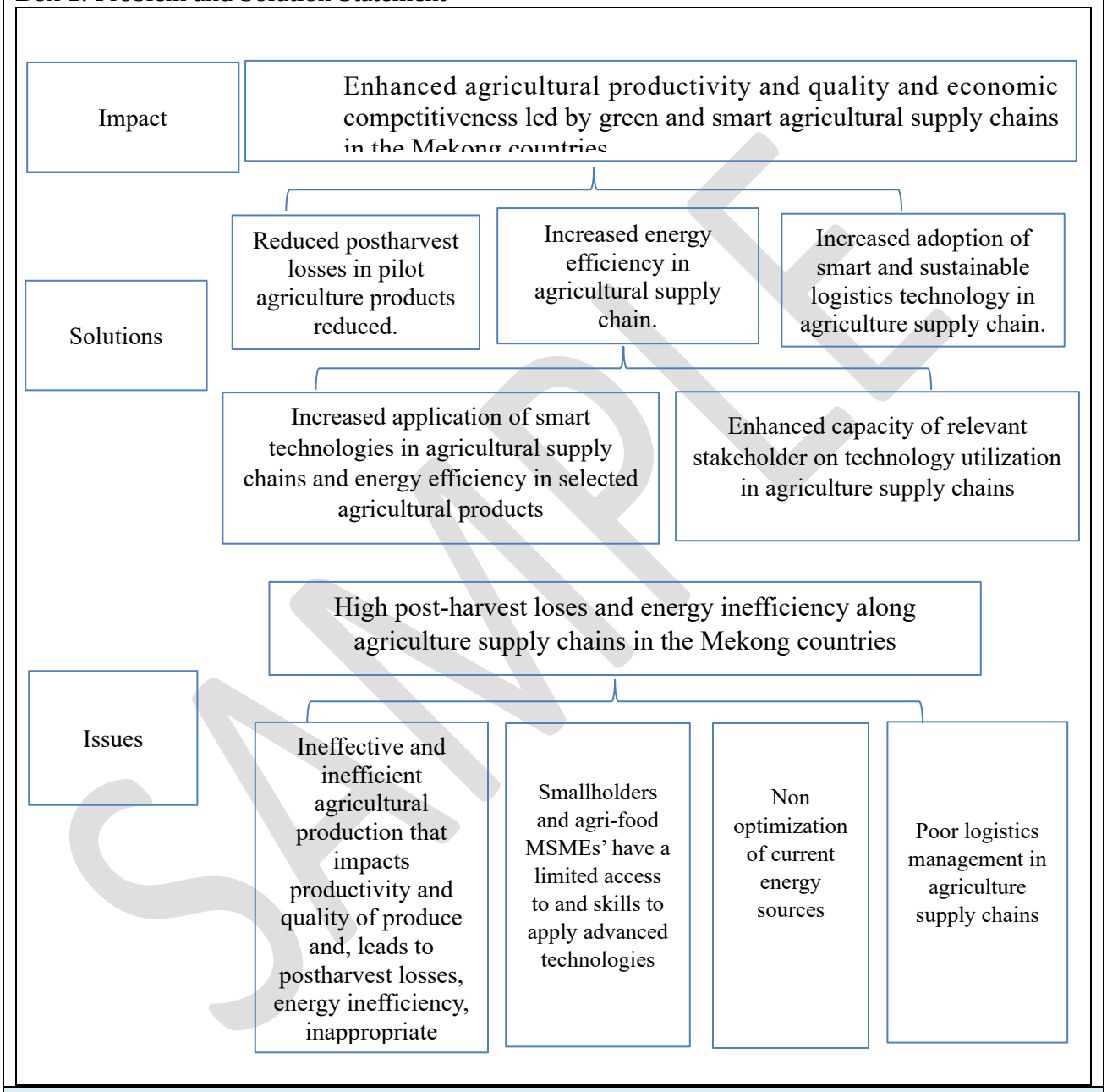
The COVID-19 pandemic has exacerbated the underlying climate change impacts on food production, as well as exposed gaps between smallholders and agri-food Micro Small and Medium-sized Enterprises (MSMEs) and bigger producers and enterprises in matters of access to and skills of applying technologies, which in turn adversely affects vulnerable groups like smallholder producers and agri-food MSMEs. The agri-food businesses faced challenges notably ineffective and inefficient production impacted to productivity, quality and postharvest losses, energy inefficiency, inappropriate logistics management and so on. Smallholders and agri-food MSMEs' have a limited access to and skills to apply advanced technologies. Existing energy source has not been optimized and inappropriate logistics management in Agriculture supply chains.

Postharvest loss can be defined as the degradation in both quantity and quality of a food production from harvest to consumption. Quality losses include those that affect the nutrient/caloric composition, the acceptability, and the edibility of a given product. These losses are generally more common in developed countries (Kader, 2002). Quantity losses refer to those that result in the loss of the amount of a product. A recent FAO report indicates that at global level, volumes of lost and wasted food in high income regions are higher in downstream phases of the food chain, but just the opposite in low-income regions where more food is lost and wasted in upstream phases (FAO, 2013). Farmers and food sellers have been concerned about losses since agriculture began. Yet the problem of how much food is lost after harvest to processing, spoilage, insects and rodents, or to other factors takes on greater importance as world food demand grows. Cutting postharvest losses could, presumably, add a sizable quantity to the global food supply, thus reducing the need to intensify production in the future.

Hence, there is an urgent need to transform agriculture supply chains (production, processing, and distribution) in the Mekong countries through the application of the smart agricultural, logistic and renewable energy technology, to ultimately contribute to the achievement of sustainable development goals (SDG) – ending poverty and hunger, promoting efficiency energy, and responding to climate change which achieving inclusive growth, building resilient society and sustainable natural resources.

Capabilities and capacities of smallholders and agri-food MSMEs on sustainable and smart technologies needs to be strengthened to respond to the challenges identified above.

Box 1: Problem and Solution Statement



Project Objective

- **Goal of the project**

To improve production effectiveness and efficiency, reduce post- harvest losses, and increase energy efficiency in agricultural supply chains through cold chain development and smart and sustainable technologies in post-COVID situation in the Mekong countries.

- **Project Objective**

The long-term objective of the project is to enhance the competitiveness of Mekong countries by strengthening sustainable and smart production and distribution technologies in the agricultural supply chains in Mekong countries.

The project also has three short-term objectives which are aligned with the long-term objectives.

1. To identify mechanisms for improving productivity and quality of agricultural produce;
2. To increase energy efficiency through using smart and sustainable technologies in agricultural supply chain;
3. To enhance agricultural supply chains by improving logistics systems including cold chain management practices for agricultural products in the Mekong region.

- **Anticipated Results**
  - **Expected outputs**
    - Assessment of situation on smart technology for agriculture supply chain in Mekong countries.
    - Capacity building activities to relevant stakeholders.
    - Technical support on pilot activity implementation.
  - **Expected short-term outcomes**
    - Application of smart technology in agricultural supply chains and energy used in selected agricultural products.
    - Enhanced capacity of relevant stakeholder on technology utilization for agriculture supply chain.
  - **Expected long-term outcomes**
    - Improved production effectiveness and efficiency
    - Reduction of postharvest losses in pilot agriculture products.
    - Increased energy efficiency in agricultural supply chain.
    - Adoption of smart and sustainable logistics technology in agriculture supply chain.
  - **Expected impact**
    - Enhanced agricultural productivity and quality and economic competitiveness led by green and smart agricultural supply chains in the Mekong countries.

Project Description / Implementation Arrangement

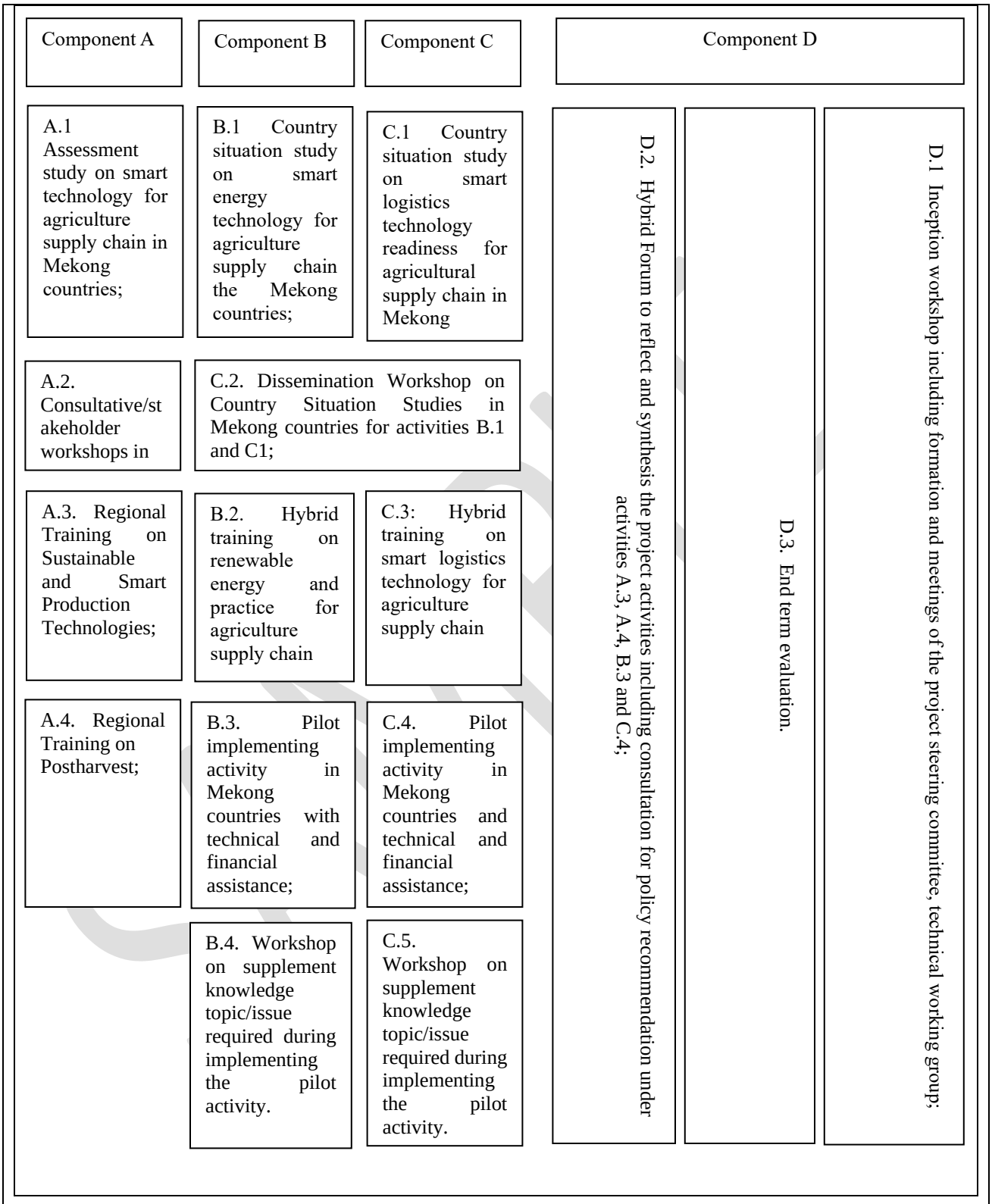
The project comprises with four major components including:

- Sustainable and smart technology for agriculture production supply chain
- Energy efficiency in agriculture supply chain
- Smart logistics management for agriculture supply chain
- Monitoring and Evaluation

- **Project activities:**

To achieve the stated short- and long-term project objectives, the project will have the following activities:

Box 2 : Project Activities Diagram



Component A: Sustainable and Smart Technology for Agriculture Production Supply Chain

Activities

A.1. Assessment study
This component will conduct assessment to increase comprehensive understanding of situation including key challenges, limitations, existing sustainable and smart agricultural technology availability/adoption, etc.) and prioritize/identify area of focus for project piloting in Cambodia, Lao PDR, Myanmar, and Vietnam. The assessment will not include Thailand since the main objective is to explore the needs for improvement of agriculture production technologies and postharvest management, which Thailand has already adopted advance technologies compared with other countries in the region. The results of the assessment will be shared to relevant stakeholders for feedbacks in validation workshop in each country.

A.2. Validation workshops
Four validation workshops will be conducted to share and confirm the results of assessment study to relevant stakeholders from CLMV including Thailand as experts to provide advice and share experiences. These will also ensure the engagement of stakeholders who are the direct and indirect beneficiary.

A.3. Capacity building activities
Two regional capacity building activities on sustainable and smart agriculture production technologies and postharvest management will be provided to stakeholders involved in selected agriculture commodity value chains in Cambodia, Lao PDR, Myanmar, and Vietnam. Thailand and other countries such as Korea, Philippines, etc will provide the service to increase capacity to CLMV countries.

- A3-1 Regional Training on "Sustainable and Smart Agriculture Production Technologies"
- A3-2 Regional Training on "Postharvest Management System in Fresh Horticultural Produce"

Component B: Energy Efficiency in Agriculture Supply Chain

Activities

B.1. Country situation study on smart renewable energy technology for agriculture supply chain in Mekong countries

The study will be conducted to understand the smart renewable energy technologies readiness and adoption of the technologies for agriculture supply chain including identification of challenges, limitations, and various interests of different stakeholders - companies, government, associations, customers/end-users, and other involved stakeholders in the energy sector. The study results will be share and confirm with relevant stakeholders in the Dissemination Workshop (Activity C.2), which will also ensure the engagement of stakeholders who are the direct and indirect beneficiary. The findings will be used to further decide the capacity building project, identify a group for implementing the pilot activity on selected agriculture product and policy recommendation.

B.2. Hybrid training on renewable energy and practice for agriculture supply chain

A hybrid regional training on "Sustainable and Smart Renewable Energy Technologies" will be conducted for national level agencies, agriculture producers, renewable energy and logistics service providers involved in the agriculture supply chain development to enhance capacity of government officials and private sector enable to promote and improve energy efficiency along the supply chain. After the new skills/knowledge have been acquired, the participants will jointly develop the pilot implantation activity as Action Plans (APs) and implement it in respective country.

B.3. Pilot implementation activity on smart renewable energy technology to support selected agriculture commodity supply chain.

The pilot activity on smart renewable energy technology application in production, processing and distribution along the supply chain will be conducted by three parties/stakeholders namely selected agriculture product group, logistics business owner and renewable energy provider to increase the energy efficiency for the reduction of the postharvest losses. As part of the training program, participants will jointly develop the pilot implementation activity as Action Plans (APs) which aims to transfer the new ideas, knowledge and learning points acquired during the training to a set of activities to be done after the training by specifying suitable smart renewable energy technology to support selected agriculture commodity supply chain in their country. The technical and financial support will be provided to the pilot implementation group in each five Mekong counties. Specific pilot implementation activity will be discussed during the training. The pilot activity will be jointly implemented with activity on cold chain management of the logistics for selected agriculture commodity (C.4).

B.4. Workshop on supplement knowledge topic/issue required during implementing the pilot activity.

The workshop aims to provide further support to the implementation of the pilot activity in each Mekong country. The technical assistance especially the solutions on solar energy for cold storage system, waste to energy and energy equipment safety management will be incorporated and shared by experts at the workshop.

<u>Component C: Smart Logistics Management for Agricultural Supply Chain</u>

Activities

C.1. Country situation study on smart logistics technology readiness for agricultural supply chain in Mekong countries.

The study will be conducted to understand the smart logistics technologies readiness and adoption of the technologies which focus on cold chain management for agriculture sector including identification of challenges, limitations, and various interests of different stakeholders – companies, government, associations, customers/end-users, and other involved stakeholders in the logistics sector. The findings will be used to further decide the capacity building activities, identify a group for implementing the pilot activity related to cold chain management for selected agriculture product and policy recommendation.

C.2. Dissemination Workshop on Country Situation Studies in Mekong countries for activities on smart renewable energy technology for agriculture supply chain in Mekong countries (B1) and smart logistics technology readiness for agricultural supply chain in Mekong countries (C1)

The dissemination workshops under activities B1 and C1 will be conducted to share and confirm the results of assessment study to relevant stakeholders. These will also ensure the engagement of stakeholders who are the direct and indirect beneficiary.

C.3. Hybrid training on smart logistics technology for agriculture supply chain.

The Hybrid training will be conducted for national level agencies, agriculture producers and renewable energy and logistics service providers involved in the agriculture supply chain development. After the new skills/knowledge have been acquired, the participants will jointly develop the pilot implantation activity as Action Plans (APs) and implement it in respective country.

C.4. Pilot implementation activity on cold chain management of the logistics for selected agriculture commodity.

As part of the training program, participants will jointly develop the pilot implementation activity as Action Plans (APs) which aims to transfer the new ideas, knowledge and learning points acquired during the training to a set of activities to be done after the training by specifying cold chain management of the logistics for selected agriculture commodity in their country. The pilot implementation activity will involve three parties/stakeholders among selected agriculture product group, logistics business owner and renewable energy provider. The technical and financial support will be provided to the pilot implementation group in each five Mekong counties. The pilot activity will be jointly implemented with activity on smart renewable energy technology to support selected agriculture commodity supply chain (B.3).

C.5. Workshop on supplement knowledge topic/issue required during implementing the pilot activity.

During the implementation the pilot activity in each Mekong country, some of issues may require recommendations for deeper understanding to support the implementation. The issue such as Good Storage Practices (GSP) and Good Distribution Practices (GDP), traceability system, market access and linkage will be incorporated and shared by experts at the workshop.

<u>Component D: Monitoring and Evaluation</u>

Activities

D.1. Inception Workshop with Formation and Meeting of the Project Steering Committee.

The project will launch with the inception workshop and formation of the Project Steering Committee of three components (components A, B and C). The inception workshop aims to introduce the project goals, objectives and activities together with an indicative work plan to the members of the Project Steering Committee (PSC) and stakeholders and seeks their contribution

and support to the Project and its implementation progress towards the sustainable achievement.

The Project Steering Committee (PSC) members are senior officials from the national Ministries of Agriculture, Land and Transport and Energy and business member organizations (BMO) and service providers related to agi-business, logistics and energy to provide necessary direction to the project team on the project strategies and deliverables to ensure that activities in the project are implemented as planned. Role and responsibilities of the PSC will be provided.

Technical Working Group (TWG) will also be identified to work closely with the implementation group in each five Mekong counties. The TWG consists of subject experts in area of agriculture supply chain, renewable energy and cold chain management. The TWG will provide inputs and guidance to the pilot activity implementation group, assess progress of the project and provide feedback to the project implementation.

D.2. Hybrid Forum to reflect and synthesize the project activities including consultation for policy recommendation

One day synthesis and evaluation (S&E) workshop will be organized for the pilot implementation group. They will have chance to present their outputs and share the learning/working experience with others. Lessons learned and practical experiences from the actual applications will be shared and innovative knowledge and skills will emerge and become institutionalized. The S&E will also provide policy recommendations for the national government to continue the sustainable and smart technology for agriculture supply chain development efforts in their respective countries.

D.3. Final Evaluation

To assess the outcomes and results of the one and half year project period, an end of project evaluation will be conducted. Way forward and recommendations will be provided to the Mekong countries to continue the efforts on sustainable and smart technology for agriculture supply chain development. The evaluation will provide an exit strategy and policy suggestions which will be shared with the Technical Working Group and PSC to obtain their support and commitment to continue and expand the project results.

- **Activity Approach**

For the training component, case studies, simulation exercises, and best practices are to be drawn and tailored to the Mekong countries contexts and will focus on practical knowledge, adult learning principles and real case studies. The training will adopt a participatory approach and will be linked to the ground realities of the Mekong countries. The course will incorporate concrete actions for follow-up activities after training is completed. The participants (to be nominated by implementing partners in five Mekong counties) will undergo three progressive phases of "learning phase, knowledge application phase and knowledge transfer phase"

Learning Phase	Each training module will start with the participatory training sessions where concerned trainees are trained on the concepts, techniques, tools and effective strategies to build up capacities in trade policy development. At this cognitive phase, learner-centered instruction applied where the trainer is a leader of a community of learners, devising ways to promote inquiry, higher order thinking,

	problem solving, higher levels of literacy and engagement. This is a conceptualizing stage which requires processing and drawing on a rich knowledge base of content, methods appropriate to the content, and technology appropriate to the content.
Knowledge Application Phase	This competency-based module has been classified as a form of work-based learning. Immediately, after the new skills/knowledge have been acquired, the trainees will then carry out their corresponding assignments, e.g. after completing deliberation on the concept and tools for "Sustainable and Smart Technology for Agriculture Supply Chain", participants will be given assignments to identify, design a particular activity in groups in their respective country A four-month work-based assignment will be designed and implemented by the participants. At the end of the training, each participant will develop country-wide pilot activity as action plan to transfer newly acquired knowledge into practice back at their worksites. This application or "doing" (psychomotor) enables the learner to apply the ideas and concepts expressed in cognitive objectives. During this phase, resource persons and MI trainers will provide on-line and on-site technical support via MI supported internet portal and/or site visits.
Knowledge Transfer Phase or Synthesis and Evaluation Workshop	One day synthesis and evaluation workshop will be organized at the end of the transferring phase. The trainee as country-wide will have chance to present their outputs and share the learning/working experience with others. Lessons learned and practical experiences from the actual applications will be shared and innovative knowledge and skills will emerge and become institutionalized.

Virtual Training Delivery Method

Majority the training is designed as the virtual delivery method that covers following aspect;

- The virtual training will be held over one or two weeks with 35 hours of live online sessions delivered by the MI organizing Team and resource persons/experts with the aid of online power point presentations, videos, simulation techniques, whiteboards, survey techniques, role play etc. A suitable meeting application (such as Microsoft Teams or Zoom) will be chosen for conducting the live online sessions;
- Live online training sessions will be combined with self-paced learning - this will be off-line learning by the participants based on materials distributed by the MI Organizing Team (when the participants can devote the duration and time on materials as they wish, as per their convenience);
- In addition, the training sessions will include individual/group assignments, online group work and discussions, live online group presentations. More time will be given for group work and discussions (duration - half to full days) than that in onsite training, to accommodate the fact that participants will not be in the same physical location so will need more time to coordinate among themselves and carry out group work and discussions;

- Pre-training materials and, additional training materials and references while the online training sessions are in progress will be distributed by the MI Team;
- MI Organizing Team will conduct a pre-training survey, daily feedback of the participants on the live sessions and final evaluation of the training/workshop through online survey methods (such as Survey Monkey). To ensure full participation and attention, the evaluations and attendance record will be summarized/counted by the MI Team;
- Well-equipped meeting rooms (including IT support) will be provided for conducting both live contact sessions and monitoring group work and discussions by the MI team;
- More days will be needed for each consultant/expert and MI team for the online training as experts and MI team will be engaged for pre-training preparations, conducting live contact sessions for up to 3 hours a day, guidance and monitoring of group work and discussions for half to full day, arranging the logistics of the online sessions, coordination with the team and preparing the report of the training;
- At the end of the online training sessions, certificates of completion will be awarded to the training participants;
- The number of participants for each training will be 30.
- Adjustments will be made within the broad methodology, as described above, depending on factors such as the quality of internet connections of participants, evolving situation of the pandemic etc.

- **Potential Partners**

Component A
Each agency will help in providing information for the assessment and also provide support to smallholder producers. They are

- Cambodia Ministry of Agriculture, Forestry and Fisheries (MAFF)
- Lao Ministry of Agriculture and Forestry (MAF)
- Myanmar Ministry of Agriculture, Livestock and Irrigation (MOALI)
- Myanmar Fruit, Flower and Vegetable Producer and Exporter Association (MFVP)
- Vietnam Ministry of Agriculture and Rural Development (MARD)
- Ministry of Agriculture (e.g. Thailand, Philippines) will share their knowledge and experiences in the capacity building activities and workshops.

Component B

- Ministry of Mines and Energy, Cambodia
- Ministry of Energy and Mine, Lao PDR
- Ministry of Electricity and Energy, Myanmar
- Ministry of Energy, Thailand
- Ministry of Industry and Trade, Vietnam
- Renewable energy providers for agricultural product production, processing and distribution in Mekong countries

Component C

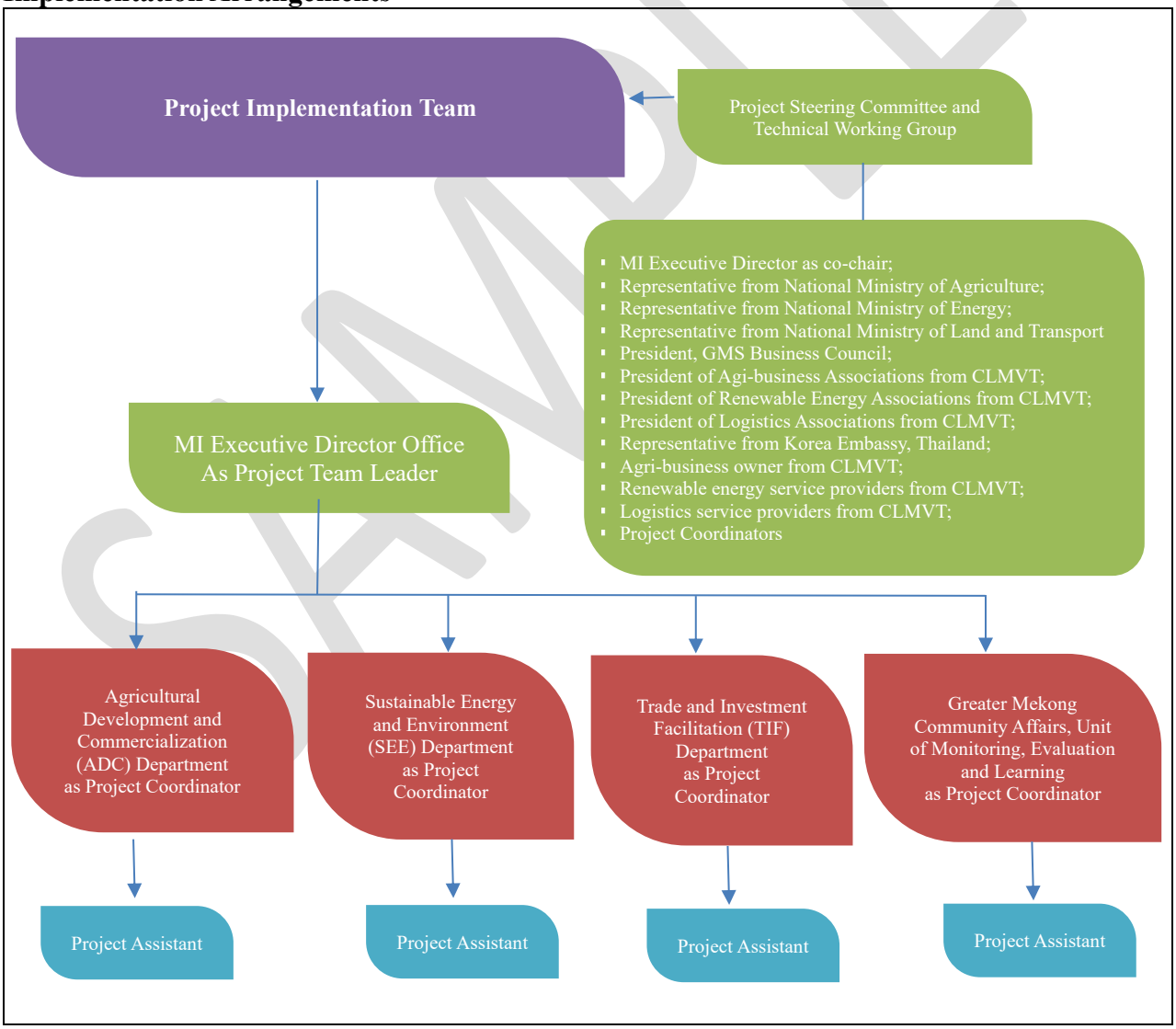
- Ministry of Land Transport and related departments in cold chain management;
- GMS – Freight Transport Association (GMS-FRETA)
- National Logistics and Trucking Associations
- Korea Transport Institute.

- **Role of the Partners and Implementation Arrangement**

The project will be implemented by thematic areas of Mekong Institute namely Agricultural Development and Commercialization (ADC), Trade and Investment Facilitation (TIF), Sustainable Energy and Environment (SEE) and Unit of Monitoring, Evaluation and Learning of Greater Mekong Community Affairs (GMCA). These departments have experience in implementing large scale capacity building projects related to agriculture, trade, transportation and logistics management, business development and energy integration.

The project will work closely with the multi-stakeholders in the government and private sector in Cambodia, Lao PDR, Myanmar, Thailand and Vietnam including National Ministries of Agriculture, Land and Transport, Energy and Environment in all the five Mekong countries.

Implementation Arrangements



MI as the project proponent will set up a dedicated Project Implementation Team (PIT) comprising of a Team Leader assisted by three Project Coordinators and supported by three Project Assistants. Adequate administrative and logistical support will be provided to the project team in a timely manner by various MI corporate units.

The Project Steering Committee (PSC) will be formed comprising of senior officials from the national Ministries of Agriculture, Land and Transport and Energy and business associations and service providers related to agi-business, logistics and energy to provide necessary direction to the project team on the project strategies and deliverables to ensure that activities in the project are implemented as planned. Role and responsibilities of the PSC will be provided. In addition, a Technical Working Group (TWG) will be identified to provide technical advices together with the subject experts, work closely with the implementation group in each five Mekong countries and inputs to formulate the renewable energy of cold chain for agricultural commodities and capacity building activities. The TWG comprises of three parties' bodies involved in agri-business supply chain, renewable energy and cold chain management from five Mekong counties. They also will assess progress of the project and provide feedback of the pilot implementing activity to the PSC.

Subject experts from Korea and the region will be commissioned to develop content and deliver the specific task (training curriculum development, training delivery, evaluations etc.) and to co-work with the project implementation team.

- **Target Group**

The participants will be government officials from National Ministries of Agriculture, Land and Transport, Energy and Environment, agri-business owners, renewable energy and logistics service providers in Cambodia, Lao PDR, Myanmar, Thailand and Vietnam.

For the training component, the total number of participants of the four face to face and virtual trainings to be delivered in the first year will be 108 participants. They will then act as project intermediaries who will apply their newly acquired skills in their work places and replicate the training modules and design pilot implementation activity as action plan for implementing the activity at national and/or local levels to create a critical mass of agricultural supply chain professionals in the Mekong countries.

- **Activity Plan**

Year I: (December 2021 – November 2022)

D.1 Inception workshop including formation and meetings of the project steering committee, technical working group (1 activity; 6 participants from Mekong countries, Korea -1, MI 4, international experts – 3);

A.1 Assessment study on smart technology for agriculture production supply chain in Mekong countries (1 study in the Mekong counties);

A.2. Consultative/stakeholder workshops in Mekong counties (4 workshops; 1 each in the CLMV counties);

B.1 Country situation study on smart energy technology for agriculture supply chain the Mekong countries (1 study in the Mekong counties);

C.1 Country situation study on smart logistics technology readiness for agricultural supply chain in Mekong countries (1 study in the Mekong counties);
C.2. Dissemination Workshop on Country Situation Studies in Mekong countries for components B.1 and C.1 (1 workshop; 6 participants from Mekong countries, Korea -1, MI 4, international experts – 2);
A.3. Regional Training on Sustainable and Smart Production Technologies (1 activity; 6 participants/country – 5 days face to face training);
A.4. Regional Training on Postharvest (1 activity; 6 participants/country – 5 days face to face training);
B.2. Hybrid training on renewable energy and practice for agriculture supply chain (1 activity; 6 participants/country – 5 days virtual training);
B.3. Pilot implementing activity in Mekong countries with technical and financial assistance (1 pilot activity / country – 4 months with technical and financial assistance);
C.3: Hybrid training on smart logistics technology for agriculture supply chain (1 activity; 6 participants/country – 5 days virtual training);
C.4. Pilot implementing activity in Mekong countries and technical and financial assistance (1 pilot activity / country – 4 months with technical and financial assistance);
B.4 and C.5. Workshop on supplement knowledge topic/issue required during implementing the pilot activity (2 workshops/country – 1 day virtual workshop);

Year 2 (0.6 months) : (December 2022 – May 2023)

D.2. Forum to reflect and synthesis the project activities including consultation for policy recommendation (1 activity; 18 participants/country, PSC members, Korea and MI – 1 day virtual forum);
D.3. End term evaluation (1 activity; information and data collection through survey, focus group discussion, key informant interview with stakeholders and project beneficiaries)

Value Added for the MKCF Involvement/Impact Potential

The proposed project is aligned with the Plan of Action (POA) 2021-2025 of the Mekong-Republic of Korea Cooperation for the implementation of Mekong-Han River Declaration which will serve to specific goals and measures for the next five years (2021-2025) to build a Partnership for People, Prosperity and Peace. The project's components contribute to the POA of the Mekong -Republic of Korea Cooperation as follows;

- Strengthened cooperation for sustainable development of smart agriculture by sharing best-practices, experiences, information and technologies and a scoping assessment to establish a Smart Agriculture center (3.3.4);
- Enhanced cooperation for stronger energy security and more efficient, sustainable and environmentally friendly use of energy in the region (3.4.4);
- Explore joint efforts to promote digital economy by application of emerging technologies to production, consumption and distribution system and promote digital connectivity, digital infrastructure in the region (3.5.2);
- Support the development of green industries and green cities, and enhance cooperation in green economy, green building, energy efficiency, energy conservation, circular economy, sustainable consumption and production, eco-labelling and environmental protection (3.6.6).

Exit Strategy
The sustainability of the project is ensured through the collaborative effort to enhance ownership among the Mekong countries of the results and outcomes of the projects. The organizations in the government, private sector and academe are involved in all the stages of the project which is supported through the formation of Formation of the Project Steering Committee Member (PSC) and Technical Working Group (TWG). The PSC comprises of senior officials from the national Ministries of Agriculture, Land and Transport and Energy and business associations and service providers related to agi-business, logistics and energy which will be tasked to provide necessary direction to the project team on the project strategies and deliverables to ensure that activities in the project are implemented as planned. The TWG consists of key experts in areas of agriculture supply chain, renewable energy and cold chain management. The TWG will provide inputs and guidance to the pilot activity implementation group, assess progress of the project and provide feedback to the project implementation. The TWG will meet to review the progress and outcomes of the project and discuss the ways and means to continue the project activities in their respective countries on completion of the project. The country situation studies and end of project evaluation will provide the necessary directions to monitor the progress and measure the results and outcomes. The exit strategy will put in place in the end of project evaluation results to be shared in the final year of the project with the TPSC and TWG to carry forward the results of the project in the Mekong countries development plans; private sector to expand investment in the identified areas and universities/institute to adopt the training materials in their academic curriculum.

Outcomes, Outputs, Activities and Inputs at Project level					
Expected Result	**Indicator**	**Means of Verification**	**Target**		**Remarks**
			Mid-term	Final	
Project outcomes					
Short -term outcomes					
Enhanced knowledge and capacity of relevant stakeholder on technology utilization for agriculture supply chain.	Percentage of people who achieve 70% or higher in post-tests	Final workshop / training evaluation reports	Nil	40% of government officials, agri-business owner, energy and logistics provider (project beneficiaries)	
Long -term outcomes					

- Reduced cost of production - Improved productivity and quality - Increased energy efficiency in agricultural supply chain. - Adoption of smart and sustainable logistics technology in agriculture supply chain.	- Percentage of production cost reduced - Percentage of productivity increased - Percentage of postharvest loss reduced - Applying knowledge and skill on smart technology utilization for agriculture supply chain.	Final evaluation report Evaluation form	Nil	- At least 10 percent production cost reduced - At least 10 percent productivity increased - At least 10 percent postharvest loss reduced	
Project outputs (that contribute to outcomes)					
A1, B1 and C1 - Assessment study / country situation study on smart technology for agriculture supply chain in Mekong countries	No. of quality and completeness of the survey	Study Reports	Nil	- 3 assessment study conducted	
A2, C2 Validation Workshops / Dissemination workshop on country situation studies in Mekong countries for activities B1 and C1	No. of the workshop conducted	Workshop Reports		5 national workshop reports - (4 national workshops in CLMV countries and 1 regional workshop on country situation studies in Mekong countries for activities	Comprehensive report on validation workshop and dissemination workshop will be provided.

				B1 and C1 conducted	
A3-1 Regional Training on Sustainable and Smart Production Technologies	- No. of training conducted - No. of participants received the training.	Training Completion Report		- 1 training conducted - 24 participants from CLMV countries received the training	
A3-2 Regional Training on Postharvest	- No. of training conducted - No. of participants received the training	Training Completion Report		- 1 training conducted - 24 participants from CLMV countries received the training	
B2 Hybrid training on renewable energy and practice for agriculture supply chain	- No. of participants completes the training. - No. of participants improved in skill& knowledge	Training conducted		1 report	
C3 Hybrid training on smart logistics technology for agriculture supply chain	- No. of participants completed the training. - No. of participants improved in skill& knowledge	Training conducted		1 report	
B3 and C4 Pilot implementing activity in Mekong countries with technical and financial assistance	- No. of participants completes the implementation of pilot activity. - No. of pilot activity implemented	Joint Pilot activity implemented		1 report	
B4 and C 5 Workshop on supplement knowledge topic/issue required during implementing the	- % of participants completes the implementation of pilot activity. - % of participants attended the workshop.	Supplement knowledge topic/issue organized		10 reports	1 comprehensive report of the workshop on supplement knowledge topic/issue will

pilot activity.	- No. of pilot activity implemented				be provided.
D.1 Inception workshop including formation and meetings of the project steering committee, technical working group;	- No. of members attended the meeting	Meeting organized		1 report	
D.2. Forum to reflect and synthesis the project activities including consultation for policy recommendation	- No. of participants and members attended, - Policy recommendations provided - Policy paper adopted and shared among Mekong countries	Forum organized		1 report	
D.3. End term evaluation.	- Quality and completeness of the evaluation - No. of respondents - Best practices, lessons learned documented - Results shared	Final evaluation conducted		1 report	

Activities	**Description**
D.1 Inception workshop including formation and meetings of the project steering committee, technical working group;	The inception workshop aims to introduce the project goals, objectives and activities together with an indicative work plan to the members of the Project Steering Committee (PSC) and stakeholders and seeks their contribution and support to the Project and its implementation progress towards the sustainable achievement. Formation of the Project Steering Committee Member At the inception workshop, representatives of the project's stakeholders from public and private sectors in five Mekong countries will be nominated and attended the inception workshop as the Project Steering Committee members. The PSC members role and responsibilities will be introduced to acquire necessary support to the project including the local partners for effective collaboration and coordination with the Project team to successfully implement

	the project activities. Technical Working Group (TWG) will be identified to work closely with the implementation group in each five Mekong counties. The TWG consists of key experts in areas of agriculture supply chain, renewable energy and cold chain management. The TWG will provide inputs and guidance to the pilot activity implementation group, assess progress of the project and provide feedback to th e project implementation. The TWG will meet to review the progress and outcomes of the project and discuss the ways and means to continue the project activities in their respective countries on completion of the project.
A1, B1 and C1 Assessment study / country situation study on smart technology for agriculture supply chain in Mekong countries	Under activity A1, the project will conduct an assessment study to increase comprehensive understanding of situation including key challenges, limitations, existing sustainable and smart agricultural technology availability/adoption, etc.) and prioritize/identify area of focus for project piloting in Cambodia, Lao PDR, Myanmar, and Vietnam. The results of the assessment will be shared to relevant stakeholders for feedbacks in validation workshop in each country. While activities on B1 and C1, the study will be conducted to understand the smart energy and logistics technologies readiness and adoption of the technologies for agriculture supply chain including identification of challenges, limitations, and various interests of different stakeholders - companies, government, associations, customers/end-users, and other involved stakeholders in the energy and logistics sector. The findings will be used to further decide the capacity building activities, identify a group for implementing the pilot activity as Action Plans (APs) on selected agriculture product and policy recommendation.
A2, C2 Validation Workshops / Dissemination workshop on country situation studies in Mekong countries for activities A1, B1 and C1	Validation workshops under activity A1, B1 and C1 will be conducted to share and confirm the results of assessment study to relevant stakeholders. These will also ensure the engagement of stakeholders who are the direct and indirect beneficiary.
A3-1 and A3-2 Regional Training on Sustainable and Smart Production Technologies and Regional Training on Postharvest	The curriculum training package will be developed for conducting two regional capacity building activities on sustainable and smart agriculture production technologies and postharvest management. The trainings will be provided to stakeholders involved in selected agriculture commodity value chains in Cambodia, Lao PDR, Myanmar, and Vietnam. Subsequently, national workshops will be organized in each Mekong country. At least twenty-four government officials and private representatives for each training will be received knowledge and improve skills on agriculture production technologies.

B2 and C3 Hybrid trainings on renewable energy and practice for agriculture supply chain and smart logistics technology for agriculture supply chain	Two hybrid trainings on renewable energy and practice and smart logistics technology for agriculture supply chain will be conducted for 30 participants per training. They are representatives from national level agencies, agriculture producers, renewable energy and logistics service providers involved in the agriculture supply chain development.
A3/4, B3 and C4 Pilot implementing activity in Mekong countries with technical and financial assistance	The pilot activities on renewable energy and cold chain management of the logistics to support selected agriculture commodity supply chain will be implemented in each five Mekong countries. The pilot activity will involve three parties/stakeholders namely selected agriculture product group, logistics business owner and renewal energy provider. Technical and financial assistance will be provided to the pilot implementation group.
B4 and C 5 Workshop on supplement knowledge topic/issue required during implementing the pilot activity.	The workshop aims to provide further support to the implementation of the pilot activity in each Mekong country. The technical assistance especially the solutions on solar energy for cold storage system, waste to energy, energy equipment safety management, cold chain management, Good Storage Practices (GSP) and Good Distribution Practices (GDP), traceability system, market access and linkage will be incorporated and provided in deep with the implementation group through the workshops.
D.2. Hybrid Forum to reflect and synthesis the project activities including consultation for policy recommendation;	The synthesis and evaluation workshop will be organized for the pilot implementation group. They will have chance to present their outputs and share the learning/working experience with others. Lessons learned and practical experiences from the actual applications will be shared and innovative knowledge and skills will emerge and become institutionalized.
D.3. End term evaluation.	To assess the outcomes and results of one and haft year project, an end of project evaluation will be conducted. Way forward and policy recommendations will be provided to the Mekong countries to continue the efforts on Sustainable and Smart Agricultural Supply Chain Development in Mekong Countries. The end of project evaluation will be conducted in 5 Mekong countries (CLMVT).

Indicative Work Plan

	MONTH																							
TASK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Output 1.	Introduced the project goals, objectives and activities together with an indicative work plan to the members of the Project Steering Committee (PSC) and stakeholders and seeks their contribution and support to the Project and its implementation progress towards the sustainable achievement																							
	X	X																						
Activity 1.1.	D.1. Inception Workshop with Formation and Meeting of the Project Steering Committee. - Budget USD																							
	X	X																						
Output 2.	Conducted assessment of situation on smart technology for agriculture supply chain in Mekong countries and disseminated the study to stakeholders and beneficiaries in Mekong countries																							
			X	X	X	X	X	X	X															
Activity 2.1	A.1 Assessment study on smart technology for agriculture supply chain in Mekong countries; -Budget USD																							
			X	X	X	X	X																	
Activity 2.2	A.2. Consultative/stakeholder workshops in CLMV -Budget USD																							
								X	X															
Activity 2.3	B.1 Country situation study on smart energy technology for agriculture supply chain the Mekong countries; -Budget USD																							
				X	X	X	X																	
Activity 2.4	C.1 Country situation study on smart logistics technology readiness for agricultural supply chain in Mekong countries; -Budget USD																							
			X	X	X	X																		

	MONTH																							
TASK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Activity 2.5	C.2. Dissemination Workshop on Country Situation Studies in Mekong countries for activities B1 and C1; -Budget USD																							
								X																
Output 3.	Implemented capacity building activities to relevant stakeholders																							
										X	X	X	X											
Activity 3.1	A.3. Regional Training on Sustainable and Smart Production Technologies; -Budget USD																							
												X												
Activity 3.2	A.4. Regional Training on Postharvest; -Budget USD																							
													X											
Activity 3.3	B.2. Hybrid training on renewable energy and practice for agriculture supply chain; -Budget USD																							
											X	X												
Activity 3.4	C.3: Hybrid training on smart logistics technology for agriculture supply chain; -Budget USD																							
										X	X													
Output 4.	Developed country-wide pilot activity as action plan to transfer newly acquired knowledge into practice back at their worksites.																							
													X	X	X	X								
Activity 4.1	B.3. Pilot implementing activity in Mekong countries with technical and financial assistance under activity B.2; -Budget USD																							
													X	X	X	X								
Activity 4.2	C.4. Pilot implementing activity in Mekong countries and technical and financial assistance under activity C.3;- Budget USD																							
													X	X	X	X								

	MONTH																							
TASK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Output 5.	Conducted workshop on supplement knowledge topic/issue required during implementing the pilot activity																							
													X	X	X	X								
Activity 5.1	B.4. Workshop on supplement knowledge topic/issue required during implementing the pilot activity under activity B.3. -Budget USD																							
													X	X	X	X								
Activity 5.2	C.5. Workshop on supplement knowledge topic/issue required during implementing the pilot activity under activity C.4. -Budget USD																							
													X	X	X	X								
Output 6.	Organized the synthesis and evaluation workshop for the pilot implementation groups for sharing outputs and learni ng/working experience with others, lessons learned and practical experiences from the actual applications.																							
																	X							
Activity 6.1	D.2. Hybrid Forum to reflect and synthesis the project activities including consultation for policy recommendations under activities A.3, A.4, B.3 and C.4; -Budget USD																							
																	X							
Output 7.	Assessed the outcomes and results of the one and haft year project period.																							
																		X						
Activity 6.1	D.3. End term evaluation. -Budget USD																							
																		X						

TERMS OF REFERENCE OF KEY PROJECT CONTRACTED PERSONNEL

No.	Name	Organization	Position	e-mail / phone	Remarks
1					TOR No. 1
2					TOR No.2 & 3
3					TOR No. 4
4					TOR No. 4
5					TOR No. 5
6					TOR No. 5
7					TOR No. 5
8					TOR No. 6
9					TOR No. 7

* Note: Please add more rows when needed.

TERMS OF REFERENCE (1)

	TOR No. 1
Position	Project Executive
Job Level	Executive Director
Duty Station	Khon Kaen
Responsibilities	Overall supervision of the project ensuring timely delivery of the work outputs, coordinate with project stakeholders, provide inputs on design and delivery of the project activities, budget and financial management, and quality reporting.
Requirements	▪ Project management and Leader Skill ▪ Experience in Mekong region especially in Agricultural Supply Chain Development in Mekong Countries ▪ Networking and Coordination with agencies involved in Sustainable and Smart Agricultural Supply Chain Development in Mekong Countries
Date	01/12/2021 to 31/05/2023

	TOR No. 2
Position	Technical Consultant
Job Level	External resource person
Duty Station	Home based and Khon Kaen
Responsibilities	▪ Responsible for Design and delivery the project activities under components on - Sustainable and smart technology for agriculture production supply chain - Energy efficiency in agriculture supply chain - Smart logistics management for agriculture supply chain - Monitoring and Evaluation ▪ Training/coaching the pilot implementation activities.
Requirements	Experienced Trainer and development professional with sound knowledge on Sustainable and Smart Agricultural Supply Chain Development in Mekong Countries with experience of working in the Mekong region
Date	Intermittent basis

	TOR No.3
Position	Technical Consultant
Job Level	External resource person
Duty Station	Home based and Khon Kaen
Responsibilities	▪ Design and conduct the Country situation studies ▪ Responsible for Design and delivery trainings curriculum ▪ Facilitate the regional Forums
Requirements	Experienced Trainer and development professional with sound knowledge on Sustainable and Smart Agricultural Supply Chain Development in Mekong Countries with experience of working in the Mekong region
Date	Intermittent basis

	TOR No. 4
Position	Project Team Leader / Manager
Job Level	Head of Department
Duty Station	Khon Kaen
Responsibilities	Coordinate project delivery specifications to ensure that high quality capacity building contents and methodologies are delivered together with qualified resource persons (session planning, resource persons, field visits sites, facilitators, on-line coaching)
Requirements	Experience in project management and coordination in the Mekong region
Date	01/12/2021 to 31/05/2023

	TOR No. 5
Position	Project Coordinator
Job Level	Program Manager
Duty Station	Khon Kaen
Responsibilities	▪ Coordinate project delivery specifications to ensure that high quality capacity building contents and methodologies are delivered together with qualified resource persons (session planning, resource persons, field visits sites, facilitators, on-line coaching) ▪ Facilitate the training and coaching the implementation activity.
Requirements	Experience in project management and coordination in the Mekong region
Date	01/12/2021 to 31/05/2023

	TOR No. 6
Position	Project Monitoring Evaluation Manager
Job Level	Monitoring, Evaluation and Learning Specialist
Duty Station	Khon Kaen
Responsibilities	▪ Project design and conduct the monitoring and evaluation ▪ Facilitate the training and coaching the implementation activity.
Requirements	Experience in project management and coordination in the Mekong region
Date	01/12/2021 to 31/05/2023

	TOR No. 7
Position	Project Assistant
Job Level	Program Officer
Duty Station	Khon Kaen
Responsibilities	▪ Coordinate with consultants and Team Leader on curriculum preparation and administration (preparing contracts for content providers, processing payment requests, supervision of contract) ▪ Prepare and send participants' invitation letters, participants' manuals, and advanced training program materials ▪ In coordination with course trainers/resource persons, prepare resources materials for distribution to course participants. ▪ Document project activities (workshop reports, minutes, etc.) and disseminate program documents after editing to participants and partner organizations.
Requirements	Experience in project management and coordination in the Mekong region
Date	01/12/2021 to 31/05/2023