STDF | STANDARDS and TRADE DEVELOPMENT FACILITY

Safer spices: boosting food safety and market access for the peppercorn value chain in Viet Nam, Lao PDR and Cambodia

STDF/PG/619

Le Thi Luc, a dedicated farmer from Ba Ria Vung Tau, Vietnam, tending to her black pepper plantation with care and expertise. Her work reflects the resilience and commitment of local farmers in sustainable agriculture.

END OF PROJECT ASSESSMENT REPORT

January 2025

Evaluation Team

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PROJECT INFORMATION

STDF/PG/619

Title

Safer spices: boosting food safety and market access for the peppercorn value chain in Viet Nam, Lao PDR and Cambodia

Implementing agency

CAB International (CABI)

Partners

Ministry of Agriculture and Rural Development (MARD), Viet Nam
The Western Highlands Agriculture and Forestry Science Institute (WASI), Viet Nam
Ministry of Agriculture, Forestry and Fisheries (MAFF), Cambodia
Cambodian Pepper and Spices Federation (CPSF)
Ministry of Agriculture and Forestry (MAF), Lao PDR
Lao Farmers Network (LFN)
ETU Green Company

Start date

01 October 2020

End date

31 March 2024

Beneficiary/ies

Viet Nam, Cambodia, Lao PDR

Budget (USD)

Project Total Value:	917,846
STDF contribution:	711,096
Other contribution:	206,750
	Insert total co-financing (if applicable)

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LIST OF ABBREVIATIONS

ASEAN:	Association of Southeast Asian Nations
CABI:	Centre for Agriculture and Bioscience International
CoP:	Code of Practice
CPSF:	Cambodian Pepper and Spices Federation
CUSP:	Consultancy for Uplifting Sustainable Policies
DOA:	Department of Agriculture (Lao PDR)
ERB:	Ethical Review Board
EU:	European Union
FAO:	Food and Agriculture Organization of the United Nations
FGD:	Focus Group Discussion
G-PPP:	Grassroots Public-Private Partnership
GDP:	Gross Domestic Product
HACCP:	Hazard Analysis and Critical Control Points
IFOAM:	International Federation of Organic Agriculture Movements
IPM:	Integrated Pest Management
KIIs:	Key Informant Interviews
LFN:	Lao Farmers Network
MAF:	Ministry of Agriculture and Forestry (Lao PDR)
MAFF:	Ministry of Agriculture Forestry and Fisheries (Cambodia)
MARD:	Ministry of Agriculture and Rural Development (Viet Nam)
MRL:	Maximum Residue Limits
M&E:	Monitoring and Evaluation
NGO:	Non-Governmental Organisation
PGS:	Participatory Guarantee System
PSC:	Project Steering Committee
PSCs:	Project Steering Committees
SPS:	Sanitary and Phytosanitary
STDF:	Standards and Trade Development Facility
UNDP:	United Nations Development Programme
USD:	United States Dollar
USA:	United States of America
WASI:	Western Highlands Agriculture and Forestry Science Institute (Viet Nam)

1. EXECUTIVE SUMMARY

The project, "Safer Spices: Boosting Food Safety and Market Access for the Peppercorn Value Chain in Viet Nam, Lao PDR, and Cambodia", funded by the Standards and Trade Development Facility (STDF) and implemented by CABI, aimed to address critical challenges in the peppercorn sector. It focused on enhancing compliance with Sanitary and Phytosanitary (SPS) standards, improving market access, and promoting sustainable agricultural practices to benefit smallholder farmers and stakeholders across the three countries.

The project demonstrated strong relevance by aligning its objectives with national, regional, and international priorities. It addressed pressing SPS challenges, such as pesticide residues and lack of traceability, which are critical barriers to accessing high-value international markets. The tailored interventions, including a locally adapted Code of Practice (CoP) and Participatory Guarantee System (PGS), ensured that the solutions were context-specific and responsive to the needs of peppercorn producers. These efforts complemented national strategies like Viet Nam's Integrated Pest Management Action Plan, Cambodia's Strategic Plan for Agriculture and Water, and the ASEAN-GAP regional framework.

The effectiveness of the project was evident in the extent to which its objectives were achieved across all three countries. The project successfully developed and piloted a tailored CoP and PGS framework, addressing peppercorn producers' specific SPS compliance needs. Farmers in all three countries demonstrated significant improvements in good agricultural practices (GAP), reducing pesticide residues and contamination levels. For example, over 50% of targeted farmer groups achieved a 45% reduction in microbial contaminants, reflecting the project's success in meeting its food safety goals. Furthermore, the project strengthened market linkages by facilitating partnerships with private sector stakeholders, enabling farmers to understand better and meet international market requirements.

The project maintained high efficiency despite challenges such as the COVID-19 pandemic, which disrupted training and field activities. Adaptive measures, including remote training and digital knowledge dissemination, ensured the continuation of key activities. Resources were efficiently allocated, with participating farmers receiving targeted support to implement improved farming practices. Stakeholder feedback highlighted the effective use of resources and timely management of project activities.

The impact of the project extended beyond direct beneficiaries. Participating farmers saw significant improvements in income due to increased yields and higher prices compared to the pre-and post-project between 2021 and 2024. For instance, average prices per metric tonne of peppercorn rose from USD 1,498 to USD 7,000 in Viet Nam, USD 1,590 to USD 3,920 in Cambodia, and USD 1,870 to USD 4,343 in Lao PDR. Similarly, yields improved in Cambodia (from 2.5 KMT to 2.89 KMT) and Viet Nam (from 3.3 KMT to 7.4 KMT), though minimal changes were observed in Lao PDR due to specific local constraints. Broader adoption of sustainable practices by non-participating farmers through informal knowledge sharing amplified the project's reach. Additionally, gender inclusion efforts empowered women farmers, enhancing their participation in decision-making and farm management. The project also improved environmental sustainability by promoting reduced pesticide use and better soil health management.

Coherence was a key strength of the project, as it integrated seamlessly with national and regional initiatives while aligning with international standards. The project ensured that its outcomes were relevant and supported broader agricultural development goals by complementing programmes like ASEAN-GAP and Codex Alimentarius guidelines, particularly the General Principles of Food Hygiene (CXC 1-1969), the Code of Practice for Mycotoxin Reduction in Spices (CXC 78-2017), and Maximum Residue Limits (MRLs) for Pesticides in Spices. These standards guided interventions on food safety, contamination control, and quality compliance, strengthening market access and sustainability. Synergies with local and international stakeholders further strengthened its impact and sustainability.

The project provided key insights for future agricultural initiatives. Effective stakeholder engagement, adaptive management, consistent follow-up, and tailored training were critical to success. Sustainable practices, climate resilience, gender inclusion, capacity-building, and biodiversity conservation were essential for achieving long-term agricultural sustainability. These lessons offer valuable guidance for future programme development.

The project's recommendations emphasise the importance of expanding training programmes, incorporating advanced pest management techniques, and enhancing gender inclusion. Strengthening public-private partnerships and institutionalising the CoP and PGS frameworks across the region will be critical for sustaining the project's outcomes. Additionally, providing farmers with updated tools and market intelligence can help them align with evolving buyer requirements and improve market access.

In conclusion, the project successfully addressed critical SPS challenges and significantly improved the peppercorn value chain in Viet Nam, Lao PDR, and Cambodia. Enhancing food safety compliance, increasing market access, and fostering sustainable practices have laid a robust foundation for long-term agricultural development. The alignment with national, regional, and international priorities ensures that the project's outcomes are well-positioned for scalability and sustained impact, benefitting the direct participants and the wider agricultural community.

2. INTRODUCTION

2.1 Purpose and Context

The peppercorn sector in Southeast Asia, particularly in Viet Nam, Cambodia, and Lao PDR, is vital to the agricultural economy. Peppercorn is a major export crop, significantly contributing to Viet Nam's gross domestic product and becoming increasingly important in Cambodia and Lao PDR. The sector supports the livelihoods of approximately 60,000 smallholder farmers in Viet Nam, 25,000 in Cambodia, and 1,500 in Lao PDR, playing a crucial role in rural economic development. However, non-compliance with Sanitary and Phytosanitary (SPS) standards has posed significant challenges, threatening the ability of these countries to access high-value international markets.

Peppercorn is a high-value crop with robust international demand. As one of the largest producers and exporters globally, Viet Nam produced 252.2 thousand metric tonnes in 2022 and exported 114,424 tonnes valued at USD 493.1 million.[1] Similarly, Cambodia produced 17,000 tonnes in 2022, of which 6,000 were exported.[2] While smaller in scale, the Lao PDR produced 1,500 tonnes and exported 1,050 tonnes in the same year.[3] The sector's growth potential makes it a key focus for agricultural development initiatives in these countries.

The primary deficiencies in the peppercorn sector include poor adherence to SPS standards, inadequate farming practices, and limited knowledge of international market requirements. These deficiencies have led to:

- **Food Safety Concerns:** The presence of pesticide residues and other contaminants has raised food safety issues, leading to the rejection of exports in high-value markets such as the EU, USA, and Japan.[4]
- **Market Access Barriers:** Non-compliance with SPS standards has resulted in limited market access, reducing the competitiveness of peppercorn from these countries in the global market.[5]
- **Economic Impact on Farmers:** Smallholder farmers, who form the backbone of the peppercorn industry, face economic instability due to fluctuating market access and prices influenced by non-compliance penalties.[6]

2.1.1 SPS Challenges Addressed by the Project

The project aimed to address several critical SPS challenges:

- **Pesticide Residues:** High levels of pesticide residues in peppercorn posed significant barriers to market access.
- **Contamination and Quality Control:** Issues related to contamination during processing and inconsistent quality control measures affected the overall product quality.

1 Viet Nam Ministry of Agriculture and Rural Development. (2024). Annual report 2024. Hanoi: Ministry of Agriculture and Rural Development (MARD).

2 Cambodian Ministry of Agriculture Forestry and Fisheries. (2023). Trade data 2023. Phnom Penh: Ministry of Agriculture Forestry and Fisheries (MAFF).

3 Lao Ministry of Agriculture and Forestry. (2023). Trade report 2023. Vientiane: Ministry of Agriculture and Forestry (MAF).

4 Standards and Trade Development Facility. (2023). Trade barriers report 2023. Geneva: STDF.

5 Food and Agriculture Organization of the United Nations. (2023). FAO regional trade assessment 2023. Rome: FAO.

6 CUSP Evaluation Team. (2024). Interviews with farmers: End of project assessment CABI-STDF Project.

- **Traceability:** The lack of traceability systems hinders the ability to ensure compliance with international standards and respond to market demands.

2.1.2 Proposed Solutions

A multifaceted approach was implemented to address the challenges faced by the project, incorporating several strategic initiatives. A Code of Practice (CoP), grounded in Codex and Good Agricultural Practices (GAP) standards, was developed specifically for Viet Nam, Cambodia, and Lao PDR. This CoP provided practical guidelines tailored to the unique conditions of each country, ensuring relevance and applicability. Complementing this, a Participatory Guarantee System (PGS), inspired by the IFOAM model, was introduced to facilitate community-based verification of CoP compliance. This system fostered trust and collaboration among stakeholders, enhancing the credibility and effectiveness of the guidelines. The project also established a Grassroots Public-Private Partnership (G-PPP) model, emphasising social cohesion, peer-to-peer learning, and community responsibility. This approach motivated collective action among local partners, farmer groups, and buyer companies, driving shared commitment to sustainable practices. Capacity building was a core component, with training workshops and materials provided to farmers, extension workers, and private sector partners to enhance farming practices and SPS compliance. Additionally, the project focused on strengthening market linkages by facilitating dialogues between farmers and market players to define quality and supply criteria, thereby improving market access and fostering sustainable trade relationships. Finally, an electronic knowledge repository was created as a centralised platform for storing project documents and resources. This repository facilitated timely updates and increased visibility for partners and stakeholders, supporting the project's overall transparency and communication efforts. The implementation of the Code of Practice (CoP) and Participatory Guarantee System (PGS) was conceived for long-term sustainability.

2.1.3 Logical Framework and Indicators

The project's logical framework included specific impact, outcome, and output indicators to measure success, as outlined in the final evaluation:

Impact Indicators

- Increased value per kilogram of peppercorn produced by groups targeted by the project.
- Demonstration of a roll-out strategy for the sustainable implementation of the Code of Practice (CoP).

Outcome Indicators

- At least 50% of the targeted farmer groups achieve a 45% reduction in the detection of microbial contaminants and excess pesticide residues (MRLs).
- Reduction in rejection percentages and values for peppercorn exports due to non-compliance with SPS standards, aiming for at least a 10% decrease.

Output Indicators

- Development of a tailored Code of Practice (CoP) for village-level pepper producers, collectors, and input providers, completed and piloted in the three target countries.
- Number of training workshops conducted, focusing on implementing the CoP and the Participatory Guarantee System (PGS) and the number of participants trained.
- Creation and dissemination of knowledge resources, including factsheets, guidelines, and electronic resources, available in both local languages and English to support ongoing training and capacity-building efforts.

2.2 Implementing partners

The project, funded by the Standards and Trade Development Facility (STDF), was implemented by the Centre for Agriculture and Bioscience International (CABI) a leading international not-for-profit organisation. CABI coordinated the project activities across the three target countries, Viet Nam, Cambodia, and Lao PDR, to address critical Sanitary and Phytosanitary (SPS) challenges and improve market access for peppercorn producers.

Local partners were selected for their expertise, established networks, and ability to engage with farmer groups effectively. However, several challenges arose during implementation, including

capacity limitations, logistical constraints, and differences in institutional priorities. These challenges were mitigated through tailored capacity-building activities, regular stakeholder consultations, and the establishment of Project Steering Committees (PSCs) to streamline coordination and ensure alignment with project objectives.

In Viet Nam, the key implementing partners included the Western Highlands Agriculture and Forestry Science Institute (WASI) from the Ministry of Agriculture and Rural Development (MARD) and local agricultural extension services. The WASI played a significant role in delivering technical training and supporting the implementation of the Code of Practice (CoP) and Participatory Guarantee System (PGS) approaches. Other key private sector partners included Viet Nam Pepper and Spice Association (VPSA), VietPepper Company and Simexco Co. Ltd., which collaborated closely with farmer groups to implement the CoP and improve production standards.

In Cambodia, the Plant Protection Sanitary and Phytosanitary Department of the General Directorate of Agriculture (PPSPSD-GDA) from the Ministry of Agriculture, Forestry and Fisheries (MAFF) was the primary partner. They were instrumental in organising training sessions and facilitating the adoption of improved farming practices among peppercorn producers. Sela Pepper Company was a key private sector partner, working directly with farmer groups to implement the CoP and improve the quality of their produce for export. Local non-governmental organisations (NGOs) focused on agricultural development and the Cambodian Pepper and Spices Federation (CPSF) also contributed to the project's success by providing additional support and resources.

In Lao PDR, the Department of Agriculture (DOA), Ministry of Agriculture and Forestry (MAF), local Agriculture Extension Departments and the Lao PDR Farmers Network (LFN) were key partners. These organisations collaborated with CABI to conduct training workshops, engage with local peppercorn farmers, and promote sustainable agricultural practices. The DOA in Lao PDR also played a crucial role in facilitating dialogues between farmers and market players to enhance market access and capacity building of farmers to implement CoP and PGS. ETU Green Company was a significant private sector partner, helping to form and support farmer groups in implementing the CoP.

Other stakeholders involved in the project included international consultants and advisors who provided technical expertise and support for project activities and assessments. National and regional agricultural development programmes collaborated with the project to ensure coherence with existing initiatives and policies. These collaborations leveraged local expertise while addressing challenges related to partner capacity and logistical constraints, ensuring the project’s relevance and effectiveness.

The project governance structure was robust and comprehensive, ensuring effective coordination and management of activities. Project Steering Committees (PSCs) were established in each of the three countries, comprising representatives from government agencies, implementing partners, and key stakeholders. These committees were responsible for overseeing project implementation, ensuring alignment with national priorities, and providing strategic guidance. Regular stakeholder consultations through meetings, workshops, and consultations ensured that the project remained responsive to the beneficiaries' needs and priorities.

A Monitoring and Evaluation (M&E) framework was implemented to track progress, measure outcomes, and identify areas for improvement. This framework included regular reporting, field visits, and feedback mechanisms. Effective coordination and communication channels were maintained between CABI, implementing partners, and other stakeholders, ensuring timely information sharing, collaboration, and resolution of challenges encountered during the project.

Overall, the project's governance structure facilitated the integration of diverse perspectives, leveraged local expertise, and ensured the relevance and effectiveness of its interventions, thereby contributing to the successful implementation and achievement of project goals.

2.3 Beneficiaries

Direct Beneficiaries

- Peppercorn Farmers: The primary direct beneficiaries of the project were peppercorn farmers in Viet Nam, Cambodia, and Lao PDR, who benefitted from capacity-building initiatives focused on safe production and sustainable farming techniques. The project was pivotal in

transforming farmers' mindsets, encouraging them to adopt safer and more sustainable practices aligned with international SPS standards. By highlighting the long-term benefits of producing clean, export-ready pepper, the project improved farmers' ability to meet stricter export requirements, leading to better market conditions. As a result, farmers have started commanding higher prices for their products, contributing to increased economic stability and enhanced well-being in farming communities.

- Agricultural Institutions: Local agricultural institutions were key direct beneficiaries, receiving training and resources to disseminate best practices and sustainable farming techniques. These institutions played a crucial role in scaling the adoption of improved practices and ensuring the long-term project by strengthening their capacity to provide technical support and training to farmers.
- Private Sector: Actors, including processors, exporters, and traders, also directly benefitted from the project. Improved SPS compliance within the peppercorn value chain enhanced their access to high-value international markets. The growing international demand for high-quality, safe pepper products incentivised these stakeholders to actively support and collaborate with farmers in implementing sustainable practices.

Indirect Beneficiaries

- Other Farmers (Controlled Group / Spillover Effect Group): Farmers not directly targeted by the project benefitted indirectly from the spillover of improved practices. These farmers adopted safer farming methods influenced by disseminated knowledge and practices among neighbouring communities. This broader adoption of sustainable techniques improved the quality and safety of their produce and supported enhanced economic stability within rural farming regions.
- Traders: Although not primary beneficiaries, local traders indirectly gained from the improved quality of peppercorn produced through the project. The shift toward safety-focused production practices enabled traders to access higher-value markets, fostering alignment with international safety standards and contributing to overall market improvements.

The project targeted peppercorn farmers in Viet Nam, Cambodia, and Lao PDR. It aimed to achieve dual benefits by addressing this group: ensuring safer, high-quality products for international markets and providing farmers with sustainable livelihoods through better market integration and economic opportunities. These, combined with capacity building for agricultural institutions and private sector stakeholders, created a ripple effect, improving the entire peppercorn value chain. Through these efforts, the project supported its direct beneficiaries. It enhanced the overall market ecosystem, contributing to long-term economic stability, environmental sustainability, and improved quality of life for farming communities across the region.

3. METHODOLOGY

3.1 Data Collection

Sample Population: Structured surveys targeted a range of stakeholders, including farmers, private sector representatives, and local institutions. Farmers were divided into treatment farmers (direct beneficiaries of project interventions) and control farmers (non-participants), enabling a comparative analysis of project impacts. Key stakeholders such as CABI and STDF staff, government partners, and private sector companies also participated in interviews and focus group discussions (FGDs).

Group of Respondents	Total	Male	Female
Farmers (Treatment Group)	29	19	10
Farmers (Control Group)	32	26	6
Case Study	4	3	1
National Public Stakeholders	6	5	1
Master Trainers	4	2	2
CABI & STDF Staff	3	1	2

Locations of Data Collection: Data was collected across the three target countries: Viet Nam, Cambodia, and Lao PDR. Some of the locations included Cheach in Memong district, Kokir and Ka Ngok in Tbong Khmum province, Cambodia; 2 Tay villages in Xuyen Moc district and Ea Ning

commune in Dak Lak, Viet Nam; and Lak 33 and Lak 35 villages in Pakxong district, Champasak province, Lao PDR. This comprehensive approach highlights the project's effort to gather insights from multiple regions to inform sustainable agricultural practices. Specific locations, including villages and districts within these countries, were selected to ensure representation of both treatment and control groups.

Period of Data Collection: The primary data was collected from 13 to 29 June, including data collection from farmers, private sector representatives, and project partners. Field visits and interviews were coordinated within this timeframe to gather comprehensive information.

Sampling Techniques and Sample Size: The sampling strategy followed calculations outlined in the technical proposal, using statistical parameters such as an anticipated effect size, a significance level (α) of 0.05, and a power (1-β) of 0.80. This ensured the scientific validity of the sample sizes. The total sample included 29 treatment farmers and 32 control farmers, with gender-disaggregated data provided in 1. Initially, the number of treatment and control farmers was equal but due to non-availability of treatment farmers during data collection the number was reduced. Additional interviews and case studies involved public stakeholders, master trainers, and private sector representatives, ensuring diverse perspectives.

Interviews and Enumerator Training: Data collection included both face-to-face interviews and online interviews. Enumerators received training on the questionnaire, ethical data collection practices, and the use of tools such as Google Forms. This ensured consistency and reliability in the data collection process.

Questionnaire: The structured questionnaire, developed and programmed in Google Forms, captured data on farming practices, market access, and project outcomes. It was pre-tested to ensure clarity and relevance to all stakeholder groups.

Overall Reliability: The evaluation process ensured high reliability by triangulating data across quantitative surveys, qualitative interviews, and secondary sources. The use of control and treatment groups enabled robust comparisons despite the absence of baseline data.

Limitations: The assessment faced time and budget constraints. The lack of a baseline necessitated reliance on the recall method and comparative analysis between treatment and control groups to evaluate project outcomes.

3.2 Analysis

The analysis primarily focused on examining whether the project increased smallholders' knowledge of SPS standards, good agricultural practices (GAP), and access to sustainable markets. The methodological approach comprised the following components:

- Descriptive Statistics: Quantitative data were analysed using descriptive statistics to summarise key variables such as the adoption of improved practices, changes in market access, and compliance with SPS standards. These statistics provided a broad understanding of the outcomes achieved across the treatment and control groups.
- Quantitative Analysis: The quantitative analysis compared the treatment group (farmers who directly benefitted from project interventions) with the control group (non-participating farmers) to identify differences in outcomes, including compliance levels, productivity, and income.
- Qualitative Analysis: Qualitative data were collected through multiple techniques to add depth to the findings:
    - Focus Group Discussions (FGDs): These discussions with farmers, local stakeholders, and private sector partners provided insights into their experiences, challenges, and successes in adopting the project’s practices.
    - Case Studies: In-depth case studies were conducted with treatment farmers (two from each country) to capture individual narratives and unique outcomes. These case studies added context to the quantitative data by highlighting the diversity of farmer experiences.: Delphi discussions were conducted with treatment group farmers to gather expert opinions on project interventions and assess their perceived effectiveness and sustainability.

This mixed-methods approach ensured that the analysis was both statistically rigorous and enriched by qualitative insights, offering a holistic understanding of the project's impact on smallholder farmers and other stakeholders. Combining descriptive statistics, comparative quantitative analysis, and detailed qualitative findings provided a robust basis for evaluating the project's overall effectiveness.

4. FINDINGS AND ANALYSIS

4.1 Relevance

The project demonstrates a strong alignment with national and regional agricultural priorities. The project has addressed critical SPS (Sanitary and Phytosanitary) challenges and enhanced market access for peppercorn producers in Viet Nam, Cambodia, and Lao PDR. Nationally, these countries have prioritised improving agricultural exports by adhering to international SPS standards, crucial for gaining access to high-value markets like the European Union and North America. For instance, Viet Nam's Ministry of Agriculture and Rural Development[7] has emphasized the reduction of pesticide residues in agricultural products, aligning with the project's efforts to promote safer pesticide use among peppercorn farmers.

Regionally, the project supports the ASEAN Economic Community (AEC) Blueprint.[8], which emphasises food safety, agricultural trade facilitation, and the harmonization of SPS measures across member states. By addressing the critical SPS challenges, the project contributes to the broader regional goal of enhancing agricultural trade within Southeast Asia, fostering economic integration, and improving the competitiveness of ASEAN agricultural products on the global market. This alignment ensures that the project's interventions are in harmony with the specific needs of the countries involved and the overarching regional priorities for agricultural development and trade facilitation.

4.1.1 Alignment with National and Regional Priorities

The interventions introduced by the project have been pivotal in aligning with national and regional agricultural priorities. For example, the project developed a village-level pepper producer code of practice in Viet Nam, Cambodia and Lao PDR. Respondents particularly highlighted this initiative because it directly addresses key challenges faced by the pepper industry in these countries, particularly in terms of meeting international food safety standards and improving market access. Nationally, these countries have prioritised the improvement of agricultural practices to ensure that their products meet the stringent requirements of global markets, particularly regarding pesticide residues and quality control. By establishing standardized practices at the village level, the project helped individual farmers meet these national and regional standards and strengthened the overall quality and reputation of pepper from these countries in the global market. This exemplifies how targeted, ground-level interventions can have broader impacts on aligning local agricultural practices with national and regional priorities, ultimately leading to sustainable economic development and improved livelihoods for farmers. Key Informant Interviews (KIIs) with farmers revealed that the project's interventions, such as advanced planting methods, pest management, pruning, and post-harvest handling, are well-aligned with the agricultural priorities of the region discussed above. In Viet Nam, stakeholders mentioned that the project facilitated knowledge transfer in line with national strategies to enhance export quality. This sentiment was echoed in Cambodia and Lao PDR, where stakeholders confirmed the project's alignment with national agricultural goals.

4.1.2 Relevance to CABI and STDF Mandates and Goals

The project's alignment with CABI and STDF's strategic goals is evident through its focus on public-private partnership, south-south cooperation, knowledge dissemination, and improving agricultural practices. It is important to emphasize that the support provided to all treatment farmers on best practices directly aligns with the STDF's mandate of building the capacity of developing countries to meet international SPS standards, a prerequisite for gaining access to high-value global markets. By equipping farmers with the knowledge and tools needed to reduce pesticide residues and improve the overall safety and quality of their peppercorn production, the project addressed key barriers to market entry. This alignment is further reinforced by the end-of-project meeting report, which

7 Viet Nam Ministry of Agriculture and Rural Development. National Plan for Reducing Pesticide Residues in Agricultural Products, 2023.

8 ASEAN Secretariat. ASEAN Economic Community (AEC) Blueprint 2025, ASEAN Secretariat, 2025.

emphasizes that the project's capacity-building efforts were integral to achieving both CABI's and STDF's broader goals of improving agricultural practices and facilitating trade. The project's success in overcoming SPS challenges directly contributes to the STDF's objective of promoting market access, thereby enabling farmers in Viet Nam, Cambodia, and Lao PDR to compete more effectively in international markets.

4.1.3 Addressing the Specific Needs of Peppercorn Producers

The project's objectives and activities were well-aligned with the specific needs of peppercorn producers in South-East Asia, such as good agricultural practices, pest management integrating non-chemical options along with less toxic chemical options, judicious use of fertilizers for better soil health, and post-harvest handling.

However, some farmers identified areas for further improvement. For example, more frequent updates on market trends and market requirements could help them better align their production with market needs.

4.1.4 Feedback from Public Stakeholders, Partners, and Private Companies

The project partners suggested that future projects should consider a more adaptive management approach, allowing for modifications based on ongoing feedback from participants. While the Monitoring & Evaluation (M&E) processes for this project, and indeed for STDF projects, were comprehensive and generally encouraged adaptation, some partners felt that the dynamic nature of the environment required even greater flexibility. This feedback highlights the potential for future projects to incorporate additional mechanisms that allow for more rapid responses to emerging challenges. Adaptive management remains valuable in complex settings, enabling project teams to refine their interventions in real-time. This approach and robust M&E processes contribute to greater accountability, better resource allocation, and improved outcomes.

Case studies with treatment farmers revealed that the project's interventions were relevant but crucial in addressing the significant challenges faced by peppercorn producers in Viet Nam, Cambodia, and Lao PDR. Before the project, many farmers struggled with issues such as low demand of their produce in international markets due to non-compliance with stringent Sanitary and Phytosanitary (SPS) standards. This non-compliance was largely due to inadequate knowledge of Good Agricultural Practices (GAP) and the lack of resources to implement necessary changes. As a result, many farmers found it difficult to access lucrative export markets, leading to economic instability and lower income levels. For instance, one of the stakeholders said that *"this project has created a vital link between farmers and the market, ensuring that GAP certification and food hygiene standards are not just achieved, but also sustained. The collaboration between the pepper farmers and private sectors for example in Champasak province, Lao PDR is a testament to the project's alignment with both regional agricultural priorities and international trade goals".*

The project's introduction of a localized Code of Practice (CoP), tailored to the specific conditions of each country, provided farmers with clear, practical guidelines to improve crop quality and meet international standards. This was particularly important in reducing the rejection rates of peppercorns in global markets. Additionally, the Participatory Guarantee System (PGS) empowered local communities to verify compliance with these standards, fostering a culture of collective responsibility and ensuring that the quality improvements were sustainable.

Farmers in the case studies noted that "*these interventions directly contributed to national agricultural priorities, such as enhancing crop quality and increasing market access. However, they also identified areas where they could benefit from further support"*. For instance, many farmers expressed a need for on-farm improvements, which are essential for sustaining the gains made through the project. They also suggested that more frequent and detailed training sessions on sustainable farming practices would help deepen their understanding and application of the CoP, further reducing the likelihood of market rejections and enhancing their competitive edge in international markets.

4.2 Coherence

The project has effectively aligned with various national development programmes and built synergies with other initiatives to enhance food safety and market access in Viet Nam, Cambodia, and Lao PDR.

4.2.1 Alignment with National, Regional, and International Initiatives

The project aligned closely with several national, regional, and international priorities in supporting market access for peppercorn and addressing SPS challenges.

- **National Priorities:** At the national level, the project directly supported agricultural policies aimed at improving food safety, market access, and economic development. In Viet Nam, for instance, the project complemented the Vietnam Pepper Association's (VPA) Pepper Production and Export Development Initiative (2018-2023)[9], which focused on enhancing compliance with SPS standards and facilitating market linkages for peppercorn farmers. This initiative, valued at USD 1 million and supported by the Vietnam Ministry of Agriculture and Rural Development, helped smallholder farmers access premium markets by meeting stringent food safety requirements (Vietnam Pepper Association, 2023). Similarly, in Cambodia, the project aligned with the Cambodia Agriculture Value Chain Programme (CAVAC), a major national initiative[10] funded by the Australian Government's DFAT. Running from 2015 to 2025 with a budget of USD 57 million, CAVAC aimed to boost agricultural productivity and ensure SPS compliance, improving market access for peppercorn and other key crops (DFAT, 2023).
- **Regional Initiatives:** The project also complemented regional efforts to enhance agricultural productivity and trade. It aligned particularly well with ASEAN-GAP[11] (Good Agricultural Practices), a regional initiative supported by the ASEAN Secretariat and donor agencies such as Australia's DFAT. Since 2006, ASEAN-GAP has worked to harmonise agricultural practices across ASEAN countries, including Viet Nam, Cambodia, and Lao PDR, with a strong focus on improving food safety and quality standards. With an approximate budget of USD 2.5 million, ASEAN-GAP played a crucial role in helping these countries meet international SPS requirements and enhance their competitiveness in global markets (ASEAN Secretariat, 2023).
- **International Standards:** At the international level, the project promoted compliance with Codex standards, facilitating access to export markets in Europe and the United States. It also aligned with FAO's Regional Food Safety Programme (2017-2024), a USD 4.5 million programme[12] funded by the European Union and FAO, which focused on building capacity in food safety systems across Asia. This programme provided technical assistance and training to help countries comply with SPS standards, especially regarding pesticide residues and contaminants in export crops like peppercorn (FAO, 2023). By supporting efforts to meet these international standards, the project ensured the safety and quality of peppercorn exports, enabling producers to enter high-value markets with confidence.

4.2.2 Building Synergies with Other Initiatives

The project successfully built synergies with other initiatives. The project's success in building synergies with other initiatives is particularly evident in its coordination with national food safety programs and export enhancement strategies in Viet Nam, Cambodia, and Lao PDR. Specifically, the project interaction with Viet Nam's National Argo-Forestry-Fisheries Quality Assurance Department (NAFIQAD), leads the country's efforts in ensuring food safety and compliance with international standards. In Cambodia, the project synergized with the Ministry of Agriculture, Forestry, and Fisheries (MAFF) under its *Strategic Plan for Agriculture and Water 2016-2020*, which emphasizes the improvement of food safety and the promotion of agricultural exports. Similarly, in Lao PDR, the project complemented the Lao PDR Trade and Private Sector Development Roadmap, which includes objectives related to improving SPS standards and facilitating trade. The coordination with these national programs was pivotal in maximizing the impact of the project's interventions, ensuring that they were sustainable and supported by ongoing national initiatives. Public Stakeholders praised the project's coordination with national food safety goals and export enhancement strategies.

9 Vietnam Pepper Association. (2023). Annual Report 2023

10 Australian Government Department of Foreign Affairs and Trade (DFAT). (2023). Cambodia Agriculture Value Chain Programme (CAVAC) Overview. DFAT.

11 ASEAN Secretariat. (2023). ASEAN-GAP Initiative Overview. ASEAN Secretariat

12 Food and Agriculture Organization (FAO). (2023). Regional Food Safety Programme Overview. Rome: FAO.

Public Stakeholders and partners recognised the project's alignment with national and international initiatives. In Viet Nam, 1 out of 1 stakeholder highlighted the project's coordination with national food safety system and export enhancement strategies. In Cambodia, 2 out of 2 stakeholders noted that the project effectively collaborated with local agricultural development interventions to improve SPS standards. In Lao PDR, 3 out of 3 stakeholders confirmed that the project aligned well with regional agricultural priorities and international trade goals. Master trainers highlighted the project's integration with national and regional agricultural training goals.

4.2.3 Complementing Existing Policies and Frameworks

Public stakeholders shared that the project complemented existing policies and frameworks in the agricultural sectors of Viet Nam, Cambodia, and Lao PDR. For instance, in Viet Nam, the project aligned with the *Viet Nam National Strategy for Sustainable Development* and the *National Action Plan for Integrated Pest Management (IPM)*. The strategy focuses on sustainable agricultural practices and environmental protection, while the IPM plan aims to reduce pesticide use and promote safer agricultural techniques. The project's emphasis on best practices and safe pesticide use directly supported these national goals, leading to a more integrated approach to agricultural sustainability. In Cambodia, the project complemented the *Strategic Plan for Agriculture and Water 2016-2020*, which prioritizes improving agricultural productivity and food safety. The project's initiatives on enhancing quality control and food safety in peppercorn production aligned with this framework, contributing to the country's objectives of boosting export quality and market access. In Lao PDR, the project worked in harmony with the *Lao PDR Trade and Private Sector Development Roadmap*, which includes goals related to improving SPS standards and expanding trade. By addressing SPS challenges and improving market access for peppercorns, the project supported Lao PDR' broader economic development and trade enhancement strategies. Stakeholders highlighted that these alignments were crucial for maximizing the project's impact.

Farmers noted that the project complemented existing policies and frameworks in the agricultural sectors of Viet Nam, Cambodia, and Lao PDR. This awareness was raised through structured training sessions, where the project's alignment with national agricultural development policies was communicated to participants. In Cambodia, 9 out of 10 treatment farmers reported that the project's interventions supported national agricultural development policies, which they learned about during the project's capacity-building sessions. Farmers noted that the training and resources provided by the project were explicitly linked to national priorities, such as improving agricultural productivity and food safety, which directly impacted their farming practices and export quality. In Lao PDR, 8 out of 10 treatment farmers confirmed that the project complemented regional agricultural strategies, which was communicated during workshops and peer-to-peer learning sessions. Farmers appreciated how the project's efforts in improving food safety and quality helped them meet the standards outlined in the roadmap, thereby facilitating better market access. In Viet Nam, all 9 treatment farmers highlighted the project's alignment with national policies to enhance food safety and market access. Farmers noted that *"the project's initiatives, such as improved pesticide management and quality control practices, were directly supportive of these policies. This understanding was reinforced through regular updates and consultations facilitated by project trainers and local agricultural experts, ensuring that farmers were fully informed about how the project's interventions aligned with broader national goals".*

Master trainers further corroborated these findings, noting that the training programs were designed to align with and reinforce national and regional agricultural frameworks. In Cambodia and Lao PDR, trainers reported that the content of the training supported broader agricultural goals and policies. This feedback was consistent with the observations of project staff, who emphasized that the project's focus on capacity building and best practices was integral to supporting the agricultural policies of these countries.

The project's interventions had a substantial impact across Cambodia, Lao PDR, and Viet Nam, as reflected in the average percentage responses from treatment farmers across several key areas such as integration with national and international initiatives (83% respondents), building synergies with other initiatives (83%), identifying missed opportunities or overlaps (17%), and complementing existing policies and frameworks (89%). Treatment farmers consistently show higher levels of engagement, awareness, and improvement, underscoring the effectiveness of the project's strategies in enhancing coherence with broader agricultural priorities.

In conclusion, the project addressed critical SPS challenges in the peppercorn sector through a comprehensive approach involving the development of CoP, capacity building, increased market linkages, and establishment of a knowledge repository. By aligning with national, regional, and international priorities, the project aimed to enhance food safety, improve market access, and support the sustainable development of the peppercorn value chain in Viet Nam, Cambodia, and Lao PDR.

4.3 Effectiveness

Interviews with treatment farmers revealed improvements in their knowledge and practices related to Sanitary and Phytosanitary (SPS) standards, market access, and the quality and yield of peppercorn production. Several farmers emphasised how training on SPS compliance directly contributed to reduced rejection rates in international markets. For instance, one farmer from Cambodia mentioned, "*The training helped us understand how to meet the SPS requirements, and now we face fewer rejections from buyers*". According to the project's literature, the project's objectives were largely achieved among treatment farmers. Improvements in knowledge and practices related to SPS standards, market access, and the quality and yield of peppercorn production were reported. The STDF Safer Spices End Project Report provided detailed evidence of these achievements. Several factors influenced the achievement of the project's objectives, including the quality of training, follow-up support, and the availability of resources.

The project effectively addressed market access challenges. Treatment farmers reported improved market access due to better quality and compliance with SPS standards. The following sections present findings from the primary data collected by the CUSP team to provide feedback on the project's effectiveness.

Treatment farmers, who average 10 years of experience in pepper cultivation, manage farms of about 1.27 hectares. Their awareness of microbial contaminants and maximum residue limits (MRLs) of pesticides has significantly improved due to the project's interventions, leading to a notable reduction in rejections. In Cambodia, 9 out of 10 treatment farmers reported being aware of contaminants, and all noted fewer rejections. Similarly, 9 out of 10 farmers in Lao PDR were aware, with seven reporting reductions in rejections. All 9 treatment farmers in Viet Nam were aware, with 6 experiencing fewer rejections. This contrasts with control farmers, where only 14 out of 32 were aware of contaminants, and none reported a reduction in rejections. One of the stakeholders shared that "this project has significantly improved our understanding of market requirements, especially in terms of Maximum Residue Limits (MRLs). The coaching we received on food hygiene certification is already opening doors to new markets in Viet Nam, China, and Thailand. The continued expansion of pepper plantations in our province is directly linked to the success of this project".

However, areas for improvement were identified. In Viet Nam, 2 out of 9 farmers suggested that more specific training on advanced pest management techniques would be beneficial. In Cambodia, 1 out of 10 farmers highlighted the need for better access to quality seeds. In Lao PDR, 1 out of 10 farmers indicated a need for more support for irrigation infrastructure improvements.

Among treatment farmers, all 29 received training on best practices for pepper cultivation, specifically as part of this project, and the majority found these training useful and implemented the learnings. This comprehensive training approach demonstrates a strong alignment with the goal of knowledge dissemination. In contrast, among control farmers, only 3 out of 32 received similar training from other initiatives by government and private sector companies, resulting in low to no confidence in their ability to implement the roll-out strategies effectively. This disparity highlights the significant impact of this project's interventions on the treatment group and its alignment with CABI and STDF's goals. This disparity highlights the project's significant impact, this project's interventions, on the treatment group and its alignment with CABI and STDF's goals. Future projects could benefit from additional follow-up training sessions to reinforce initial training and address emerging challenges. Some areas for improvement which were identified also included better coordination with local agricultural extension services to maximise the impact of the interventions.

4.3.1 Achievement of Project Objectives

The project's objectives, as outlined in the log frame, were effectively met among treatment farmers, with notable improvements in knowledge, practices, market access, and the quality and yield of peppercorn production. Specifically, in Cambodia, 9 out of 10 treatment farmers reported substantial

enhancements in their farming practices, including better pest management and adherence to SPS standards, leading to increased yields. For example, yields increased by up to 2.5 KMT to 2.89 KMT. In Lao PDR, 8 out of 10 farmers experienced similar advancements, with documented increases in peppercorn yield and quality. In Viet Nam, all nine treatment farmers reported achieving significant improvements in their farming techniques, with yield increases up to 10 KMT, as documented by both qualitative feedback and quantitative data (see Annex: Dataset - KII Tool Farmers (Treatment & Control).)

Public stakeholders and partners corroborated these findings, noting that the project had successfully enhanced SPS capacities and market access. For instance, stakeholders in Viet Nam confirmed that the project had significantly improved SPS standards, while those in Cambodia and Lao PDR highlighted improvements in agricultural practices and alignment with regional agricultural goals.

Master trainers also supported these claims, with trainers in both Cambodia and Lao PDR affirming that the training modules effectively improved farmers' capacities and practices. The project staff member based in Viet Nam further emphasised that the project's interventions had successfully achieved its goals across all targeted countries, enhancing overall agricultural productivity.
Case studies provided additional validation, with farmers in Viet Nam, Cambodia, and Lao PDR reporting enhanced farming practices and increased yields. For example, in Viet Nam, case studies showed that treatment farmers had not only improved their practices but also experienced a documented increase in yield. Similarly, in Cambodia and Lao PDR, case studies confirmed that treatment farmers had seen significant improvements in both their techniques and production outcomes.

Delphi Group Discussions also confirmed the project's success, with feedback highlighting improvements in farming practices and yields, further validating the project's effectiveness.

4.3.2 Factors Influencing Achievement of Objectives

Several key factors influenced the achievement of the project’s objectives, as identified through feedback from treatment farmers, stakeholders, master trainers, and case studies. In Cambodia, 7 out of 10 treatment farmers credited the quality of training and follow-up support as crucial to their success. For example, farmers noted that hands-on training sessions and regular follow-ups significantly improved their pest management techniques and adherence to SPS standards. In Lao PDR, 6 out of 10 treatment farmers highlighted the availability of essential resources and materials, such as quality seeds and pest control tools, as critical to their improved practices. In Viet Nam, 8 out of 9 treatment farmers emphasised the importance of continuous support and guidance from project staff, noting that regular consultations helped them address specific challenges in their peppercorn production.

In contrast, control farmers experienced limited success due to the absence of these supportive factors. In Cambodia, 6 out of 11 control farmers reported insufficient training and resources as barriers to their progress. In Lao PDR, 7 out of 10 control farmers pointed to the lack of follow-up support as a major hindrance, while in Viet Nam, 6 out of 11 control farmers identified the lack of continuous guidance as a key issue affecting their outcomes.

National stakeholders and partners also highlighted factors influencing the project’s success. Effective coordination with national programmes was noted as a significant factor in Viet Nam. Stakeholders in Cambodia and Lao PDR emphasised the quality of training and the availability of resources as critical to achieving the project’s goals. For instance, stakeholders in Cambodia appreciated the project's capacity-building efforts, which aligned with national agricultural development strategies.

Master trainers in Cambodia and Lao PDR reinforced these observations, identifying effective training methodologies and continuous support essential for the project's success. Trainers highlighted the value of practical, hands-on sessions and regular follow-ups to ensure farmers implemented new practices effectively.

The project staff member based in Viet Nam stressed that effective project management, timely resource delivery, and continuous monitoring and evaluation were crucial for achieving the project's

objectives. Adaptive management was also vital for addressing emerging challenges and ensuring that interventions remained relevant and impactful.

Case studies provided further insight, with farmers in Viet Nam, Cambodia, and Lao PDR identifying quality training, access to resources, and continuous support as key contributors to the project's success. For example, farmers in Viet Nam highlighted how access to improved pest control resources led to better outcomes. At the same time, those in Cambodia and Lao PDR emphasised the importance of ongoing support from project staff.

Delphi Group Discussions similarly identified critical factors for success. In Cambodia, participants underscored the significance of quality training and access to resources. In Lao PDR, participants highlighted the impact of continuous support and guidance from project staff on improving farming practices and achieving project goals.

4.3.3 Addressing Market Access Challenges

The project made notable strides in addressing market access challenges faced by beneficiary farmers, significantly improving their market opportunities across Cambodia, Lao PDR, and Viet Nam. 58.6% of treatment farmers sold to local traders, compared to 46.9% of control farmers, highlighting the improved access to local markets for the treatment group. In contrast, 53.1% of control farmers continued to sell primarily in the village, indicating limited market access improvements. For instance, in Cambodia, 8 out of 10 treatment farmers reported enhanced market access, attributing these improvements to better compliance with SPS standards and higher quality of their peppercorns. For instance, farmers cited reduced rejection rates and increased demand from buyers (from local markets and villages) who were now more confident in the safety and quality of their produce. In Lao PDR, 7 out of 10 treatment farmers observed greater market opportunities, with some attributing this to improved adherence to SPS guidelines, which facilitated entry into previously inaccessible markets. Similarly, in Viet Nam, all nine treatment farmers experienced enhanced market access and achieved better prices for their peppercorns, thanks to improved quality and SPS compliance, which opened new trade channels and strengthened their market positions.

Control farmers faced ongoing market access challenges. In Cambodia, 4 out of 11 control farmers reported persistent difficulties accessing markets, often due to lower product quality and non-compliance with SPS standards. In Lao PDR, 3 out of 10 control farmers struggled with limited market opportunities, while in Viet Nam, 5 out of 11 control farmers experienced challenges in securing competitive prices, primarily due to inadequate adherence to SPS requirements and lower product quality.

Master trainers echoed these observations, with trainers in Cambodia and Lao PDR reporting that improved farming practices and adherence to SPS standards were critical to overcoming market access challenges. They emphasised that the training programs improved the quality of peppercorns and facilitated better market integration by meeting international standards.

Project beneficiaries (treatment group) achieved significantly higher price increases, with an overall increase of 202.94% compared to 120.56% for non-project farmers (control group). More details on price increases are provided under the impact section. Case studies further validated these outcomes. In Viet Nam, in both case studies, farmers reported improved market access and better pricing, attributing these gains to the project's focus on quality and SPS standards. Similarly, farmers in Cambodia and Lao PDR highlighted increased market opportunities as a direct result of enhanced product quality and compliance with SPS standards.

Participants in the Delphi Group Discussions also supported these findings. In Cambodia, a participant noted improved market access and better prices due to the project's focus on quality. In Lao PDR, highlighted how better farming practices, encouraged by the project, led to increased market opportunities.

This data (under impact section) provides a detailed comparison of key metrics between treatment and control farmers, highlighting the impact of the project's interventions on the achievement of objectives, factors influencing success, and addressing market access challenges. Treatment farmers consistently show higher levels of achievement and better outcomes, underscoring the effectiveness of the project's strategies.

4.4 Efficiency

Overall, the project demonstrated high efficiency in resource allocation, timely delivery, effective project management, and adaptability to changes and risks. Both treatment farmers and public stakeholders confirmed that resources were well-utilised and that project activities were conducted according to the planned timeline. Effective project management and implementation were widely acknowledged, and the project was praised for its ability to adapt to unexpected challenges and manage risks effectively.

However, stakeholders suggested that future projects could include more comprehensive stakeholder engagement plans to ensure all relevant parties are adequately involved and informed. Improved coordination with existing government initiatives could also enhance the project's impact and avoid duplication of efforts.
Robust mechanisms for monitoring and evaluating the impact of the interventions in real time would also be beneficial for making timely adjustments to the strategies being implemented.

4.4.1 Resource Allocation and Utilisation

Treatment farmers generally reported that the resources provided to them (e.g., training, inputs, and support) were sufficient and well-utilised to achieve the project goals. In Cambodia, 8 out of 10 treatment farmers felt that the resources they received were adequate and supported their farming activities. In Lao PDR, 7 out of 10 farmers shared similar sentiments, while in Viet Nam, all nine treatment farmers were satisfied with the resources provided. Stakeholders confirmed that resources were allocated appropriately and efficiently.

Master trainers reported that the project efficiently allocated resources to achieve its objectives. In Cambodia, 2 out of 2 trainers, and in Lao PDR, 2 out of 2 trainers confirmed that resources were used effectively.

The project staff member based in Viet Nam reported that resources were allocated efficiently across all three countries. The staff member noted that the project team managed resources effectively to ensure timely and impactful interventions.

Farmers in the case studies confirmed that resources were allocated appropriately. In Viet Nam, 2 out of 2 farmers reported that they received sufficient resources to implement project interventions. In Cambodia, 2 out of 2 farmers, and in Lao PDR, 2 out of 2 farmers noted that resources were well-utilised and supported their farming activities.
Participants in the Delphi Group Discussions highlighted the efficient allocation of resources. In Cambodia, participants highlighted that resources were well-managed and effectively utilised. In Lao PDR, participants noted that resources were allocated appropriately to support project activities.

4.4.2 Project Management and Implementation

Farmers praised the project management and implementation. In Cambodia, 9 out of 10 beneficiary farmers highlighted effective project management and timely reporting. In Lao PDR, 8 out of 10 beneficiary farmers mentioned the project's ability to tackle unexpected challenges. In Viet Nam, all nine beneficiaries highlighted the project's strong management and adaptability. All public stakeholders interviewed also praised the project's management and the ability of the project team to tackle unexpected challenges. challenges

Master trainers reported effective project management. In Cambodia, 2 out of 2 trainers, and in Lao PDR, 2 out of 2 trainers confirmed the project's effective handling of challenges and risks.

The project staff member based in Viet Nam referred to the importance of effective project management. The staff member highlighted the project's ability to tackle unexpected challenges, timely reporting, and quality staffing as key factors in the project's success.

Farmers in the case studies confirmed effective project management. In Viet Nam, farmers praised the project's strong management and timely reporting. In Cambodia and Lao PDR, farmers highlighted the project's ability to handle challenges and manage resources effectively.

Participants in the Delphi Group Discussions highlighted effective project management. In Cambodia, participants noted the project's strong management and ability to tackle challenges. In Lao PDR, participants said that the project's timely reporting and quality staffing.

Despite the challenges posed by the COVID-19 pandemic, the project was delivered in a timely manner, with strong management practices that ensured adaptability across Cambodia, Lao PDR, and Viet Nam. Stakeholders consistently praised the project's ability to manage resources effectively, maintain timely reporting, and address unexpected challenges, including those brought on by the pandemic. This demonstrates that timeliness remained a key strength of the project, even in the face of significant disruptions.

4.4.3 Changes and Risk Management

At the outset, the project encountered several challenges, mainly caused by COVID-19. These included logistical issues, delayed implementation of sessions, and mobilization of local partners. The pandemic caused disruptions in training and fieldwork, particularly in reaching remote farming areas across Cambodia, Lao PDR, and Viet Nam. This situation necessitated the development of alternative training and communication methods, including digital platforms and remote training sessions, to continue delivering essential knowledge on pepper production and SPS standards.

In addition to the pandemic, the project faced the challenge of ensuring compliance with SPS standards in regions where infrastructure and local capacity were limited. To address this, the project adapted by working closely with local partners and agricultural extension services, ensuring that knowledge and resources were effectively disseminated. Compliance was supported through enhanced follow-up visits, virtual meetings, and coordinated efforts with local master trainers, ensuring farmers received the necessary guidance.

Logistical challenges in remote areas also affected the timely delivery of resources, particularly for training materials and agricultural inputs. In response, the project implemented a flexible resource allocation strategy, using contingency planning to reallocate resources where needed. This ensured that any gaps caused by logistical delays were addressed promptly, and farmers continued to receive the support they needed.

The project also managed to tackle risks related to fluctuating market conditions. By improving market access through adherence to SPS standards, farmers were better equipped to compete in regional and international markets, mitigating risks associated with market volatility.

The project beneficiaries, including farmers and master trainers, consistently praised the project's ability to adapt to these challenges. In Cambodia, treatment farmers noted the effective allocation of resources and timely interventions. In Lao PDR, respondents highlighted the project’s flexibility in adjusting to the constraints posed by the pandemic and logistical difficulties. In Viet Nam, master trainers and farmers commended the project’s strong risk management strategies, particularly in addressing compliance with SPS standards and adapting to market changes.

4.4.4 Missed Opportunities or Overlaps

Some areas for improvement were identified, such as better coordination with local agricultural extension services to maximise the impact of the interventions.

Farmers pointed out potential overlaps and missed opportunities in the project’s implementation. In Cambodia, 2 out of 10 treatment farmers suggested that better coordination with local agricultural extension services could have maximised the impact of the interventions. In Lao PDR, 1 out of 10 treatment farmers mentioned that additional support for integrating new farming techniques with traditional practices would have been beneficial. Stakeholders highlighted areas for improvement in avoiding overlaps and maximising synergies. In Cambodia, a stakeholder pointed out the need for broader outreach to include more remote farming communities, which could have amplified the project's impact.

4.5 Impact

The project had a positive impact, leading to improved farming practices, better quality and yields, enhanced income, and increased roles for female farmers as compared to the situation before the

project. Additionally, several unexpected positive impacts were noted, such as improved community cooperation and better local market prices. The project also catalysed further actions and changes, including heightened awareness of SPS challenges and the mobilisation of additional resources for SPS capacity development.

Market Access, Yield, and Price Changes before and after

Benefits	Country	Project Beneficiaries (Treatment Group)	Project Non-Beneficiaries (Control Group)
Market Access	Cambodia	Significant increase in demand due to improved SPS compliance and quality. Opened new trade channels.	Moderate improvement: control farmers faced limited market access challenges.
	Lao PDR	Improved market access through better compliance with SPS standards and higher product quality.	Limited market access, with challenges due to lower product quality and non-compliance.
	Viet Nam	Substantial market access improvements, leading to better prices and new trade opportunities.	Some improvements, but overall access remained more limited than treatment farmers.
Changes in Yield (KMT)	Cambodia	Increased yields by 2.5 to 2.89 KMT, with overall improvements in farming practices.	Yields remained relatively unchanged for most control farmers.
	Lao PDR	Minimal to no change in yield for most farmers in the treatment group.	Yields are mostly unchanged for control farmers.
	Viet Nam	Yields increased by 4-10 KMT, driven by improved farming techniques and SPS compliance.	Yields remained stagnant, and no significant changes were reported.
Changes in Prices per KMT	Cambodia	Prices increased from 1,590 USD to 3,920 USD (146.54% increase).	Prices increased from 1,772 USD to 2,518 USD (42.11% increase).
	Lao PDR	Prices increased from 1,870 USD to 4,343 USD (132.23% increase).	Prices increased from 1,573 USD to 3,615 USD (129.85% increase).
	Viet Nam	Prices increased from 1,498 USD to 7,000 USD (367.58% increase).	Prices increased from 1,564 USD to 4,707 USD (200.90% increase).

Project beneficiaries (treatment group) experienced significant price increases across all three countries. In Cambodia, treatment farmers saw a 146.54% increase compared to 42.11% for control farmers. In Lao PDR, the increase was 132.23% for treatment farmers and 129.85% for control farmers. In Viet Nam, treatment farmers experienced the highest gain of 367.58%, compared to 200.90% for control farmers. In terms of figures, the average in Cambodia price increased from 1,590 USD to 3,920 USD, representing a gain of 2,330 USD (146.54% increase). In Lao PDR, treatment farmers saw the average price rise from 1,870 USD to 4,343 USD, a gain of 2,473 USD (132.23% increase). Viet Nam saw the largest improvement for project beneficiaries, with the average price increasing from 1,498 USD to 7,000 USD, a substantial gain of 5,502 USD (367.58% increase). Non-project farmers (control group) also saw price increases, though generally smaller in comparison. In Cambodia, the average price for control farmers rose from 1,772 USD to 2,518 USD, a gain of 746 USD (42.11% increase). In Lao PDR, the average price increased from 1,573 USD to 3,615 USD, reflecting a gain of 2,042 USD (129.85% increase). In Viet Nam, control farmers experienced a price rise from 1,564 USD to 4,707 USD, resulting in a gain of 3,143 USD (200.90% increase). Source: Annex Dataset - KII Tool Farmers (Treatment & Control).

The side-by-side comparison of key metrics between treatment and control farmers, highlighted the impact of the project's interventions. Treatment farmers who received specific support and training showed significant awareness of contaminants (27 out of 29 farmers), a reduction in rejections (22 out of 29 farmers), and high confidence in implementing these strategies. They also reported improvements in yield and quality and a high willingness to share knowledge. In contrast, control farmers, who did not receive the same level of intervention, showed lower awareness (14 out of 32

farmers), no reduction in rejections (0 out of 32 farmers), minimal training received (3 out of 32 farmers), and low confidence in roll-out strategies. The comparative analysis underscores the effectiveness of the project's interventions in addressing the needs of peppercorn producers and aligning with broader agricultural priorities and organisational mandates.

KIIs with farmers have revealed notable improvements in pepper crop yield and quality since the implementation of the project's interventions. Treatment farmers reported a high level of confidence in the effectiveness of the roll-out strategies for the PGS-based system and code of conduct.

The Delphi Group Discussions with treatment farmers in Cambodia and Lao PDR further underscored the project's relevance to national and regional agricultural priorities. Participants highlighted *"the effectiveness of the agricultural practices introduced by the project in improving the quality of peppercorn production".*

4.5.1 Overall Impact on the Peppercorn Value Chain

Employment Dynamics on Farms

The employment data illustrates impact of the project on farm labour across the project countries. The data reveals that this increase in employment isn't uniform across all demographics or regions, highlighting the complexity of labour dynamics. Various factors such as socio-economic conditions, local labour markets, and the specific nature of agricultural practices in each country contribute to these variations.

- **Women's Employment**: Across the three countries, treatment farmers employ an average of 1.4 women per farm, compared to 1.3 by control farmers. In Cambodia, women's employment is consistent across both treatment and control groups at 1.5 employees per farm. In Lao PDR, treatment farmers engage more women (1.7) compared to their control counterparts (1.2). Viet Nam shows a slight decline, with treatment farms employing 0.9 women on average, slightly lower than the 1.0 employed by control farms.
- **Men's Employment**: The average number of men employed on treatment farms is higher (1.6) than on control farms (1.2). This trend is most notable in Lao PDR, where treatment farms employ an average of 2 men compared to 1 on control farms, indicating a significant labour demand increase. Cambodia and Viet Nam show similar employment figures for men between treatment and control farmers, with marginal differences.
- **Youth Employment**: The average number of youths employed on treatment farms (0.9) is slightly higher than on control farms (0.8). Notably, youth employment is significantly lower on treatment farms in Cambodia (0.1) compared to control farms (0.5). Conversely, in Viet Nam, youth employment is higher on treatment farms (1.8) than on control farms (1.6), suggesting a growing interest among younger generations in working on farms where modern practices are implemented.

Price Evolution

The data on peppercorn prices reveals a positive contribution of the project interventions on the incomes of beneficiary farmers. Across Cambodia, Lao PDR, and Viet Nam, the price of one KMT of peppercorn increased more dramatically for project beneficiary farmers compared to non-beneficiary farmers. On average, non-beneficiary farmers across the three countries experienced a price increase from 1,638 USD to 3,613 USD for one KMT of peppercorn, whereas beneficiary farmers saw a steeper increase from 1,658 USD to 5,022 USD. These results indicate that the project not only helped farmers improve their production processes but also significantly enhanced their ability to fetch premium prices, thereby boosting their income potential.

Cambodia: Before the project, the price of one KMT of peppercorn for non-beneficiary farmers averaged 1,772 USD, which increased to 2,518 USD at the time of end assessment data collection (June 2024). However, for project beneficiary farmers, the price rose sharply from 1,590 USD to 3,920 USD. This considerable price surge reflects the effectiveness of the project in enhancing peppercorn quality and market access, allowing farmers to command higher prices.

Laos PDR: In Lao PDR, non-beneficiary farmers saw prices increase from 1,573 USD to 3,615 USD over the project period. Meanwhile, beneficiary farmers experienced a more substantial price rise, from 1,870 USD to 4,343 USD. The project interventions clearly contributed to this stronger price

growth, positioning beneficiary farmers to better meet market demands and achieve higher value for their produce.

Viet Nam: Viet Nam**:** Vietnam exhibited the most striking price increase. Non-beneficiary farmers saw prices grow from 1,564 USD to 4,707 USD, but beneficiary farmers saw their peppercorn prices soar from 1,498 USD to 7,000 USD. This dramatic increase highlights the substantial gains achieved by project beneficiaries, underscoring the project's success in transforming the peppercorn value chain.

Changes in Yield: The production yield data reveals varying levels of impact across Cambodia, Lao PDR, and Viet Nam, with project beneficiary farmers showing significant improvements in some areas while others faced challenges. Across the three countries, non-beneficiary farmers maintained an average yield of 4.0 KMT, whereas beneficiary farmers increased their yield from 1.7 KMT before the project to 3.8 KMT after the interventions. This demonstrates that the project's technical and capacity-building interventions have had a positive effect on the productivity of beneficiary farmers, particularly in Cambodia and Viet Nam, while challenges remain in Lao PDR.

- **Cambodia**: Before the project, both non-beneficiary and beneficiary farmers in Cambodia produced an average of 5.2 KMT of peppercorn. However, after the project interventions, non-beneficiary farmers maintained their production levels, while beneficiary farmers experienced a notable increase in production from 1.0 KMT to 3.5 KMT. This suggests that the project successfully revitalised the peppercorn farms of beneficiary farmers, improving their production capacity and overall yield.
- **Lao PDR**: In Lao PDR, non-beneficiary farmers maintained consistent production levels, producing 1.3 KMT before and after the project. However, project beneficiary farmers saw a slight decline in production from 1.0 KMT to 0.9 KMT. This slight decrease may be attributed to specific challenges in Lao PDR, such as local agricultural constraints or market dynamics, which the project is still addressing.
- **Viet Nam**: Viet Nam's peppercorn sector shows the most significant improvement in production yield among project beneficiary farmers. Non-beneficiary farmers consistently produced 5.4 KMT of peppercorn before and after the project. In contrast, beneficiary farmers saw a substantial increase in yield from 3.3 KMT to 7.4 KMT, reflecting the project's success in enhancing farm practices and boosting production efficiency.

Ability to Sell to New Buyers Before and After the Project

Prior to the project, both project beneficiary and non-beneficiary farmers faced significant challenges in accessing new markets. However, after the project, there was a marked improvement, especially among beneficiary farmers, while non-beneficiary farmers saw limited progress. While both project beneficiaries and non-beneficiaries started from a similar position before the project, the interventions have had a clear positive impact on market access for beneficiary farmers, particularly in Cambodia and Lao PDR. The number of farmers selling to new buyers post-project rose from 7 to 19, primarily driven by the success of project beneficiary farmers. However, Viet Nam remains an outlier, with continued challenges in market access that will require additional attention and support.

Before the Project: Before the project, across all respondents, only 7 out of 61 farmers were able to sell their peppercorns to new buyers. This was a challenge shared by both project beneficiary and non-beneficiary farmers.

- **Cambodia**: Only 3 out of 21 farmers could sell to new buyers.
- **Lao PDR**: Similarly, 4 out of 20 farmers had access to new buyers in Lao PDR.
- **Viet Nam**: In Viet Nam, no farmer, whether a project beneficiary or non-beneficiary, had successfully connected with new buyers before the project. This lack of market access underscored the difficulties farmers[13] across the region faced in reaching broader or more lucrative markets.

After the Project: Post-project, there is a clear distinction between project beneficiaries and non-beneficiary farmers, with beneficiaries demonstrating substantial improvements in their ability to sell to new buyers.

13 Despite Viet Nam's position as a global leader in peppercorn exports, smallholder farmers face structural barriers such as SPS compliance challenges, limited market linkages, and restricted access to high-value buyers. The project worked to address these gaps, enabling broader participation in export markets.

- **Cambodia**: Among non-beneficiary farmers, the ability to sell to new buyers remained stagnant, with only 2 out of 11 reporting success in this area. On the other hand, project beneficiary farmers experienced a significant increase, with 8 out of 10 now able to sell their products to new buyers from Vietnam and Thailand. This suggests that the project interventions improved market access, enabling farmers to connect with structured trade networks.
- **Lao PDR**: In Lao PDR, non-beneficiary farmers saw a moderate improvement, with 3 out of 10 able to sell to new buyers post-project. In contrast, project beneficiary farmers saw a dramatic increase, with 8 out of 10 now accessing new buyers, compared to just four before the project. These buyers included domestic spice traders and exporters targeting Thailand and China. This outcome underscores the project's success in expanding regional trade opportunities for smallholder farmers.
- **Viet Nam**: In Viet Nam, the situation remains challenging, as both non-beneficiary and beneficiary farmers continued to face significant market access barriers. Neither group saw improvements, with 0 out of 20 farmers able to sell to new buyers after the project. This highlights the persistent structural challenges in market linkages and the need for further targeted interventions to improve access to domestic processors and international exporters.

Level of compliance

The project's impact on farmers' compliance with regulations regarding contaminants and excess pesticide Maximum Residue Limits (MRLs) is clear from the comparison between project beneficiaries and non-beneficiary farmers. While compliance challenges were widespread before the project, particularly among project beneficiaries, post-project data shows significant improvements for beneficiary farmers. The project has had a notable impact on reducing compliance issues related to contaminants and excess pesticide MRLs, particularly for project beneficiary farmers in Cambodia and Lao PDR. Prior to the project, 32 out of 61 farmers faced compliance issues, but post-project, only 15 farmers continue to face these challenges, with almost all improvements attributed to project beneficiary farmers. Viet Nam shows a positive trend, as all farmers reported no compliance issues after the project, highlighting the project's effectiveness in resolving these regulatory challenges.

Before the Project: Prior to the project, compliance issues related to contaminants and pesticide MRLs were prevalent among farmers in Cambodia, Lao PDR, and Viet Nam. A total of 32 out of 61 farmers reported facing compliance issues.

- **Cambodia**: In Cambodia, 19 out of 21 farmers had compliance issues, with 9 out of 11 non-beneficiary farmers and 10 out of 10 project beneficiary farmers facing difficulties in meeting pesticide MRL standards.
- **Lao PDR**: Lao PDR saw a somewhat lesser, though still notable, proportion of farmers struggling with compliance. 6 out of 20 farmers reported issues, including 4 non-beneficiary farmers and 2 project beneficiaries.
- **Viet Nam**: Compliance issues were widespread in Viet Nam, with 7 out of 20 farmers reporting challenges. All of these were among non-beneficiary farmers, as project beneficiaries did not report issues prior to the project.

After the Project: After the project interventions, there is a stark contrast in compliance issues between project beneficiaries and non-beneficiaries. While non-beneficiaries continue to face significant challenges, beneficiary farmers have seen a dramatic reduction in compliance problems.

- **Cambodia:** Non-beneficiary farmers continue to struggle, with 11 out of 11 still facing compliance issues. However, the project interventions have led to a remarkable improvement among beneficiary farmers, with 9 out of 10 no longer reporting compliance issues. Only one beneficiary farmer in Cambodia still faces challenges, demonstrating the project's success in addressing these regulatory barriers.
- **Lao PDR:** In Lao PDR, the project's impact is clear. 10 out of 10 beneficiary farmers reported no compliance issues post-project, compared to 7 out of 10 non-beneficiary farmers who also avoided issues. Only three non-beneficiary farmers still face compliance problems, indicating that the project's support for beneficiaries was crucial in addressing compliance challenges.
- **Viet Nam:** Both project beneficiary and non-beneficiary farmers in Viet Nam reported no compliance issues after the project, suggesting that while challenges existed prior to the project, the interventions helped ensure all farmers met the required standards. All 20 farmers, regardless of beneficiary status, reported no further issues post-project.

Familiarity with the Code of Practice (CoP) and Quality Standards

The project aimed to increase farmers' knowledge and implementation of good agricultural practices, particularly through the Code of Practice (CoP) and adherence to quality standards and certifications. The data shows a significant increase in familiarity with both CoP and pepper quality standards among project beneficiary farmers compared to non-beneficiary farmers. *The project made significant strides in raising awareness and familiarity with CoP and quality standards among project beneficiaries, particularly in Cambodia and Lao PDR.* The proportion of farmers familiar with these important agricultural standards increased substantially, demonstrating the effectiveness of the training and capacity-building components of the project. Viet Nam, however, continues to face challenges, with a significant portion of both beneficiary and non-beneficiary farmers still lacking full familiarity with quality standards, underscoring the need for continued support in this area.
Before the project, a large majority of both beneficiary and non-beneficiary farmers were unfamiliar with the CoP across all three countries.

- **Cambodia:** Before the project, no farmers had formal knowledge of the CoP, as it was developed through the project itself. However, 4 out of 10 project beneficiaries had some exposure to general good agricultural practices (GAP) or other informal guidelines related to pepper production. Among non-beneficiaries, all 11 farmers were unfamiliar with any structured framework for compliance.
- **Lao PDR:** Similarly, in Lao PDR, the CoP was entirely new to all farmers, with only one beneficiary having prior exposure to related concepts from other agricultural training programs. None of the non-beneficiaries were familiar with it.
- **Viet Nam:** In Viet Nam, all 20 farmers—both beneficiaries and non-beneficiaries—were unfamiliar with the CoP before the project. This reflects that the CoP was a newly introduced concept in all project countries, reinforcing the importance of training and dissemination efforts.

Familiarity with Pepper Quality Standards and Certifications After the Project:

The project had a marked impact on the familiarity of project beneficiary farmers with pepper quality standards and certifications, with substantial progress in Cambodia, Lao PDR, and Viet Nam.

- **Cambodia**: Among non-beneficiary farmers, all 11 remained unfamiliar with quality standards and certifications. However, project beneficiaries showed notable improvements, with 7 out of 10 now fully familiar with the standards and an additional three farmers partially familiar.
- **Lao PDR**: While all non-beneficiary farmers in Lao PDR continued to lack familiarity with quality standards, 10 out of 10 project beneficiaries gained partial familiarity with these standards, reflecting a positive outcome from the project interventions.
- **Viet Nam**: In Viet Nam, 13 out of 20 farmers still lacked familiarity with quality standards and certifications, including 11 non-beneficiaries and 2 beneficiaries. However, seven project beneficiaries had gained partial familiarity with the standards, indicating progress but also highlighting room for further improvement.

Adoption of Pest and Disease Management Practices in Pepper Crops

The adoption of pest and disease management strategies is a critical aspect of improving pepper crop yields and quality. The data shows that project beneficiary farmers have significantly adopted these practices compared to non-beneficiaries, particularly in Cambodia and Lao PDR, where the project interventions have facilitated better uptake of these essential agricultural strategies.
The project has significantly enhanced the adoption of pest and disease management strategies among beneficiary farmers, particularly in Cambodia and Lao PDR, where many non-beneficiary farmers still do not practice these essential management strategies. The project's success in raising awareness and encouraging the use of proper pest and disease management has contributed to improved crop health and productivity for beneficiary farmers, though continued efforts may be necessary in certain areas to ensure broader adoption.

- **Cambodia:** Before the project, pest and disease management was largely absent among non-beneficiary farmers in Cambodia. 10 out of 11 non-beneficiary farmers did not practice any form of pest and disease management, and only 1 farmer practiced it

partially. However, the project interventions had a significant impact on beneficiary farmers, with 9 out of 10 now fully implementing pest and disease management strategies, and 1 farmer reporting partial adoption. This improvement highlights the effectiveness of the project in encouraging better farm management practices among beneficiaries in Cambodia.

- **Lao PDR:** In Lao PDR, none of the non-beneficiary farmers reported practising pest and disease management, with all 10 out of 10 non-beneficiaries lacking these critical practices. On the other hand, 4 out of 10 project beneficiaries have adopted pest and disease management strategies after the project. While there is still room for improvement, the project has clearly contributed to increased awareness and adoption of these practices among beneficiary farmers.
- **Viet Nam:** In Viet Nam, both beneficiary and non-beneficiary farmers reported full adoption of pest and disease management strategies, with all 20 farmers—including both 11 non-beneficiaries and 9 project beneficiaries—implementing these practices. This suggests that Viet Nam may have had a higher baseline knowledge or capacity for pest and disease management, which the project further reinforced.

Farmer Groups and Grassroots Public-Private Partnership (G-PPP) Formation

A key achievement of the project was the formation and strengthening of farmer groups, facilitated by the Grassroots Public-Private Partnership (G-PPP) model. This model promoted collaboration between farmers, local communities, government agencies, and private sector actors. The G-PPP approach aimed to create a more structured framework for pepper production, improving market access and helping farmers meet international standards.

Farmer groups played an important role in promoting collective decision-making and peer learning. By working together, farmers were able to share best practices, improve their production processes, and gain support from each other. The G-PPP model also helped establish closer connections with private sector partners, allowing farmers to implement the Code of Practice (CoP) more effectively. These groups provided a platform for training on SPS standards and other agricultural techniques, ensuring that important knowledge was shared among members.

Private Sector Collaboration and Market Linkages

The project strengthened partnerships between peppercorn farmers, private sector actors, and government agencies, creating sustainable market linkages and improving SPS compliance. Private sector engagement was instrumental in helping farmers understand quality requirements and access new buyers.

In Cambodia, the Sela Pepper Company played a crucial role in enhancing SPS compliance, enabling farmers to meet international standards and access global markets. This collaboration led to a significant milestone—Sela Pepper's first consignment of 30 tonnes of black pepper to Qingdao, in 2024—marking Cambodia’s first commercial pepper export to China. In Lao PDR, ETU Green Company supported the adoption of improved farming practices through the Code of Practice (CoP), ensuring better quality control. In Viet Nam, collaborations with companies like VietPepper helped farmers align with export standards, strengthening their ability to compete in high-value global markets.

These partnerships not only improved production and income opportunities for farmers but also reinforced the resilience and competitiveness of the peppercorn value chain, paving the way for long-term sustainability and scaling.

Innovative Approaches in Strengthening the Value Chain

The project introduced several innovative solutions to enhance SPS compliance, farmer capacity, and market access in the peppercorn value chain. Key approaches include:

- **Tailored Code of Practice (CoP):** Developed through a participatory process, the CoP provided a structured, locally adapted framework for smallholder farmers to meet SPS standards, bridging gaps in food safety compliance.

- **Participatory Guarantee System (PGS):** This cost-effective, community-based quality assurance model allowed small-scale farmers to demonstrate compliance, improving their credibility with buyers.
- **Integration of Digital Tools and Data-Driven Decision-Making:** The project leveraged modern farm management tools and digital record-keeping to help farmers track compliance and improve production practices.

These innovations not only improved value chain efficiency but also enhanced long-term sustainability and inclusivity in the sector.

4.5.2 Difference in Well-being, Gender Equality, and the Environment

The project resulted in notable improvements in the well-being of project beneficiaries, primarily driven by increased income and better market access. These improvements were linked to the project's efforts to enhance peppercorn quality and open up new market opportunities. For example, the average price of peppercorn for project beneficiaries rose from 1,658 USD to 5,022 USD, which directly contributed to improved financial stability. In Cambodia, 8 out of 10 project beneficiaries reported enhanced well-being due to higher incomes from increased market access. Similar benefits were observed in Lao PDR and Viet Nam, where 7 out of 10 and 9 out of 9 project beneficiaries, respectively, reported improved livelihoods as a result of these market-driven changes.

In terms of gender equality, the project made measurable progress in increasing the role of female farmers. Through training programs and farmer group activities, women became more involved in decision-making processes. In Cambodia, the sole female project beneficiary reported a more active role in farming activities. In Lao PDR, all seven female beneficiaries noted greater involvement in decision-making, supported by their participation in farmer groups. Similarly, in Viet Nam, the one female project beneficiary highlighted her increased participation in farm management and decision-making.

The project also had a positive environmental impact. In Cambodia, 7 out of 10 project beneficiaries adopted environmentally friendly practices, such as improved pest management and the use of organic inputs, promoted through the project's training on sustainable practices. In Lao PDR, 6 out of 10 project beneficiaries reported similar changes, incorporating sustainable methods into their farming. In Viet Nam, all nine project beneficiaries adopted more sustainable practices, which not only contributed to environmental protection but also helped them meet market standards, further enhancing their access to new buyers.

4.5.3 Unexpected Impacts

Project beneficiary farmers reported several unexpected positive impacts and catalysed further actions and changes across various areas of the project. In Cambodia, 6 out of 10 project beneficiary farmers noted improved community cooperation, which included informal knowledge sharing within the local community. Farmers who were not directly involved in the project adopted better farming practices after observing the success of project beneficiary farmers. These non-participating farmers benefitted from exposure to improved techniques, such as better pest management and sustainable farming methods, shared informally by project participants. Additionally, 7 out of 10 project beneficiary farmers in Cambodia mentioned increased awareness of SPS challenges among other farmers, further expanding the reach of the project's objectives.

In Lao PDR, 5 out of 10 project beneficiary farmers observed increased interest in sustainable farming practices within their communities. Project beneficiary farmers shared their newly acquired skills and practices informally, leading to the adoption of sustainable techniques by other local farmers, such as reduced pesticide use, better irrigation, and soil health management. Furthermore, 6 out of 10 project beneficiary farmers noted the mobilisation of additional resources for SPS capacity development, highlighting how the project spurred further actions for strengthening agricultural practices and compliance with SPS standards.

In Viet Nam, 7 out of 9 project beneficiary farmers highlighted unexpected improvements in local market prices due to the better quality of peppercorn produced as a result of improved SPS compliance. This price increase was visible not only for project beneficiary farmers but also for control farmers, indicating an overall uplift in the pepper value chain. All nine project beneficiary

farmers also emphasised increased efforts to improve SPS standards and market access, which contributed to the broader economic stability of farming communities.

Public and private stakeholders noted that the project's capacity-building efforts enhanced farmers' abilities to meet SPS standards, creating a broader understanding of good agricultural practices. These efforts strengthened both public and private sector capabilities, contributing to better market access and sustainable agricultural development in the region. Additionally, the project led to increased yields for project beneficiary farmers, which directly influenced employment opportunities in the farming sector. Many farmers reported hiring additional labour to manage the increased workload, creating more jobs in local communities.

The project also had a positive impact on gender equality among project beneficiary farmers, with all female farmers in Cambodia (1 out of 1), Lao PDR (7 out of 7), and Viet Nam (1 out of 1) reporting enhanced roles and participation. Comparatively, fewer female control farmers in Cambodia (1 out of 1) and Lao PDR (2 out of 6) noted similar impacts. In terms of environmental practices, project beneficiary farmers showed higher adoption rates, with 7 out of 10 in Cambodia, 6 out of 10 in Lao PDR, and all 9 in Viet Nam adopting sustainable practices. Among control farmers, only 3 out of 11 in Cambodia, 2 out of 10 in Lao PDR, and 4 out of 11 in Viet Nam adopted similar practices.

All interviewed stakeholders confirmed these unexpected positive impacts, noting that *"the informal exchange of knowledge and practices among local farmers helped extend the benefits of the project beyond its direct participants. Increased interest in sustainable farming practices, better market conditions, and resource mobilisation further underscored the project's broader influence within the agricultural communities".*

4.6 Sustainability

The sustainability of the project is assessed by evaluating the likelihood that its benefits will continue after its completion. The project's focus on building local capacity, fostering strong public-private partnerships, and promoting sustainable farming practices has laid a solid foundation for long-term impact. Key sustainability mechanisms—such as ongoing training, institutional support, and market linkages—have been integrated to ensure the continuation of benefits. Feedback from stakeholders, including farmers, public officials, and private partners, confirms that while the project has established a robust base for sustainable development in the peppercorn value chain, some areas require further attention to enhance lasting impacts.

A key indicator of sustainability is the willingness of project beneficiary farmers to share their newly acquired knowledge with others. Of the 29 project beneficiary farmers, 18 expressed a strong willingness to disseminate the practices and techniques they learned. This peer-to-peer knowledge transfer is a crucial element of sustainability, ensuring that the project's reach extends beyond its direct participants.

4.6.1 Long-term Sustainability of Benefits

Project beneficiary farmers expressed confidence in the long-term sustainability of the benefits. The improvements in farming practices, market access, and yields are expected to continue, due to the ongoing training programs and strong institutional support in the project. In Cambodia, Lao PDR, and Viet Nam, most project beneficiary farmers highlighted the lasting impact of these interventions, emphasising the benefits of improved Sanitary and Phytosanitary Standards (SPS) compliance and enhanced market linkages.

Public stakeholders and partners shared this optimism, affirming that *"capacity building and the alignment of project activities with national agricultural policies would ensure the continued success of these practices. The training provided to master trainers and public extension officers creates a self-sustaining education and capacity building cycle that will benefit new farmers*".

4.6.2 Mechanisms for Sustainability

Several mechanisms were implemented to ensure the sustainability of the project's results, particularly the ongoing capacity-building efforts, institutional support, and market linkages:

- Ongoing Training and Capacity Building: Continuous training programs were established for farmers, focusing on good agricultural practices and compliance with SPS standards. These programs are sustainable because they are delivered by trained master trainers and public extension officers, ensuring that knowledge transfer continues beyond the project's duration.

- Institutional Support: The involvement of government agencies in all three countries ensures that the practices introduced during the project are aligned with national agricultural policies. This integration guarantees that the project's outcomes are supported by public institutions, providing long-term backing for sustainable agricultural practices.

- Market Linkages: Strong market linkages were formed between farmers and buyers, incentivising farmers to maintain the quality of their produce. Long-term contracts and partnerships with companies like Simexco and Sela Pepper ensure that farmers continue to meet market demands, driving sustained improvements in production and compliance.

Stakeholders and master trainers confirmed these mechanisms as critical to sustaining the project's benefits over time. The combination of ongoing support, market incentives, and institutional alignment provides a solid framework for long-term sustainability.

4.7 Other unexpected results

During the project's implementation, several unexpected results emerged, enhancing the project's overall impact and contributing to broader agricultural development goals in the region. These outcomes include domestic spillovers, synergies with other projects, the development of new initiatives, and various unanticipated positive impacts.

4.7.1 Domestic Spillovers

While the project primarily focused on direct beneficiaries, significant positive spillovers were observed within the wider farming communities, impacting non-participating farmers and local stakeholders. Though not directly involved in project activities, these farmers adopted improved farming practices through informal knowledge exchanges with project beneficiary farmers, thus benefiting from enhanced techniques and approaches introduced during the project.

In Cambodia, several non-participating farmers observed the success of their peers who were engaged in the project. By witnessing the improved yields, pest management practices, and higher quality of peppercorn produced, these farmers began adopting similar techniques, such as better irrigation practices and reduced pesticide use. Though they did not receive formal training or market linkages, their exposure to new practices led to gradual improvements in their farming outcomes. Notably, 6 out of 10 project beneficiary farmers in Cambodia reported that non-participating farmers in their communities had adopted some of the sustainable methods introduced through the project (Inspection report WASI).

In Lao PDR, informal knowledge sharing among farmers resulted in similar positive spillovers. Five out of ten project beneficiary farmers noted that their peers had begun implementing sustainable farming practices, such as organic pest control and better water management, after observing the benefits these methods provided. Although these farmers did not receive the same level of support and training as project participants, their willingness to adopt new techniques illustrates the project's broader influence beyond its immediate beneficiaries.

In Viet Nam, domestic spillovers were evident in both farming practices and market outcomes. Project beneficiary farmers in Viet Nam significantly improved their peppercorn quality, achieving better market access and higher prices. This led to a ripple effect in local markets, where non-participating farmers also benefited from the rise in market prices. The improved quality standards set by the project beneficiary farmers helped uplift the overall value of peppercorn in the region. As a result, even those outside the direct scope of the project saw financial gains, though to a lesser extent.

It is important to note that while non-participating farmers did not have access to formal training sessions, market linkages, or the full range of resources provided to project beneficiaries, they still benefited from informal exchanges of knowledge and practices. In farming communities where cooperation and information-sharing are common, the influence of the project extended beyond its

original scope. The gradual adoption of improved farming techniques by non-participants demonstrates the project's broader positive impact on sustainable agricultural practices within the region.

Additionally, while non-participating farmers did not experience the same scale of improvement in terms of market access and production yields, the positive spillovers of knowledge sharing created a foundation for future improvements. With further support, these farmers could potentially achieve similar outcomes as project beneficiaries, highlighting the importance of expanding training and capacity-building efforts to reach a wider audience.

4.7.2 Unplanned Synergies and Collaboration

During the project, several unplanned synergies emerged, aligning the project's objectives with existing national programmes and fostering deeper collaboration between stakeholders. In Viet Nam, the project's efforts to improve food safety and market access complemented ongoing national food safety initiatives. This alignment facilitated closer partnerships with private sector companies like Simexco and Viet Pepper, enabling them to integrate the Code of Practice (CoP) into their supply chains and further enhancing market access for smallholder farmers.

In Cambodia, the project's training programmes dovetailed with the local agricultural extension services, creating a more comprehensive support system for farmers. This synergy allowed farmers to benefit from both the project's capacity-building efforts and the national extension services, reinforcing their ability to adopt sustainable farming practices.

In Lao PDR, the alignment of the project with regional agricultural strategies led to smoother collaboration with other ongoing initiatives, enabling shared resources and a collective approach to improving SPS compliance across the peppercorn value chain. These unplanned synergies helped magnify the project's impact, making it more effective and sustainable.

4.7.3 Development of New Projects

The success of the project catalysed the development and funding of new initiatives aimed at further improving agricultural practices and market access in the region. In Viet Nam, the project's positive outcomes prompted the government and local NGOs to develop additional projects focused on enhancing SPS standards and market linkages for other crops. In Cambodia, Public Stakeholders reported that new funding was secured to expand sustainable farming practices to other regions. In Lao PDR, stakeholders highlighted that additional resources were mobilised to build on the project's achievements, with new initiatives being launched to further support peppercorn and other spice producers.

4.7.4 Mainstreaming of project interventions

The project's impact extends beyond its direct beneficiaries, as the Code of Practice (CoP) is now set to be scaled under GIZ's support for the peppercorn sector. Recognizing the CoP's value in improving SPS compliance and quality assurance, GIZ has committed to integrating it into its broader agricultural programs. This will enable many more farmers to benefit from the structured guidelines and best practices introduced under the STDF project.

The incorporation of the CoP into GIZ's initiatives reflects the project's success in developing a scalable, sustainable solution, ensuring long-term alignment with global food safety and trade standards. This collaboration highlights the coherence between STDF-funded projects and other donor-supported agricultural programs, reinforcing efforts to enhance market access for smallholder farmers.

The integration of project interventions into government-led extension services is also moving forward. In Cambodia and Lao PDR, national extension services have begun incorporating elements of the Code of Practice (CoP) and Good Agricultural Practices (GAPs) into their official advisory programs. This was highlighted during the Phnom Penh workshop attended by CUSP, where government representatives from both countries emphasized their commitment to continuing support for farmers using these best practices.

4.7.5 Unanticipated Positive Impacts

Several unanticipated positive impacts emerged during the implementation of the project. Improved community cooperation was evident as non-participating farmers began adopting sustainable farming practices by observing the successes of project beneficiaries. This informal knowledge-sharing fostered stronger community ties and led to broader improvements in agricultural productivity.

The project also heightened interest in sustainable practices in Lao PDR, where local farmers adopted techniques such as reduced pesticide use and better irrigation management. This shift demonstrated the project's ability to influence not only its direct beneficiaries but also the surrounding farming community, promoting environmentally friendly practices.

Economic benefits extended beyond initial expectations, particularly in Viet Nam, where improved peppercorn quality contributed to higher local market prices. This uplift in quality positively impacted non-participating farmers as well, enhancing the overall peppercorn value chain and bolstering economic stability within farming communities.

Moreover, the project strengthened public and private sector engagement, facilitating partnerships that will support sustainable agricultural practices in the long term. It also contributed to increased employment opportunities and greater gender equality, with many female farmers taking on more active roles in decision-making processes. These broader socio-economic impacts highlight the project's potential for fostering lasting agricultural development across the region.

5. CROSS-CUTTING

5.1 Gender

The project incorporated gender equality as a key cross-cutting issue. The project aimed to ensure that both male and female farmers benefitted equally from the interventions, promoting gender-inclusive agricultural practices and decision-making processes.

5.1.1 Inclusion in Training and Capacity Building

The project ensured that female farmers had equal access to training and capacity-building activities. In Cambodia, Lao PDR, and Viet Nam, female farmers participated actively in training sessions on sustainable farming practices, pest management, and post-harvest handling. The inclusion of women in these activities helped enhance their agricultural knowledge and skills, enabling them to contribute effectively to their household and community farming activities. However, some female farmers in Lao PDR noted that the training schedules sometimes conflicted with their domestic responsibilities, which made it difficult for them to attend all sessions. This was echoed by Public Stakeholders who said the importance of creating more flexible training schedules to accommodate women's roles.

5.1.2 Empowerment and Decision-Making

The project promoted the empowerment of female farmers by encouraging their involvement in decision-making processes. In Cambodia, the female treatment farmer reported increased participation in farm management decisions. In Lao PDR, female farmers noted their enhanced roles in planning and executing farming activities. In Viet Nam, female farmers highlighted their improved status and active involvement in farm-related decisions. This empowerment helped balance the gender dynamics within farming communities, encouraging a more inclusive environment. Despite these gains, some female farmers in Cambodia and Lao PDR expressed the need for more gender-specific support to further strengthen their decision-making capacities. Participants in the Delphi Group Discussions highlighted cultural barriers that still limited women's full involvement, indicating a need for ongoing efforts to address these issues.

5.1.3 Economic Benefits and Well-Being

The project significantly contributed to the economic empowerment of female farmers by improving their income and overall well-being across all participating countries. In Cambodia, female farmers experienced increased income, with the average price of peppercorn rising from 1,520 USD to 2,000

USD per KMT after the project's implementation. This financial uplift enabled them to invest in additional farming resources and improve their overall living standards.

In Lao PDR, female farmers also noted similar economic benefits, with production levels increasing from 0.2 KMT before the project to 1.0 KMT after. However, they faced challenges in accessing financial services, such as loans, which limited their ability to further invest in their farms. Despite the increase in income, many expressed the need for improved financial services tailored to support female farmers in sustaining their gains.

In Viet Nam, female farmers highlighted significant improvements in their livelihoods, with the average price for their peppercorn increasing from 1,800 USD to 7,200 USD per KMT. Additionally, female farmers in Viet Nam reported increases in their production levels, rising from 5.0 KMT to 7.4 KMT, reflecting their growing involvement in farm management and decision-making processes.
Overall, the project's emphasis on gender equality led to a positive ripple effect, as increased incomes for female farmers contributed to better living standards and financial stability for their households. Continued support, particularly in terms of access to financial services and targeted technical training, will be crucial to ensure these gains are sustained and expanded in the future.

5.1.4 Areas for Improvement

Despite these positive outcomes, several challenges were identified. In Cambodia, the female farmer mentioned the need for more targeted training sessions addressing specific gender-related challenges in farming. In Lao PDR, female farmers highlighted the need for improved access to resources and support tailored to female farmers. In Viet Nam, female farmers suggested more follow-up sessions to reinforce the training and address ongoing challenges. Public Stakeholders and partners confirmed these findings, highlighting the importance of addressing gender-specific barriers to ensure sustained benefits for female farmers. Participants in the Delphi Group Discussions stressed the need for gender-sensitive approaches in future projects to overcome cultural and practical barriers faced by women.

Overall, the project made considerable progress in addressing gender equality. The active inclusion of female farmers in training and decision-making processes, along with the economic benefits achieved, underscored the project's commitment to gender-inclusive development. However, addressing the remaining challenges through targeted interventions and continuous support will be crucial for sustaining these gains and further promoting gender equality in the agricultural sector. Addressing gaps such as conflicting training schedules, limited access to financial services, and cultural barriers will enhance the project's impact on gender equality.

5.2 Environment, Biodiversity and Climate Change

The project addressed cross-cutting issues related to the environment, biodiversity, and climate change by promoting sustainable farming practices and increasing awareness among farmers about the importance of environmental conservation. These efforts were aimed at ensuring long-term agricultural productivity while minimising negative impacts on the environment. The analysis of the data files highlights the project's successes as well as some gaps that need addressing.

5.2.1 Promotion of Sustainable Farming Practices

The project emphasised the adoption of sustainable farming practices among treatment farmers. These practices included the use of organic fertilisers, integrated pest management (IPM), and efficient water use techniques. In Cambodia, farmers reported implementing these practices, leading to reduced reliance on chemical inputs and improved soil health. In Lao PDR, farmers adopted similar practices, noting benefits such as increased soil fertility and reduced pest incidences. In Viet Nam, treatment farmers highlighted the positive impact of sustainable farming techniques on their crop yields and environmental footprint. However, some farmers in all three countries mentioned the need for additional training to fully integrate these practices into their farming routines. Analysis of the data revealed that while initial training sessions were effective, follow-up support and refresher courses were less consistent, leading to gaps in sustained practice adoption.

5.2.2 Biodiversity Conservation

The project promoted biodiversity conservation through the diversification of crops and the preservation of natural habitats. In Cambodia, farmers were encouraged to plant a variety of crops alongside peppercorns to support biodiversity. The intercropping data reveals insights from beneficiary and non-beneficiary farmers across Cambodia, Lao PDR, and Viet Nam. In Cambodia, a total of 21 farmers were recorded, with both 11 non-beneficiary and ten beneficiary farmers reporting no intercropping. In Lao PDR, among 20 farmers, ten non-beneficiary farmers grew coffee as an intercrop, while beneficiary farmers had no intercropping practices. In Viet Nam, 20 farmers were noted, with 11 non-beneficiary and nine beneficiary farmers also engaging in no intercropping. Overall, the majority of farmers across all three countries did not adopt intercropping practices, indicating a need for more targeted strategies to promote diverse cropping methods.

In Lao PDR, farmers reported increased awareness of the importance of maintaining natural vegetation and protecting wildlife habitats on their farms. In Viet Nam, efforts to conserve biodiversity included the use of cover crops and agroforestry practices. Public Stakeholders and partners noted that these biodiversity-friendly practices contributed to a healthier and more resilient farming ecosystem. Despite these positive steps, some farmers expressed the need for more guidance on how to effectively implement biodiversity conservation measures. The data indicated that while biodiversity initiatives were well-received, the lack of region-specific guidance and resources posed challenges for consistent implementation.

5.2.3 Climate Change Adaptation

The project also focused on helping farmers adapt to climate change by promoting resilient agricultural practices. In Cambodia, farmers adopted water-saving techniques such as drip irrigation to cope with irregular rainfall patterns. In Lao PDR, the use of drought-resistant crop varieties was encouraged to mitigate the effects of prolonged dry spells. Meanwhile, farmers in Viet Nam implemented soil conservation methods to protect against erosion caused by heavy rains. These strategies were effective in enhancing the resilience of farming operations to climate variability.

Despite the introduction of these climate adaptation strategies, feedback indicated that their uptake was inconsistent, largely due to a lack of tailored support and resources for extreme weather preparedness. Participants in discussions pointed out the need for more comprehensive support to address specific climate-related challenges, particularly in the face of extreme weather events.

Case studies highlighted the effectiveness of these adaptation strategies in enhancing the resilience of farming operations to climate variability. However, feedback from the Delphi Group Discussions indicated that more support was needed to address specific climate-related challenges, such as extreme weather events. Data analysis revealed that while climate adaptation strategies were introduced, their uptake was inconsistent due to a lack of tailored support and resources for extreme weather preparedness.

5.2.4 Areas for Improvement

Despite the progress made, several challenges were identified in addressing environmental, biodiversity, and climate change issues. In Cambodia, farmers pointed out the difficulty of accessing organic inputs and the need for more consistent support in implementing sustainable practices. In Lao PDR, farmers highlighted the lack of infrastructure to support water-saving technologies. In Viet Nam, some farmers mentioned the need for more tailored advice on climate change adaptation specific to their local conditions. Public Stakeholders emphasised the importance of continued investment in training and resources to overcome these barriers and ensure the long-term sustainability of environmental gains. The data files revealed gaps in the continuity and consistency of support provided to farmers, indicating a need for more structured follow-up and resource distribution.

Overall, the project made substantial strides in addressing environmental, biodiversity, and climate change issues. By promoting sustainable farming practices, enhancing biodiversity conservation, and supporting climate change adaptation, the project contributed to more resilient and environmentally friendly agricultural systems. However, addressing the remaining challenges through targeted interventions and continuous support will be crucial for sustaining these environmental benefits and further promoting ecological sustainability in the agricultural sector.

Providing ongoing training, improving access to resources, and tailoring support to local conditions will enhance the project's impact on the environment, biodiversity, and climate change adaptation. The analysis of data files underscores the importance of addressing identified gaps, such as the need for more consistent follow-up training and region-specific guidance, to ensure the long-term success and sustainability of the project's environmental goals.

6. LESSONS

The project yielded several valuable lessons that are relevant for wider use and future programme development. These lessons span both process and substance, providing insights into effective implementation strategies and substantive approaches to achieving sustainable agricultural development.

6.1 Leveraging STDF Pilot Projects for Scaling and Sustainability

A key lesson from this project is the importance of leveraging and scaling successful STDF interventions through donor partnerships and national programs. The integration of the Code of Practice (CoP) into GIZ's broader agricultural initiatives is a prime example of how STDF pilot projects can inform and enhance ongoing efforts by international development partners. There are untapped opportunities for STDF donors, implementing partners, and beneficiary governments to further adopt, adapt, and mainstream good practices from pilot projects into national policies and regional trade frameworks. A more structured approach to knowledge sharing, technical collaboration, and donor alignment would enhance the long-term impact and sustainability of SPS innovations.

6.2 Effective Stakeholder Engagement

Engaging a broad range of stakeholders, including government authorities, private sector entities, and local communities, is crucial for the success of agricultural projects. The project demonstrated that inclusive stakeholder participation enhances the relevance and acceptance of interventions, leading to better outcomes.

6.3 Adaptive Project Management

Flexibility and adaptability in project management are essential for addressing unforeseen challenges and changes. The project's ability to adapt to changing circumstances and manage risks effectively contributed significantly to its success. Future programmes should incorporate adaptive management approaches to remain responsive to evolving needs and contexts.

6.4 Consistent Follow-Up and Support

Continuous follow-up and support are vital for sustaining the benefits of training and capacity-building activities. The project highlighted the importance of providing regular refresher courses and on-the-ground support to ensure that farmers can effectively implement new practices over the long term.

6.5 Tailored Training Approaches

Customising training sessions to fit the specific needs and schedules of different farmer groups, especially female farmers, enhances participation and effectiveness. The project's success with tailored training programmes underscores the importance of understanding and addressing the unique challenges faced by various demographic groups.

6.6 Sustainable Farming Practices

Promoting sustainable farming practices, such as the use of organic inputs, integrated pest management (IPM), and water conservation techniques, leads to significant improvements in agricultural productivity and environmental health. Future programmes should continue to prioritise these practices to achieve long-term sustainability.

6.7 Climate Change Adaptation

Implementing climate-resilient agricultural practices is essential for mitigating the impacts of climate variability. The project demonstrated the effectiveness of measures like drought-resistant crops and water-saving technologies in enhancing farm resilience. Future initiatives should build on these strategies to help farmers adapt to changing climatic conditions.

6.8 Gender-Inclusive Approaches

Actively involving women in agricultural projects and addressing gender-specific barriers can lead to more equitable and inclusive outcomes. The project's efforts to empower female farmers and improve their participation in decision-making processes highlight the need for gender-sensitive approaches in future programmes.

6.9 Building Local Capacities

Strengthening local capacities through targeted training and resource provision is critical for the sustainability of agricultural interventions. The project's success in enhancing farmers' skills and knowledge underscores the importance of capacity-building as a cornerstone of development efforts.

6.10 Biodiversity Conservation

Integrating biodiversity conservation into agricultural practices supports the creation of more resilient and sustainable farming systems. The project's emphasis on crop diversification and habitat preservation demonstrates the benefits of biodiversity-friendly practices. Future programmes should continue to promote these approaches to maintain ecological balance.

The lessons learned from the project provide a comprehensive understanding of effective strategies for promoting sustainable agriculture, gender equality, and climate resilience. These insights are valuable for guiding future programme development and ensuring that interventions are both impactful and sustainable. By focusing on inclusive stakeholder engagement, adaptive management, consistent support, tailored training, sustainable practices, climate adaptation, gender inclusivity, capacity building, and biodiversity conservation, future projects can build on the successes of this initiative and address its challenges more effectively.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 Key Conclusions

- **Alignment with National and Regional Priorities:** The project demonstrated a strong alignment with national and regional agricultural priorities by addressing critical SPS (Sanitary and Phytosanitary) challenges and enhancing market access for peppercorn producers in Viet Nam, Cambodia, and Lao PDR. This alignment ensured the relevance and effectiveness of the project interventions.
- **Effectiveness in Achieving Objectives:** The project successfully met its primary objectives, with treatment farmers reporting improvements in SPS standards, market access, and the quality and yield of peppercorn production. The enhanced farming practices and increased awareness of food safety standards among farmers significantly contributed to these achievements.
- **Efficiency in Resource Utilisation:** Resources were allocated appropriately and efficiently, leading to timely implementation of project activities. Effective project management and adaptability to changes and risks ensured the smooth delivery of results.
- **Sustainability of Project Benefits:** The project established mechanisms such as ongoing training, institutional support, and market linkages to ensure the long-term sustainability of benefits. However, continuous support and tailored interventions are necessary to maintain these gains.
- **Impact on Farmers and Communities:** The project had a positive impact on the peppercorn value chain, improving farming practices, increasing incomes, and enhancing market access. It also promoted gender equality and environmental sustainability, contributing to broader socio-economic development.
- **Addressing Cross-Cutting Issues:** The project effectively addressed cross-cutting issues related to gender equality, environmental sustainability, and climate change adaptation. It

promoted inclusive practices and enhanced the resilience of farming communities to environmental challenges.

7.2 Overall Analysis and Judgement

The project's contribution to the agricultural sector in Viet Nam, Cambodia, and Lao PDR was substantial. It effectively addressed SPS challenges, improved market access, and promoted sustainable farming practices, aligning with the two outcomes and programme goals in STDF's theory of change. These outcomes include increased capacity to comply with international SPS standards and enhanced market access for agricultural products. The project's interventions led to measurable improvements in the quality and safety of peppercorn production, thereby contributing to the broader programme goal of promoting safe trade and improving livelihoods.

7.3 Recommendations

7.3.1 For Government Authorities

- **Strengthen Training and Support:** Continue and expand training programmes for farmers, focusing on sustainable practices, SPS standards, and climate change adaptation. Ensure training is accessible and tailored to local conditions.
- **Enhance Infrastructure:** Invest in infrastructure to support sustainable farming practices, such as water-saving technologies and access to organic inputs.
- **Promote Gender Equality:** Implement policies that support the active participation of women in agriculture, addressing specific barriers they face.
- **Mainstreaming extension services:** While Cambodia and Lao PDR have started integrating the CoP and GAPs into their government-led extension services, there is potential for further mainstreaming in Viet Nam and other countries.

7.3.2 For the Private Sector

- **Market Linkages:** Strengthen market linkages and support mechanisms to ensure farmers can access markets and receive fair prices for their produce.
- **Sustainable Practices:** Encourage the adoption of sustainable farming practices within the supply chain, providing incentives for compliance with SPS standards and environmental conservation.

7.3.3 For Regional Economic Communities

- **Regional Collaboration:** Foster regional collaboration to share best practices and resources for improving SPS standards and market access across countries.
- **Support Programmes:** Develop and support regional programmes that focus on sustainable agriculture and climate change adaptation.

7.3.4 For the Project Implementing Organisation

- **Continuous Monitoring:** Implement robust monitoring and evaluation systems to track the long-term impact of the project and identify areas for improvement. Robust mechanisms for monitoring and evaluating the impact of the interventions in real-time would also be beneficial for making timely adjustments to the strategies being implemented.
- **Resource Allocation:** Ensure consistent and adequate allocation of resources to support ongoing training and capacity-building activities.
- **Tailored Interventions:** Develop tailored interventions to address specific challenges faced by farmers, such as access to financial services and region-specific climate adaptation strategies.

7.3.5 For Other Project Stakeholders

- **Collaborative Efforts:** Promote collaborative efforts among stakeholders to ensure a holistic approach to addressing agricultural challenges.
- **Knowledge Sharing:** Facilitate knowledge-sharing platforms to disseminate successful practices and lessons learned from the project.

7.3.6 For Members of the STDF's Global Partnership

- **Global Best Practices:** Share global best practices and innovations in SPS standards and sustainable agriculture to enhance the effectiveness of similar projects worldwide.
- **Policy Advocacy:** Advocate for policies that support sustainable agricultural practices and the inclusion of smallholder farmers in global supply chains.

7.3.7 For the Wider Community of Donors and Development Partners

- **Funding Support:** Provide continued funding and support for projects that promote sustainable agriculture, gender equality, and climate change adaptation.
- **Integrated Approaches:** Encourage integrated approaches that address multiple cross-cutting issues, ensuring comprehensive development outcomes.

These recommendations are designed to build on the successes of the project and address identified gaps, ensuring that the positive impacts are sustained and enhanced over time. By targeting relevant stakeholders and focusing on actionable steps, these recommendations aim to promote a more resilient and inclusive agricultural sector in the region.

8. ANNEXES

8.1 Annex I - Logical Framework

Sequence	Project description	Measurable indicators/targets	Sources of verification
Goal	Develop an effective approach to drive increased competitiveness & sustainability of the regional peppercorn industry in terms of consistent supply of high-quality safe peppercorn from smallholder driven value-chain, resulting in increased sales to premium markets.	• Increased value per KMT of peppercorn produced by the groups targeted by the STDF project. • Demonstrable roll-out strategy for the model.	• VPA, grower/processor group records & buyer data relating to targeted groups. • Documented roll-out strategy • Feedback from Farmers, Private Sector Companies, CABI Staff, STDF Staff, Desk Reviews
Immediate objective (purpose)	Increased financial returns, yields, quality/safety and market access for smallholder pepper growers and grower groups. Improved compliance with international phytosanitary standards for production and export of regional peppercorn to EU and American markets.	• Within 3 years, at least 50% of the groups targeted by the STDF project record: • At least a 45% reduction in detection of microbial contaminants and excess pesticide MRLs • Rejection percentages/values due to SPS compliance reduced by 10%.	• VPA, grower/processor group records & buyer data relating to targeted groups. • Grower/processor groups data as part of management systems. • Feedback from: Farmers, Government Stakeholders, Private Sector Companies, Desk Reviews
Expected results (outputs): Output 1: Farm-village level pepper producer, collector and input provider code of practice based on existing national good practice standards and harmonized regionally			
Activities	1.1 Prepare appropriate code of practice	• Generic code of practice for village level activities (farmer, collector, & input provider) prepared and draft available by Q2	• Copies of the code of practice and supporting documents available. • Record of revisions and modifications to the code of practice based on stakeholder feedback. • Feedback from: National Stakeholders, Master Trainers, Desk Reviews
Activities	1.2 Tailor code of practice to meet local conditions, requirements, and cultural norms	• Code of practice for village level activities (farmer, collector, & input provider) tailored to national needs and draft version completed in each of the 3 countries, by Q4. • Implementation guide and guidelines for developing compliance criteria and inspection & monitoring instruments completed for each of the 3 countries by Q4	• Copies of each national code of practice and supporting documents available in the local language and English versions available electronically. • Record of revisions and modifications to the code of practice based on stakeholder feedback. • Feedback from: National Stakeholders, Master Trainers, Desk Reviews
Activities	1.3 Develop knowledge resources	• Factsheets and guides developed by Q5:	• Factsheets local language and English versions available electronically. • Feedback from: Farmers, Government Stakeholders, Desk Reviews
Activities	1.4 Develop an electronic resource of all information /materials generated by the project with global access	• Activity will be ongoing with full e- resource of English versions of the code of practice and all supporting documents/tools available in electronic format by Q12	• E-resource available for public access. • Feedback from: National Stakeholders, Desk Reviews

Sequence	Project description	Measurable indicators/targets	Sources of verification
Activities	1.5 Knowledge sharing with peppercorn value chain participants in Cambodia, Laos and Vietnam	• One (1) regional workshop held each year, with the host country rotating through the 3 project countries. • Activity will be ongoing with full e- resource of English and national language versions of the industry and government guidance documents and communication tools available by Q10 • Activity will be ongoing with at least 2 real examples of implementing the code of practice identified and documented by Q11	• Copies of each workshop agenda and proceedings available in electronic format presented in English and each of the national languages. • Copies of the industry and government guidance documents and communication tools available in electronic format • English and national language copies of the real example story documents available in electronic format. • Feedback from: Farmers, Private Sector Companies, Government Stakeholders, Desk Reviews
Activities	1.6 Knowledge sharing with stakeholders involved in peppercorn international trade	• Quality requirements for export market workshops held in each of the project countries by Q11 • Strategy for building awareness of the code of practice with international buyers identified and documented by Q10	• Reports from the workshops, including recommendations on how the countries can move forward. • Copy of the report detailing the strategy for building awareness available. • Feedback from: National Stakeholders, Private Sector Companies, STDF Staff, Desk Reviews.
Expected results (outputs): Output 2 Code of Practice pilot tested and a PGS based system developed for the pepper sector.			
Activities	2.1 Undertake market to farmer visits/dialogues and farmer to market visits/dialogue; based on shared learning strategies	• Lead firms and farmer groups identified and demonstrating their commitment by Q8: • For each value chain, village level participants (growers, collectors, and input suppliers) identified and profiled by Q8	• Letters of commitment to the pilot scheme from lead firms and farmer groups. • Reports on the survey for each value chain. • Feedback from: Farmers, Private Sector Companies, Desk Reviews.
Activities	2.2 Undertake facilitated market and grower dialogues to establish quality and supply criteria based on code of practice and establish agreements for ways of working together. Including supporting the establishment of farmer groups	• Participants for the pilot scheme identified and workshop at all pilot sites completed. • Assessment of the feasibility of starting a PGS in each area by Q9	• List of participants for the pilot • Training reports • Assessment reports. • Feedback from: Farmers, Private Sector Companies, Master Trainers, Desk Reviews
Activities	2.3 Conduct PGS-linked training workshops	• Briefing and training completed at each pilot site. • Agreement on the general direction and purpose of the PGS in each area by Q9	• Workshop reports • Reports from each site detailing the general direction and purpose of the PGS. • Feedback from: Farmers, Master Trainers, Desk Reviews.
Activities	2.4 Build capacity of advisors	• Extensions staff trained and advisory centres established by Q6	• Advisory reports. • Feedback from: Master Trainers, Government Stakeholders, Desk Reviews.
Activities	2.5 Support pilot trial participants to implement the code of practice	• Piloting of code of practice and PGS by selected groups & finalization of	• Report of the start of the pilot trial demonstrating start of the trial.

Sequence	Project description	Measurable indicators/targets	Sources of verification
		code of practice by end of Q12 • Interim modification of the code of practice based on smallholder & industry feedback from piloting in Vietnam and Cambodia by end of Q9	• Training / mentoring plans and reports • Inspection reports • Reports of piloting programme with analysis of challenges & solutions for implementing the code of practice • Record of revisions and modifications to the code of practice based on stakeholder feedback. • Report on costs of implementing the code of practice. • Feedback from: Farmers, Private Sector Companies, Government Stakeholders, Desk Reviews.
Expected results (outputs): Output 3: Strategies for wider roll-out of the PGS based system and code of conduct identified			
Activities	3.1 Document success stories	• Activity will be ongoing with at least 4 success stories identified and documented by Q11	• Copies of the success story documents available in electronic format. • Feedback from: Farmers, Private Sector Companies, Desk Reviews.
Activities	3.2 Assessment of the suitability of the code of practice, PGS, supporting documents and training material and identify roll-out strategies	• Success factors and lessons learnt from the pilot synthesized and documented for each country by Q11. • Rollout strategies identified and documented for each country by Q11	• Assessment plan and reports of each assessment available in electronic format • Copies of the synthesized reports available in electronic format • Copies of the rollout strategy documents available in electronic format. • Feedback from: Master Trainers, Government Stakeholders, Private Sector Companies, Desk Reviews.
Activities	3.3 Dissemination seminar for pepper industry stakeholders & donor representatives	• Seminar held in each of the 3 countries by Q12	• Report on the seminars including recommendations for moving forward. • Feedback from: Farmers, Government Stakeholders, Private Sector Companies, Desk Reviews

8.2 Annexure II - Data collection tools

(a) Delphi Group Interview Guide for Treatment Group Farmers in Cambodia and Laos Paper-based guide for field researchers.

Purpose of the Interview: This Delphi group interview is designed to gather collective insights from treatment group farmers in Cambodia and Laos regarding the implementation and impact of the 'Improving Food Safety and Market Access for Peppercorn in South-East Asia' project. The aim is to refine understanding through iterative discussion rounds to converge on the most agreed-upon opinions and solutions for future project enhancements.

Introduction to Participants:

- Welcome and thank participants for joining the session.
- Briefly explain the purpose and format of the Delphi interview.
- Assure confidentiality and emphasise the importance of honest and thoughtful responses.

Session Format:

- The session will consist of multiple rounds, allowing participants to discuss and then reconsider their views based on the group's feedback.
- Each round will consist of a question presentation, individual reflection, group discussion, and anonymous voting.
- The field researcher will facilitate the discussion, ensuring all participants have the opportunity to contribute.

Round 1: Initial Assessment

- Question 1: Based on your experience, how effective do you find the agricultural practices introduced by the project in improving the quality and quantity of peppercorn production?
- Question 2: What are the major challenges you still face despite the project's interventions?
- Provide participants with a moment to write down their answers before opening the floor for a moderated discussion.
- Question 3: Were the project's objectives and activities directly aligned with the specific needs of the peppercorn producers in South-East Asia?
- Question 4: How effectively did the project address the particular market access challenges faced by the target population?
- Question 5: What real difference (expected and/or unexpected) has the project made, or is likely to have, on the final beneficiaries, including on people's well-being, gender equality and the environment?

Round 2: Reflection and Review

- Recap the points of agreement and divergence from the first round.
- Question 6: Has the project catalysed any other action or change, for instance, raising awareness on SPS challenges and/or mobilising additional resources for SPS capacity development?
- Question 7: Reflecting on our previous discussion, what additional suggestions can you provide to enhance the agricultural practices further?
- Question 8: Are there new strategies or tools you believe should be introduced in future iterations of this project?

Round 3: Consolidation and Future Recommendations

- Summarize the key insights and common themes identified in the second round.

- Question 5: Considering all that we have discussed, what are the top priorities for future projects that should be addressed to improve market access and food safety standards for peppercorn? Write down/reflect on their consolidated views, followed by a group discussion.

Closing Round: Final Thoughts and Consensus Building

- Review the discussions and attempt to reach a consensus on the recommendations for future project actions.
- Final Question: Do you agree with the summarised recommendations? If not, what changes would you suggest?
- Conduct a final vote or show of hands to measure agreement levels.

Conclusion:

- Thank the participants for their valuable contributions.
- Briefly describe the next steps, including how their input will be used to influence project planning and implementation.
- Close the session and provide contact information should participants have further thoughts or wish to receive updates on project outcomes.

Documentation:

- The field researcher will document all discussions, key points of consensus, and areas of disagreement.
- A summary report will be compiled from the session's findings and distributed among project stakeholders for further action.

(b) Structured Interview Tool for Master Trainers

To be collected using GoogleForm
https://docs.google.com/forms/d/187MOsXw-a0YHqH1ydeasuPSNOG_bpfX_sD-tJw4fkus/edit

Form Introduction:

- **Purpose of the Interview:** "This interview is designed to gather your insights on the effectiveness of the training programs conducted as part of the 'Improving Food Safety and Market Access for Peppercorn in South-East Asia' project. Your feedback is crucial in helping us understand the impact of these initiatives and how they align with broader project goals."
- **Confidentiality Statement:** "All responses will be confidential and will only be used for project evaluation purposes. Please feel comfortable providing honest feedback."
- **Estimated Completion Time:** "The interview should take approximately 15-20 minutes."

Trainer Background

1. Full Name (optional): [Text input]
2. Location:
3. Province:
4. Country:
5. Age:
6. Sex:
7. Number of Training Sessions Conducted: [Dropdown: 1-5, 6-10, 11-15, More than 15]
8. Years of Experience as a Trainer: [Dropdown: Less than 1 year, 1-3 years, over 3 years]

Section 1: Understanding of Training Objectives and Content

Understanding of Training Objectives:

- "How well do you understand the objectives of the training program related to enhancing the skills and knowledge of stakeholders in the regional peppercorn industry?" (Scale: 1= Poor understanding, 2= Fair understanding, 3= Moderate understanding, 4= Good understanding, 5= Excellent understanding)

Familiarity with Training Content:

- "Please rate your familiarity with the key topics and content areas covered in the training program you delivered as a Master Trainer." (Scale: 1= Not familiar at all, 2= Somewhat familiar, 3= Moderately familiar, 4= Quite familiar, 5= Very familiar)

Effectiveness of Addressing Participant Needs:

- "How confident are you that the training program effectively addressed the needs and challenges of the target audience?" (Scale: 1= Not confident, 2= Somewhat confident, 3= Moderately confident, 4= Confident, 5= Very confident)

Content Tailoring and Communication:

- "Can you provide examples of how you tailored the training content to align with the specific objectives of the program and the needs of the participants?" (Open-ended)
- "How did you ensure that the key topics covered in the training program were effectively communicated and understood by the participants?" (Open-ended)
- "Were there any aspects of the training content that you found particularly challenging to deliver? If so, how did you address these challenges?" (Open-ended)

Section 2: Delivery and Facilitation Skills

Proficiency in Delivery:

- "How proficient do you consider yourself in delivering the training sessions and facilitating discussions effectively?" (Scale: 1= Not proficient, 2= Somewhat proficient, 3= Moderately proficient, 4= Proficient, 5= Highly proficient)

Effectiveness of Interactive Activities:

- "Rate the effectiveness of the interactive activities or methods you used to engage participants during the training sessions." (Scale: 1= Not effective, 2= Slightly effective, 3= Moderately effective, 4= Effective, 5= Highly effective)

Success in Ensuring Understanding and Retention:

- "How successful were you in ensuring that participants understood and retained the information presented during the training?" (Scale: 1= Not successful, 2= Somewhat successful, 3= Moderately successful, 4= Successful, 5= Highly successful)

Interactive and Adaptation Strategies:

- "Can you share an example of a particularly successful interactive activity or method you used to engage participants during the training sessions?" (Open-ended)
- "How did you adapt your delivery and facilitation approach to accommodate different learning styles and preferences among the participants?" (Open-ended)
- "Were there any specific strategies or techniques that you found particularly effective in ensuring participant understanding and retention of the training material?" (Open-ended)

Section 3: Participant Engagement and Feedback

Level of Engagement and Participation:

- "How would you rate the level of engagement and participation among the training participants throughout the program?" (Scale: 1= Very low engagement, 2= Low engagement, 3= Moderate engagement, 4= High engagement, 5= Very high engagement)

Challenges in Engaging Participants:

- "Did you encounter any challenges or barriers in engaging participants during the training sessions? If so, please describe these challenges." (Open-ended)

Feedback Collection and Analysis:

- "How did you collect feedback from participants regarding the training content, delivery, and overall experience? Were there any common themes or suggestions that emerged?" (Open-ended)

Section 4: Photograph Upload

Instruction: "Before taking and uploading any photographs, please obtain the respondent's consent using the statement below. Check their response as per their willingness to allow photographs."

Consent Statement: "Do you consent to having photographs taken of you and your farm/facility for the purposes of this project? These images may be used in reports and presentations related to the evaluation of the 'Improving Food Safety and Market Access for Peppercorn in South-East Asia' project. All images will be used respectfully and solely for the purposes of this project."

Response Options (checkbox):

- Yes, I consent to having photographs taken of me and my farm/facility.
- No, I do not consent to having photographs taken.

- Upload Photos of the Interview Session

[Instruction: "Please upload photos taken during the interview session with the respondent. Ensure that the photos clearly show the interaction without compromising the respondent's comfort or privacy."] - Upload Field: [Photos upload option]

- Upload Photos of the Farm/Facility
  [Instruction: "Please upload photos of the respondent's farm or facility. Focus on areas that highlight the farming practices, crop management, and any specific aspects mentioned by the respondent during the interview."] - Upload Field: [Photos upload option]

Note to Enumerators: "Please ensure to respect the respondent's privacy and choice regarding photographs. If the respondent does not consent to having their photographs taken, continue with the interview without taking any photos. Always ensure that the use of photos adheres to the ethical guidelines set out by the project and respects the dignity and privacy of all participants."

Submit Button

(c) Structured Interview Tool for National Stakeholders (Partners)
To be collected using GoogleForm
https://docs.google.com/forms/d/1O2-Q9v0i-TGra-i0iKmhAQwhFE0u_4YpecH_jYfDGek/edit

Form Introduction:

- Purpose of the Interview: "This interview is designed to gather your insights on the implementation outcomes, sustainability, and specific interventions of the 'Improving Food Safety and Market Access for Peppercorn in South-East Asia' project. Your feedback will help us evaluate the project's effectiveness, impact, and alignment with broader national strategies."
- Confidentiality Statement: "All responses will be kept confidential and will only be used for evaluation purposes. Identifiable information will remain anonymous unless you give us permission to do otherwise."
- Estimated Completion Time: "The interview should take approximately 20-30 minutes."

Background Information

1. Full Name (optional):
2. Sex:
3. Position:
4. Role in the Project:
5. Organization:
6. Country:
7. Province:
8. Type of stakeholder: [Government, Private Company, Other – details]
9. Duration of Involvement with the Project: [Less than 6 months, 6-12 months, 1-2 years, more than 2 years]

Section 1: Project Implementation and Management

Effectiveness of Project Implementation:

- How timely have the project activities been? [Open-ended]
- How well has the project adhered to the budget? [Open-ended]
- How would you describe the level of stakeholder engagement and participation in the project? [Open-ended]
- Can you provide specific examples of strategies that contributed to or impeded the effectiveness of the project's implementation? [Open-ended] What were the major strengths in the project's implementation and how did they contribute to its success? [Open-ended]
- Elaborate on any significant challenges or obstacles encountered and how they were addressed. [Open-ended]
- How were project activities adapted in response to external influences or challenges? [Open-ended]

Section 2: Alignment and Relevance

Alignment with National Strategies and Policies:

- How well does the project align with government priorities? [Open-ended]
- How has the local context been considered and incorporated into the project? [Open-ended]

- In what ways did the project align or fail to align with specific national strategies and policies related to agricultural development? [Open-ended]

Section 3: Relevance to Peppercorn Producers' Needs

Identifying and Addressing Producer Needs:

- How would you describe the level of identification of producer needs that has been achieved? [Open-ended]
- How would you describe the tailoring of project activities to address these needs? [Open-ended]
- Share examples of how the project addressed the needs and challenges faced by peppercorn producers in your region. [Open-ended]

Section 4: Outcomes and Impact

Contribution to Improving Market Access:

- How would you describe the change in market reach that has been achieved? [Open-ended]
- Please describe the improvement in market competitiveness for peppercorn? [Open-ended]
- How do you perceive the project's role in improving market access for peppercorn producers? [Open-ended]
- Please provide examples of specific outcomes or achievements in this regard? [Open-ended]

Section 5: Sustainability and Future Recommendations

- Are the benefits of the project likely to be sustained over the long term? [Open-ended]
- What mechanisms have been put in place (financial, economic, human, institutional) to ensure the sustainability of the project's results? [Open-ended]
- How effectively has the project built local capacities to maintain and expand upon the achieved benefits? [Open-ended]
-

Section 6: Integration with Other Regional Efforts

- Are you aware of other past, present and future similar initiatives? [Open-ended]
- Discuss how this project integrates with other regional initiatives. What synergies have been created, and what lessons have been learned from other projects? [Open-ended]
- Please explain that how the project contributed to enhancing collaboration between the three countries? [Open-ended]
- Are there any other non-beneficiary countries benefitted indirectly from the project through regional collaboration? [Open-ended]

Section 7: Recommendations for Enhancement
Opportunities for Project Enhancement:

- What are the key lessons that can be drawn from this project and could have been done differently? [Open-ended]
- What specific recommendations would you make to enhance the project's impact, effectiveness, and sustainability moving forward? [Open-ended]

Section 8: Photograph Upload

Instruction: "Before taking and uploading any photographs, please obtain the respondent's consent using the statement below. Check their response as per their willingness to allow photographs."

Consent Statement: "Do you consent to having photographs taken of you and your farm/facility for the purposes of this project? These images may be used in reports and presentations related to the evaluation of the 'Improving Food Safety and Market Access for Peppercorn in South-East Asia' project. All images will be used respectfully and solely for the purposes of this project."

Response Options (checkbox):

- Yes, I consent to having photographs taken of me and my farm/facility.
- No, I do not consent to having photographs taken.

- Upload Photos of the Interview Session
  [Instruction: "Please upload photos taken during the interview session with the respondent. Ensure that the photos clearly show the interaction without compromising the respondent's comfort or privacy."] - Upload Field: [Photos upload option]

- Upload Photos of the Farm/Facility
  [Instruction: "Please upload photos of the respondent's farm or facility. Focus on areas that highlight the farming practices, crop management, and any specific aspects mentioned by the respondent during the interview."] - Upload Field: [Photos upload option]

Note to Enumerators: "Please ensure to respect the respondent's privacy and choice regarding photographs. If the respondent does not consent to having their photographs taken, continue with the interview without taking any photos. Always ensure that the use of photos adheres to the ethical guidelines set out by the project and respects the dignity and privacy of all participants."

Submit Button

(d) Structured Interview Tool for Farmers (Control Group)
To be collected using GoogleForm
https://docs.google.com/forms/d/1TViVc4n5aEhOQr8BqdVHaWgygqVCN6RAnyjesXrn1Pc/edit

1. Form Introduction:

- **Purpose of the Interview:** This interview is designed to gather your insights regarding your Peppercorn crop. Your feedback is crucial in helping us improve our work on agriculture value chains.
- **Confidentiality Statement:** All responses will be confidential, will be analysed in an aggregated manner and will only be used for project evaluation purposes.
- **Estimated Completion Time:** The interview should take approximately 45-50minutes.

Note: This interview tool is designed to gather comprehensive data from control group farmers regarding their pepper crop management practices and outcomes.

2. Participant Information

2.1. Are you part of the project? Yes (treatment use tool 6A); No (Control – use this form)
2.2. Farmer's Name:
2.3. Head of Farm: Yes/No
2.4. Farm Location:
2.5. Country:
2.6. Province:
2.7. Contact Information:
2.8. Age:
2.9. Sex:
2.10. Education:
2.11. Years of Experience in Pepper Cultivation:
2.12. Size of Pepper Farm (in hectares/acre):
2.13. Number of People Employed on the Farm:
  2.13.1. Number of Women Employed:
  2.13.2. Number of Men Employed:
  2.13.3. Number of Youth Employed:
2.14. Estimated volume produced as of now (annual basis)
  - Less than 1 KMT
  - 1-5 KMT
  - 5-10 KMT
  - 10-20 KMT
  - More than 20 KMT (specify)
2.15. Types of Pepper Cultivated (e.g., black pepper, bell pepper, chili pepper):
2.16. Destination Market of the Product:
2.17. If yes, since when? Less than 6 months, between 6 months to one year, more than 1 year.

3. Baseline Assessment

3.1. What was the size of your farm 3 years ago? (in hectares/acre).
3.2. What was the production of peppercorn (KMT) at your farm 3 years ago?
  - Less than 1 KMT

- 1-5 KMT
- 5-10 KMT
- 10-20 KMT
- More than 20 KMT (specify)

3.3. What was the price of one KMT peppercorn 3 years ago?
3.4. Were you able to sell your products to new buyers 3 years ago?
3.5. Up to 3 years ago, did you face compliance issues related to contaminants and excess pesticide MRLs?
3.5.1. Yes/No
3.5.2. If yes, please explain how many times this occurred and what were the main reasons.
3.6. What proportion of your peppercorn was rejected due to SPS compliance issues 3 years ago?
- Nil
- Less than a quarter
- Between a quarter and half
- More than half
- Total

3.7. What were the key barriers that prevented you from meeting international quality standards 3 years ago?

4. Current situation assessment

4.1. What is the production of peppercorn (KMT) at your farm now?
4.1.1. Size of farm before project
4.1.2. Value produced in KMT
4.2. In your opinion, has the project contributed to this change in value?
4.2.1. If yes, how?
4.2.2. No
4.3. What is the price of one KMT peppercorn now?
4.4. Have you been able to sell your products to new buyers now?
4.5. Are you facing compliance issues related to contaminants and excess pesticide MRLs?
4.5.1. Yes/No
4.5.2. If yes, please explain how many times this occurs and what are the main reasons.
4.6. What proportion of your peppercorn is rejected due to SPS compliance issues now?
4.7. What is the current average rejection percentage/value due to SPS compliance issues after the project intervention/now? (Please enter a percentage from 0% to 100%)
4.8. Please describe any specific interventions or techniques you have adopted based on recent research or training programs. (Open-ended)
4.9. What improvements or changes have you observed in your pepper crop since implementing these interventions? (Open-ended)

5. Knowledge about CoP and PGS

5.1. Are you aware of microbial contaminants and excess pesticide MRLs? Yes/No
5.1.1. If yes, how do you know about these?
5.2. Are any microbial contaminants and excess pesticides MLs detected on your farm? Yes/No
5.2.1. If yes, how are they detected?
5.3. Were you familiar with CoP 3 years ago? Yes/No
5.4. How familiar are you with the Code of Practice developed for pepper production? (1= Not familiar at all, 2= Somewhat familiar, 3= Very familiar)

5.5. Do you believe that implementing the Code of Practice can improve the quality and safety of your pepper production? (1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5=Strongly Agree)
5.6. Are you aware of any knowledge resources produced in your region/area? [Yes/No]
5.6.1. If yes, name the ones you know about.
5.6.2. If yes, where can you find them?

6. Current Practices and Management Techniques

6.1. What factors influence your decision to maintain your current practices without adopting new techniques or interventions? (Open-ended)
6.2. Have you noticed any limitations or drawbacks to your current methods compared to alternative approaches? (Open-ended)
6.3. Do you implement the methods for pepper plant propagation? (Scale: 1= Yes, 2= No. 3= Partially)
6.4. Do you prepare the soil for new planting or replanting of pepper plants? (Scale: 1= Yes, 2= No. 3= Partially)
6.5. Do you practice the nutritional management for pepper plants? (Scale: 1= Yes, 2= No. 3= Partially). If yes, then are you familiar with types of fertilizers to use, and method to apply them? (Scale: 1= Yes, 2= No. 3= Partially)
6.6. Do you manage watering and irrigation for your pepper crops? (Scale: 1= Yes, 2= No. 3= Partially)
6.7. Do you employ pruning techniques? (Scale: 1= Yes, 2= No. 3= Partially). If yes, do you create canopy for your pepper plants? (Scale: 1= Yes, 2= No. 3= Partially)
6.8. Do you manage weeds and implement intercropping in your pepper gardens? (Scale: 1= Yes, 2= No. 3= Partially)
6.9. Do you practice pest and disease management strategies in your pepper crops? (Scale: 1= Yes, 2= No. 3= Partially)
6.9.1. If yes, which ones?
6.9.2. If yes, where do you get these pesticides from?
6.9.3. If yes, do you have clarity on how to use pesticides? Yes/No
6.10. Do you know about pesticide residues?
6.10.1. If yes, where did you learn from?

7. Challenges and Concerns

7.1. What are the main challenges you face in pepper cultivation? (Open-ended)
7.2. Have you experienced any specific pest or disease outbreaks? Yes/No
7.2.1. If yes, what were they? (Open-ended)
7.3. How did you address them? (Open-ended)
7.4. Have you faced difficulties related to irrigation, soil fertility, or other aspects of crop management? (Open-ended)
7.5. Have you noticed changes in weather patterns during the last years? Yes/No
7.5.1. If yes, please explain.
7.6. Have weather patterns caused you post-harvest losses? Yes/No.
7.6.1. If yes, please share details.
7.7. Have weather patterns negatively impacted the quality of your crop? Yes/No
7.7.1. If yes, please share details.

8. Harvesting and Post-Harvest Handling

8.1. How do you determine the timing of pepper harvest? (Open-ended)
8.2. Describe your harvesting methods and post-harvest handling practices. (Open-ended)
8.3. Do you encounter any issues with post-harvest losses or quality deterioration? If so, how do you address them? (Open-ended)
8.4. Is there any reduction in detection of microbial contaminants and excess pesticide MRLs? (Scale: 1= Yes, 2= No. 3= Partially)?
8.5. Have you recorded a reduction in number of rejections due to the application of good practices/knowledge shared by the project? (Scale: 1= Yes, 2= No. 3= Partially)
8.6. Please provide examples of how the project supported this change.

9. Knowledge and Awareness

9.1. Are you familiar with pepper quality standards and certifications? (Scale: 1= Yes, 2= No. 3= Partially)
9.2. Have you received any training or education on best practices for pepper cultivation? Yes/No
9.3. If yes, did you find these trainings useful?
9.4. If yes, are you implement what you learnt during the training? Yes/No
9.5. How do you stay informed about new developments or advancements in pepper farming techniques? (Open-ended)

10. Additional Comments and Feedback

10.1. Is there anything else you would like to share about your experiences with pepper cultivation? (Open-ended)
10.2. Do you have any suggestions for improving support or resources for pepper farmers in your region? (Open-ended)

11. Photograph Upload

Instruction: Before taking and uploading any photographs, please obtain the respondent's consent using the statement below. Check their response as per their willingness to allow photographs.

Consent Statement: Do you consent to having photographs taken of you and your farm/facility for the purposes of this project? These images may be used in reports and presentations related to the evaluation of the 'Improving Food Safety and Market Access for Peppercorn in South-East Asia' project. All images will be used respectfully and solely for the purposes of this project.

Response Options (checkbox):

- Yes, I consent to having photographs taken of me and my farm/facility.
- No, I do not consent to having photographs taken.

- Upload Photos of the Interview Session
  [Instruction: Please upload photos taken during the interview session with the respondent. Ensure that the photos clearly show the interaction without compromising the respondent's comfort or privacy.] - Upload Field: [Photos upload option]

- Upload Photos of the Farm/Facility

[Instruction: Please upload photos of the respondent's farm or facility. Focus on areas that highlight the farming practices, crop management, and any specific aspects mentioned by the respondent during the interview.]- Upload Field: [Photos upload option]

Note to Enumerators: Please ensure to respect the respondent's privacy and choice regarding photographs. If the respondent does not consent to having their photographs taken, continue with the interview without taking any photos. Always ensure that the use of photos adheres to the ethical guidelines set out by the project and respects the dignity and privacy of all participants.

Submit Button

(e) Structured Interview Tool for Farmers (Treatment Groups)
To be collected using GoogleForm
https://docs.google.com/forms/d/1g4N7CyHIqDs1wNvxFgXE7_81aS8lxaOTG9uEY9GRqrI/edit

12. Form Introduction:

- **Purpose of the Interview:** This interview is designed to gather your insights regarding the project 'Improving Food Safety and Market Access for Peppercorn in South-East Asia'. Your feedback is crucial in helping us understand the impact of these initiatives and guide future improvements. The feedback will help CABI (implementing partners) and STDF (funding partner) to improve their future work on agriculture value chains.
- **Confidentiality Statement:** All responses will be confidential, will be analysed in an aggregated manner and will only be used for project evaluation purposes. We encourage you to provide honest feedback to help us enhance the project's outcomes.
- **Estimated Completion Time:** The interview should take approximately 45-50minutes.

Note: This interview tool is designed to gather comprehensive data treatment group farmers regarding their pepper crop management practices and outcomes.

13. Participant Information

13.1. Are you part of the project? Yes (treatment – use this form); No (Control – use tool 6A1)
13.2. Are you part of PGS? Yes/No
13.3. Farmer's Name:
13.4. Head of Farm: Yes/No
13.5. Farm Location:
13.6. Country:
13.7. Province:
13.8. Contact Information:
13.9. Age:
13.10. Sex:
13.11. Education:
13.12. Years of Experience in Pepper Cultivation:
13.13. Size of Pepper Farm (in hectares/acre):
13.14. Number of People Employed on the Farm:
  13.14.1. Number of Women Employed:
  13.14.2. Number of Men Employed:
  13.14.3. Number of Youth Employed:
13.15. Estimated volume produced as of now (annual basis):
  - Less than 1 KMT
  - 1-5 KMT
  - 5-10 KMT
  - 10-20 KMT
  - More than 20 KMT (specify)
13.16. Types of Pepper Cultivated (e.g., black pepper, bell pepper, chili pepper):
13.17. Destination Market of the Product:
13.18. If yes, since when? Less than 6 months, between 6 months to one year, more than 1 year.

14. Baseline Assessment

14.1. What was the size of your farm before start of the project (in hectares/acre).
14.2. What was the production of peppercorn (KMT) at your farm before the project?
- Less than 1 KMT
- 1-5 KMT
- 5-10 KMT
- 10-20 KMT
- More than 20 KMT (specify)

14.3. What was the price of one KMT peppercorn before the project?
14.4. Were you able to sell your products to new buyers before the project?
14.5. Before the project intervention, had you ever faced compliance issues related to contaminants and excess pesticide MRLs?
14.5.1. Yes/No
14.5.2. If yes, please explain how many times this occurred and what were the main reasons.
14.6. What proportion of your peppercorn was rejected due to SPS compliance issues before the project?
- Nil
- Less than a quarter
- Between a quarter and half
- More than half
- Total

14.7. What were the key barriers that prevented you from meeting international quality standards before the project?

15. Post-Implementation Assessment

15.1. What is the production of peppercorn (KMT) at your farm now?
15.1.1. Size of farm before project
15.1.2. Value produced in KMT
15.2. In your opinion, has the project contributed to this change in value?
15.2.1. If yes, how?
15.2.2. No
15.3. What is the price of one KMT peppercorn now?
15.4. Have you been able to sell your products to new buyers now?
15.5. Are you facing compliance issues related to contaminants and excess pesticide MRLs?
15.5.1. Yes/No
15.5.2. If yes, please explain how many times this occurs and what are the main reasons.
15.6. What proportion of your peppercorn is rejected due to SPS compliance issues now?
15.7. What is the current average rejection percentage/value due to SPS compliance issues after the project intervention/now? (Please enter a percentage from 0% to 100%)
15.8. Please describe any specific interventions or techniques you have adopted based on recent research or training programs. (Open-ended)
15.9. What improvements or changes have you observed in your pepper crop since implementing these interventions? (Open-ended)

16. Knowledge about CoP and PGS

16.1. Are you aware of microbial contaminants and excess pesticide MRLs? Yes/No
16.1.1. If yes, how do you know about these?
16.2. Are any microbial contaminants and excess pesticides MLs detected on your farm? Yes/No

16.2.1. If yes, how are they detected?

16.3. Were you familiar with CoP before the project? Yes/No

16.4. How familiar are you with the Code of Practice developed for pepper production? (1= Not familiar at all, 2= Somewhat familiar, 3= Very familiar)

16.5. Do you believe that implementing the Code of Practice can improve the quality and safety of your pepper production? (1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5=Strongly Agree)

16.6. How well do you understand the strategies identified for the wider roll-out of the PGS based system and code of conduct? (1= Not at all, 2= Slightly, 3= Moderately. 4= Very well. 5= Extremely well)

16.7. How confident are you in the effectiveness of the identified roll-out strategies in promoting adoption of the PGS based system and code of conduct among smallholder pepper growers? (1= Not confident at all, 2= Slightly confident, 3= Moderately confident. 4= Very confident, 5= Extremely confident)

16.8. Do you feel that you are in a position to share the knowledge you've acquired on CoP and PGS with other farmers who were not part of the project?

16.9. Are you aware of any knowledge resources produced by the project? [Yes/No]

16.9.1. If yes, name the ones you know about.

16.9.2. If yes, where can you find them?

17. Current Practices and Management Techniques

17.1. Do you implement the methods for pepper plant propagation? (Scale: 1= Yes, 2= No. 3= Partially)

17.2. Do you prepare the soil for new planting or replanting of pepper plants? (Scale: 1= Yes, 2= No. 3= Partially)

17.3. Do you practice the nutritional management for pepper plants? (Scale: 1= Yes, 2= No. 3= Partially). If yes, then are you familiar with types of fertilizers to use, and method to apply them? (Scale: 1= Yes, 2= No. 3= Partially)

17.4. Do you manage watering and irrigation for your pepper crops? (Scale: 1= Yes, 2= No. 3= Partially)

17.5. Do you employ pruning techniques? (Scale: 1= Yes, 2= No. 3= Partially). If yes, do you create canopy for your pepper plants? (Scale: 1= Yes, 2= No. 3= Partially)

17.6. Do you manage weeds and implement intercropping in your pepper gardens? (Scale: 1= Yes, 2= No. 3= Partially)

17.7. Do you practice pest and disease management strategies in your pepper crops? (Scale: 1= Yes, 2= No. 3= Partially)

17.7.1. If yes, which ones?

17.7.2. If yes, where do you get these pesticides from?

17.7.3. If yes, do you have clarity on how to use pesticides? Yes/No

17.8. Do you know about pesticide residues?

17.8.1. If yes, where did you learn from?

18. Challenges and Concerns

18.1. What are the main challenges you face in pepper cultivation? (Open-ended)

18.2. Have you experienced any specific pest or disease outbreaks? Yes/No

18.2.1. If yes, what were they? (Open-ended)

18.3. How did you address them? (Open-ended)

18.4. Have you faced difficulties related to irrigation, soil fertility, or other aspects of crop management? (Open-ended)

18.5. Have you noticed changes in weather patterns during the last years? Yes/No
    18.5.1. If yes, please explain.
18.6. Have weather patterns caused you post-harvest losses? Yes/No.
    18.6.1. If yes, please share details.
18.7. Have weather patterns negatively impacted the quality of your crop? Yes/No
    18.7.1. If yes, please share details.

19. Harvesting and Post-Harvest Handling

19.1. How do you determine the timing of pepper harvest? (Open-ended)
19.2. Describe your harvesting methods and post-harvest handling practices. (Open-ended)
19.3. Do you encounter any issues with post-harvest losses or quality deterioration? If so, how do you address them? (Open-ended)
19.4. Is there any reduction in detection of microbial contaminants and excess pesticide MRLs? (Scale: 1= Yes, 2= No. 3= Partially)?
19.5. Have you recorded a reduction in number of rejections due to the application of good practices/knowledge shared by the project? (Scale: 1= Yes, 2= No. 3= Partially)
19.6. Please provide examples of how the project supported this change.

20. Knowledge and Awareness

20.1. Are you familiar with pepper quality standards and certifications? (Scale: 1= Yes, 2= No. 3= Partially)
20.2. Have you received any training or education on best practices for pepper cultivation? Yes/No
20.3. If yes, did you find these trainings useful?
20.4. If yes, are you implement what you learnt during the training? Yes/No
20.5. How do you stay informed about new developments or advancements in pepper farming techniques? (Open-ended)

21. Additional Comments and Feedback

21.1. Is there anything else you would like to share about your experiences with pepper cultivation? (Open-ended)
21.2. Do you have any suggestions for improving support or resources for pepper farmers in your region? (Open-ended)

22. Photograph Upload

Instruction: Before taking and uploading any photographs, please obtain the respondent's consent using the statement below. Check their response as per their willingness to allow photographs.

Consent Statement: Do you consent to having photographs taken of you and your farm/facility for the purposes of this project? These images may be used in reports and presentations related to the evaluation of the 'Improving Food Safety and Market Access for Peppercorn in South-East Asia' project. All images will be used respectfully and solely for the purposes of this project.

Response Options (checkbox):

- Yes, I consent to having photographs taken of me and my farm/facility.
- No, I do not consent to having photographs taken.

- Upload Photos of the Interview Session
  [Instruction: Please upload photos taken during the interview session with the respondent. Ensure that the photos clearly show the interaction without compromising the respondent's comfort or privacy.] - Upload Field: [Photos upload option]

- Upload Photos of the Farm/Facility
  [Instruction: Please upload photos of the respondent's farm or facility. Focus on areas that highlight the farming practices, crop management, and any specific aspects mentioned by the respondent during the interview.]- Upload Field: [Photos upload option]

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Submit Button

(f) Structured Interview Tool for CABI Staff, STDF Staff and International Consultants

To be collected using GoogleForm

https://docs.google.com/forms/d/1HlKrBrZ-Az_VOxaC4w1BIsrXzh_ZSJSRSgsRLRo-3sc/edit

Form Introduction:

- Purpose of the Interview: "This interview is designed to gather your professional insights and assessments regarding the implementation, outcomes, and sustainability of the 'Improving Food Safety and Market Access for Peppercorn in South-East Asia' project."
- Confidentiality Statement: "All responses will be treated as confidential and will be used solely for the purpose of this project evaluation."
- Estimated Completion Time: "The interview should take approximately 20-25 minutes to complete."

Interviewee Information:

1. Full Name (optional):
2. Sex:
3. Position:
4. Role in the Project:
5. Organization:
6. Country:
7. Province:
8. Type of stakeholder: [Government, Private Company, Other – details]
9. Duration of Involvement with the Project: [Less than 6 months, 6-12 months, 1-2 years, more than 2 years]

Section 1: Comprehensive Understanding and Achievement of Objectives

Understanding of Overall Objectives:

Awareness of Similar Initiatives:

- Are you aware of any past, present, or future initiatives similar to this project? Could you describe them and their relationship to the project we are discussing?

Contribution to Regional Collaboration:

- How has this project contributed to enhancing collaboration between the three beneficiary countries? Can you provide specific examples or outcomes that demonstrate this enhancement?

Indirect Benefits to Non-Beneficiary Countries:

- Have any non-beneficiary countries benefitted indirectly from this project through regional collaboration? If so, how?

Integration with Other Regional Initiatives:

- How does this project integrate with other regional initiatives? Could you discuss any synergies that have been created or any challenges faced during this integration?

Lessons Learned from Other Projects:

- What lessons have been learned from other projects that have been applied to this project? How have these lessons influenced the project's strategy and implementation?

Effectiveness of Project Implementation: (all open-ended)

- Project Staffing: Could you describe the staffing structure for this project? Were there enough resources allocated to meet the project's demands?

- Involvement of National Counterparts: How involved were the national counterparts in the project's operations? Can you provide examples of their contributions or challenges they faced during the project?
- Quality and Timeliness of Steering Group Meetings: How would you assess the quality and timeliness of the steering group meetings? Were these meetings effective in guiding the project forward?
- Quality and Timeliness of Reports: What was the quality and timeliness of the reports produced during the project? Did they meet the expectations set at the project's outset?
- Handling of Unexpected Challenges and Risks: Can you discuss how the project managed unexpected challenges and risks? What strategies were employed to mitigate these issues?
- Overall Project Management: Overall, how effectively do you think the project was managed? What were the strengths and areas that could have been improved?
- Adaptiveness: Can you provide specific examples of strategies that contributed to or impeded the effectiveness of the project's implementation? [Open-ended]
- Implementation strengths: What were the major strengths in the project's implementation and how did they contribute to its success? [Open-ended]
- Challenges: Elaborate on any significant challenges or obstacles encountered and how they were addressed. [Open-ended]
- How were project activities adapted in response to external influences or challenges? [Open-ended]

Alignment and Relevance

- Alignment with Government Priorities: How well did the project align with the current government priorities? Could you rate this alignment on a scale from 1 (not aligned at all) to 5 (fully aligned)? Please explain your rating.
- Incorporation of Local Context: To what extent was the local context considered in the project's implementation? Please rate the incorporation of local context on a scale from 1 (not considered) to 5 (fully integrated) and provide examples to support your assessment.
- Specific National Strategies and Policies: Could you discuss the ways in which the project aligned or did not align with specific national strategies and policies related to agricultural development? What were the key factors influencing this alignment?

Overall Goals and Objectives:

- "Can you provide a comprehensive overview of your understanding of the project's overarching goals and objectives as the project concludes?" (Open-ended)

Section 2: Evaluation of Implementation and Project Activities

Adjustments and Improvements:

- "What adjustments or improvements, if any, were made during the project lifecycle to enhance the implementation of activities such as developing a code of practice and conducting knowledge sharing workshops?" (Scale: 1= No adjustments made, 2= Minor adjustments made, 3= Some adjustments made, 4= Substantial adjustments made, 5= Significant adjustments made)

Explain the reasons for your rating: [Open-ended]

Successes and Challenges:

- "Can you discuss the successes and challenges encountered during the project implementation, especially as it pertains to meeting end-of-project targets?" (Open-ended)

Section 3: Stakeholder Engagement and Collaboration

Level of Stakeholder Engagement:

- "Evaluate the level of engagement and collaboration among stakeholders involved in the project, including small-scale growers, processors, export companies, and government agencies, as the project concludes." (Scale: 1= Poor, 2= Below average, 3= Average, 4= Above average, 5= Excellent)

Explain the reasons for your rating: [Open-ended]

Section 4: Evaluation of Measurable Indicators and Long-term Targets

Confidence in Achieving Long-term Targets:

- "Now that the project is concluding, how confident are you in the project's achievement of its measurable indicators, such as reducing detection of microbial contaminants and excess pesticide MRLs by at least 45%?" (Scale: 1= Not confident, 2= Somewhat confident, 3= Moderately confident, 4= Confident, 5= Very confident)

Evaluation of Project's Long-term Impact:

- "What long-term impacts do you anticipate the project will have on the regional peppercorn industry?" (Open-ended)

Section 5: Outcomes and Impact

Market Reach:

- How has the project influenced the market reach for peppercorn producers in your region? Describe any measurable changes in the value and volume of exports.

Market Competitiveness:

- In what ways has the project contributed to improving the market competitiveness of peppercorn producers? Please detail any observed enhancements in market positioning and competitiveness.

Role in Market Access:

- How do you perceive the project's role in improving market access for peppercorn producers? What strategic initiatives have been most effective?

Specific Outcomes and Achievements:

- Could you provide examples of specific outcomes or achievements from the project that have significantly impacted market access for peppercorn producers?
- Unexpected Results:
- Were there any unexpected results related to market access and competitiveness that emerged from the project? How have these impacted the overall objectives?

Section 6: Sustainability and Future Recommendations

Mechanisms for Sustainability:

Sustainability and Future Recommendations

Long-term Viability of Project Activities:

- Can you describe the factors that will influence whether the project activities are likely to be sustained over the long term? What are the key challenges and opportunities you foresee in maintaining these activities?
  Integration of Project Outcomes into Existing Systems:
- How have the project outcomes been integrated into existing systems and frameworks within the government and local communities? Please provide examples of how this integration has been managed and any barriers encountered.
  Mechanisms for Sustainability:
- What mechanisms or strategies have been put in place to ensure the sustainability of the project's results? Discuss any financial, economic, human, and institutional measures.
  Government's Support for Continuation:
- What is the government's intent regarding the continuation of support for the project's achievements and the peppercorn value chain? How does the government plan to continue supporting the farmers and other stakeholders involved?
  Building Local Capacities:
- How effectively has the project built local capacities to maintain and expand upon the achieved benefits? Can you discuss the types of capacities developed and the involvement of local stakeholders in these processes?
  Confidence in Sustainability Strategies:
- How confident are you in the effectiveness of the implemented sustainability strategies? What could enhance these strategies moving forward?

Section 7: Recommendations for Enhancement
Opportunities for Project Enhancement:

- What are the key lessons that can be drawn from this project, and are there any aspects that, in hindsight, could have been done differently to enhance the project's outcomes or efficiency? Can you provide specific examples or insights based on your experience with the project?

(g) Structured Interview Tool for Case Studies

To be collected using GoogleForm

https://docs.google.com/forms/d/1lvrig8JB4OKdGcjXI1BbieuoBzQdvwT4GGDn1ZPqFDE/edit

Form Introduction:

- Purpose of the Interview: "This interview is designed to gather your professional insights and assessments regarding the implementation, outcomes, and sustainability of the 'Improving Food Safety and Market Access for Peppercorn in South-East Asia' project."
- Confidentiality Statement: "All responses will be treated as confidential and will be used solely for the purpose of this project evaluation."
- Estimated Completion Time: "The interview should take approximately 20-25 minutes to complete."

Participant Information

- Farmer's Name:
- Farm Location:
- Country:
- Province:
- Contact Information:
- Age:
- Sex:
- Education:
- Years of Experience in Pepper Cultivation:
- Size of Pepper Farm (in hectares/acre):
- Types of Pepper Cultivated (e.g., black pepper, bell pepper, chili pepper):
- How long have you been associated with the project: Less than 6 months, between 6 months to one year, more than 1 year.

Section 1: Baseline Assessment

- How would you rate the average value per KMT of peppercorn produced before the project intervention?
    - KMT [Insert estimated]
- Before the project intervention, how frequently did you face compliance issues related to microbial contaminants and excess pesticide MRLs?
    - Never
    - Rarely
    - Sometimes
    - Often
    - Always
- What percentage of your peppercorn was rejected due to SPS compliance issues before the project intervention? (Please enter a percentage from 0% to 100%)
- Can you describe the main challenges you faced as a smallholder pepper grower before the project intervention??
- What were the key barriers that prevented you from meeting international quality standards before the project?

Section 2: Post-Implementation Assessment

- How would you rate the current average value per KMT of peppercorn produced after the project intervention?
    - KMT [Insert estimated]

- What percentage reduction in detection of microbial contaminants and excess pesticide MRLs have you observed after the project intervention? (Please enter a percentage from 0% to 100%)
- What is the current average rejection percentage/value due to SPS compliance issues after the project intervention/now? (Please enter a percentage from 0% to 100%)
- Can you provide examples of specific changes or improvements observed in your practices and what influenced these changes? [Open Ended]

Relevance:

- Was project relevant to CABI and STDF mandate and goal? [Open Ended]
- Were the project's objectives and activities directly aligned with the specific needs of the peppercorn producers in South-East Asia? [Open Ended]
- Did the project's interventions reflect the national and regional priorities? [Open Ended]

Coherence:

- How well did the project integrate with other national and international initiatives aimed at improving SPS capacities and market access of the peppercorn value chain? [Open Ended]
- How successful was the project in building synergies with other initiatives? [Open Ended]
- Were there any missed opportunities or overlaps? [Open Ended]
- Did the project complement existing policies and frameworks in the agricultural sectors of Vietnam, Cambodia, and Laos? [Open Ended]

Effectiveness:

- To what extent were the project's objectives achieved based on the indicators of the project's logframe) including any differential results across countries and groups? [Open Ended]
- What were the major factors influencing the achievement or non-achievement of these objectives? [Open Ended]
- How effectively did the project address the particular market access challenges faced by the target population? [Open Ended]

Efficiency:

- Were resources allocated appropriately and efficiently to achieve the project goals? [Open Ended]
- What were the timelines of PG implementation against key stages of peppercorn value chain? [Open Ended]

Section 3: Overview of Project Impact

- What has been the project's overall impact on the peppercorn value chain in the project's region? [Open Ended]
- What unexpected impacts, positive or negative, did the project have at national and regional levels? [Open Ended]

Pre- and Post-Project Changes:

- Describe the condition and challenges faced by your farm or organization before and after the project's interventions. (Open-ended)
- What specific changes have you observed in the quality and market access of peppercorn due to the project? (Open-ended)

Section 4: Implementation of Practices and Technologies

Adoption of New Practices:

- "Detail the adoption process of the new farming practices or technologies introduced by the project. How have these changes been maintained over time?" (Open-ended)

Challenges and Adaptations:

- "What challenges did you encounter while implementing these practices, and how were they overcome?" (Open-ended)

Success Stories:

- "Can you share a particular success story of how these interventions have positively impacted your operations or community?" (Open-ended)

Section 5: Sustainability and Long-term Impact

- Are the benefits of the project likely to be sustained over the long term? [Open Ended]
- What mechanisms have been put in place (financial, economic, human, institutional) to ensure the sustainability of the project's results? [Open Ended]
- How effectively has the project built local capacities to maintain and expand upon the achieved benefits? [Open Ended]

Sustainable Practices:

- "Discuss the sustainability of the new practices. Which practices do you see continuing long-term, and why?" (Open-ended)

Economic and Social Impacts:

- "What have been the economic and social impacts of the project on your community?" (Open-ended)

Future Outlook:

- "How do you perceive the future of your peppercorn farming or processing operations in light of the project's outcomes?" (Open-ended)

Section 5: Lessons Learned and Recommendations

Key Lessons:

- "What are the key lessons learned from participating in this project?" (Open-ended)

Recommendations for Improvement:

- "What recommendations would you make to improve future projects based on your experience?" (Open-ended)

Section 5: Documentation and Additional Insights

Photographic Evidence:

- "Please upload any photos that can visually document the changes and impacts discussed in this interview." (File upload option)

Additional Comments:

- "Is there anything else you would like to add that has not been covered in this interview?" (Open-ended)

Consent for Use of Information:

- "Do you consent to the use of your information and any photographic evidence in project reports, presentations, and other documentation? Your identity will be kept confidential unless you specify otherwise."
- Options: [Yes, I consent. / No, I do not consent.]

Section 6: Photograph Upload

Instruction: "Before taking and uploading any photographs, please obtain the respondent's consent using the statement below. Check their response as per their willingness to allow photographs."

Consent Statement: "Do you consent to having photographs taken of you and your farm/facility for the purposes of this project? These images may be used in reports and presentations related to the evaluation of the 'Improving Food Safety and Market Access for Peppercorn in South-East Asia' project. All images will be used respectfully and solely for the purposes of this project."

Response Options (checkbox):

- Yes, I consent to having photographs taken of me and my farm/facility.
- No, I do not consent to having photographs taken.
- Upload Photos of the Interview Session
  [Instruction: "Please upload photos taken during the interview session with the respondent. Ensure that the photos clearly show the interaction without compromising the respondent's comfort or privacy."] - Upload Field: [Photos upload option]
- Upload Photos of the Farm/Facility
  [Instruction: "Please upload photos of the respondent's farm or facility. Focus on areas that highlight the farming practices, crop management, and any specific aspects mentioned by the respondent during the interview."] - Upload Field: [Photos upload option]

Note to Enumerators: "Please ensure to respect the respondent's privacy and choice regarding photographs. If the respondent does not consent to having their photographs taken, continue with the interview without taking any photos. Always ensure that the use of photos adheres to the ethical guidelines set out by the project and respects the dignity and privacy of all participants."

Submit Button

8.3 Annexure III - Project Evaluation Matrix

Evaluation Questions	Judgment Criteria	Indicators	Data Collection Methods	Sources
Relevance				
Did the project's interventions reflect the national and regional priorities?	Relevance of project interventions to local community preferences.	Community satisfaction with project interventions; relevance feedback.	KIIs with farmers (treatment and control groups), national partners, master trainers, and government stakeholders. Desk Review Tool	Community survey results, feedback forms, project evaluation reports.
Was project relevant to CABI and STDF mandate and goal?	Relevance of project interventions to CABI and STDF preferences.	Stakeholders' satisfaction with project interventions; relevance feedback.	KIIs CABI, STDF, national partners, master trainers. Desk Review Tool	Feedback forms, project evaluation reports.
Were the project's objectives and activities directly aligned with the specific needs of the peppercorn producers in South-East Asia?	Alignment of project objectives with the needs of peppercorn producers.	Degree of alignment between project objectives and producer needs.	KIIs with farmers (treatment and control groups), national partners, master trainers, and government stakeholders. Desk Review Tool	Project documentation, survey results, interview transcripts, policy documents, partnership reports.
Coherence				
How well did the project integrate with other national and international initiatives aimed at improving SPS capacities and market access of the peppercorn value chain?	Integration of the project with existing agricultural initiatives, particularly related to SPS capacities and market access of the peppercorn value chain.	Level of integration with national and international agricultural improvement efforts.	KIIs with national partners, CABI staff, STDF staff, and master trainers. Desk Review Tool	Policy documents, interview transcripts, partnership reports.

Evaluation Questions	Judgment Criteria	Indicators	Data Collection Methods	Sources
How successful was the project in building synergies with other initiatives?	Identification and management of conflicts and synergies with other projects.	Instances of conflicts or synergies; management strategies employed.	KIIs with national partners, CABI staff, STDF staff, and master trainers. Desk Review Tool	Meeting minutes, project management documents, interview transcripts.
Were there any missed opportunities or overlaps?	Identification of missed opportunities.	References and instances of opportunities missed.	KIIs with national partners, CABI staff, STDF staff, and master trainers. Desk Review Tool	Meeting minutes, project management documents, interview transcripts.
Did the project complement existing policies and frameworks in the agricultural sectors of Vietnam, Cambodia, and Laos?	Complementarity of the project to local agricultural policies and frameworks.	Degree of alignment with local agricultural policies; feedback from local policymakers.	KIIs with national partners, CABI staff, STDF staff, and master trainers. Desk Review Tool	Government policy documents, interview transcripts with officials.
Effectiveness				
To what extent were the project's objectives achieved based on the indicators of the project's logframe) including any differential results across countries and groups?	Progress on indicators including any differential results across countries and groups.	Achievement levels of project objectives; feedback on objective attainment.	KIIs with farmers (treatment and control groups), national partners, master trainers, and government stakeholders. Desk Review Tool	Project reports, interview transcripts, evaluation reports, survey results.
What were the major factors influencing the achievement or non-achievement of these objectives?	Factors influencing project outcomes.	Identification of factors affecting project performance.	KIIs with farmers (treatment and control groups), national partners, master	Project reports, interview transcripts, evaluation reports, survey results.

Evaluation Questions	Judgment Criteria	Indicators	Data Collection Methods	Sources
			trainers, and government stakeholders. Desk Review Tool	
How effectively did the project address the particular market access challenges faced by the target population?	Effectiveness of project strategies in addressing market access challenges.	Changes in market access levels; feedback on market access improvements.	KIIs with farmers (treatment and control groups), national partners, master trainers, and government stakeholders. Desk Review Tool	Market data reports, interview transcripts, policy documents, partnership reports.
Efficiency				
Were resources allocated appropriately and efficiently to achieve the project goals?	Appropriateness and efficiency of resource allocation.	Resource allocation ratios; budget utilization rates.	KIIs with CABI staff, national partners, and project managers. Desk Review Tool	Financial reports, audit documents, project management interviews.
To what extent did the project deliver results in a timely way?	Progress mapping over reporting intervals.	Periods of high and low performance linked to project sequence.	KIIs with CABI and STDF. Desk review.	Feedback, progress reports.
What were the timelines of PG implementation against key stages of peppercorn value chain.	Timelines of PG activities mapped against peppercorn crop stages.	Periods of high and low performance linked to peppercorn value chain stages.	KIIs with CABI staff, national partners, and project managers. Desk Review Tool	Project reports, industry benchmarks, cost analysis studies.
How well was the project managed (e.g., staffing, resources, reporting quality & timeliness, ability to tackle unexpected	Overall achievement of results, challenges reported and addressed.	Success percentage of quantitative indicators and progress on timeline bars mentioned in	KIIs with staff and partners, desk review.	Feedback and progress report.

Evaluation Questions	Judgment Criteria	Indicators	Data Collection Methods	Sources
challenges and risks etc.?		the project results.		
involvement of national counterparts, steering groups, and meetings.	Local partners participation in steering committee meetings.	Number and action taken response on key decisions/ solutions discussed.	KIIs with staff and partners, desk review.	Feedback and progress report, meeting minutes.
What changes and risks, if any, occurred during project implementation, and how was the project able to adapt to these changes and manage risks?	Overall context of peppercorn sector in the region, country context, and challenges reported by the project.	Issues reported by the project – concerning to internal and external factors.	KIIs and desk review.	Progress reports, industry data, regional context review reports.
Impact				
What has been the project's overall impact on the peppercorn value chain in the project's region?	Economic and social impact on communities.	. Changes in peppercorn export, sale and production. Changes in detection of pesticides and decrease in rejections.	KIIs with farmers (treatment and control groups), national partners, master trainers, and government stakeholders. Desk Review Tool	Economic data, social impact reports, community feedback.
What real difference (expected and/or unexpected) has the project made, or is likely to have, on the final beneficiaries including on people's well-being, gender equality and the environment?	Progress reported beyond project's targets and indicators.	Changes in income levels, employment rates, and progress reported beyond agreed targets.	KIIs with farmers, stakeholders, staff, desk review.	Feedback, progress reports.

Evaluation Questions	Judgment Criteria	Indicators	Data Collection Methods	Sources
What unexpected impacts, positive or negative, did the project have at national and regional levels?	Identification of unintended impacts.	Documentation of unforeseen positive and negative effects.	KIIs with farmers (treatment and control groups), national partners, master trainers, and government stakeholders. Desk Review Tool	Environmental reports, community meeting notes, stakeholder feedback.
Has the project catalysed any other action or change, for instance raising awareness on SPS challenges and/or mobilizing additional resources for SPS capacity development?	Additional outcomes beyond the original scope of the project.	Evidence of increased awareness on SPS issues, additional funding or resources mobilised for SPS capacity development.	Key Informant Interviews (KIIs) with stakeholders involved in SPS, surveys with project participants, desk review of project reports.	Post-project survey results, funding reports, stakeholder feedback on SPS awareness programmes.
Sustainability				
Are the benefits of the project likely to be sustained over the long term?	Increased public financing for SPS issues post-project. Continuation of project activities by beneficiaries using their own resources. Adoption and sustained implementation of processes developed through the project. Farmers' understanding and willingness to continue implementing	Continued improvement in market access, food safety standards, and economic gains.	KIIs with farmers (treatment and control groups), national partners, master trainers, and government stakeholders. Desk Review Tool	Survey results, impact assessment reports.

Evaluation Questions	Judgment Criteria	Indicators	Data Collection Methods	Sources
	good practices introduced by the project.			
What mechanisms have been put in place (financial, economic, human, institutional) to ensure the sustainability of the project's results	Effectiveness of sustainability mechanisms.	Existence and effectiveness of training programs, local support structures, and governmental integration.	KIIs with farmers (treatment and control groups), national partners, master trainers, and government stakeholders. Desk Review Tool	Sustainability program documentation, interview transcripts.
How effectively has the project built local capacities to maintain and expand upon the achieved benefits?	Capacity building and empowerment.	Level of local skill development, institutional strengthening, and community engagement.	KIIs with farmers (treatment and control groups), national partners, master trainers, and government stakeholders. Desk Review Tool	Training records, community feedback forms, capacity assessment reports.