EVALUATION OF THE STANDARDS AND TRADE DEVELOPMENT FACILITY

DEMONSTRATING THE IMPACT ON TRADE AND REGIONAL PLANT PROTECTION OF STREAMLINED INFORMATION SYSTEMS FOR PEST SURVEILLANCE AND REPORTING

PROJECT IMPACT EVALUATION REPORT

29 MAY 2024

SUBMITTED BY

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CONTENTS

ACRONYMS AND ABREVIATIONS

ACFS	National Bureau of Agricultural Commodity and Food Standards
ACIAR	Australian Centre for International Agricultural Research
APPPC	Asia and Pacific Plant Protection Commission
ARDN	ASEAN Regional Diagnostic Network
ASEAN	Association of Southeast Asian Nations
AUD	Australian Dollar
DAFF	Department of Agriculture, Fisheries and Food, Australia
DoA	Department of Agriculture, Thailand
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
IOS	iPhone Operating System
IPPC	International Plant Protection Convention
ISPM	International Standards for Phytosanitary Measures
IT	Information Technology
MOAC	Ministry of Agriculture and Cooperatives
NPPO	National Plant Protection Organizations
ODK	Open Data Kit
PCR	Project Completion Report
PDR	People's Democratic Republic
PNG	Papua New Guinea
POC	Point of Contact
PPRDO	Plant Protection Research and Development Office
SDG	Sustainable Development Goals
SIMS	Surveillance Information Management System
SPA	ASEAN Strategic Plan of Action
SPC	South Pacific Community
SPS	Sanitary and Phytosanitary Measures
STDF	Standards and Trade Development Facility
UN	United Nations
US	United States
WTO	World Trade Organization

1   HIGH LEVEL SUMMARY

1. **Project aims and objectives:** The project 'Demonstrating the impact on trade and regional plant protection of streamlined information systems for pest surveillance and reporting' (p-tracker) was a regional project funded by the Standards and Trade Development Facility (STDF) that aimed to improve the design and implementation of pest surveillance in the Asia-Pacific region, implemented between 2016 and 2023.

2. The project aimed to tackle the inconsistent approach to pest surveillance and poor standard of pest reporting across the Asia-Pacific region by promoting best practices in surveillance and reporting. This included building capacity to improve pest and disease identification, data collection, management and analysis, and reporting, in line with international standards. The project supported activities in eight countries in the region: Cambodia, Lao PDR, Malaysia, Myanmar, Papua New Guinea (PNG), Philippines, Thailand and Vietnam.

3. **Partners and beneficiaries:** The Australian Department of Agriculture, Fisheries and Food (DAFF) was responsible for overall project management, implementation and coordination of the project from December 2016 to September 2023. The main project partners and beneficiaries were the National Plant Protection Organizations (NPPOs) in the eight countries. The NPPOs are part of agricultural departments or ministries in each government. NPPOs' broad objectives include: to protect national plant resources through implementing appropriate phytosanitary measures in imports; to facilitate market access and safe international trade in plants and plant products through a robust export certification system; and, to reduce risks to national food security and the environment by protecting plant resources.

4. **Evaluation:** The project impact evaluation (PIE) included document reviews and interviews. Between November 2023 and February 2024, the project evaluator reviewed documents and data, conducted virtual interviews in all eight countries and undertook field work in Thailand. The project evaluator interviewed 40 people, including staff from participating NPPOs, DAFF and the STDF Secretariat, as well as departments and offices in the Ministry of Agriculture and Cooperatives (MOAC), private sector beneficiaries, research and extension workers in Thailand.

5. **Summary of findings:**

    a. **Relevance:** Overall, the project reflected the priorities of the main project beneficiaries, the NPPOs. The NPPOs considered the package of support relevant and appropriate to their surveillance needs. The project implementing partner considered local contexts and processes, tailoring activities to specific needs and circumstances. The project aligned with regional and international surveillance priorities and commitments related to maintaining and/or gaining market access and trade.

    b. **Coherence:** There were several examples of complementarities between, or with other projects. The project complemented initiatives by STDF partners and donors, including other initiatives

funded and implemented by Australia. However, opportunities for complementarities were not fully capitalized on. In some of the countries, the project led to subsequent projects and activities and continued use of the same or similar technology. However, more could have been done to leverage other activities and financial support.

c. **Efficiency:** The COVID-19 pandemic had a significant impact on the project, leading to a delay of nearly 3 years and an under-spend. Overall, apart from the delay and resulting extensions due to COVID-19, the project was efficient, delivering activities in a timely and cost-effective way. It was also flexible enough to adapt to changes in circumstances, such as the pandemic. There were some administrative challenges delaying payments. Moreover, staff turnover during the project contributed to delays.

d. **Effectiveness:** Overall, the project has helped all NPPOs to improve their surveillance capacity, systems, data collection and reporting. However, limited progress was made in reporting data to international information systems. The main challenge highlighted by all NPPOs was the cost of the software license, some operational problems with the technology, COVID-19 travel restrictions, and inadequate staff capacity and/or high staff turnover. In addition, the quality of the M&E data, reporting and evaluative work was variable and often quite poor.

e. **Impact:** Overall, the project contributed to all countries gaining and/or maintaining market access. In some cases, this took place after the project ended. Information on non-compliance notifications (rejections) is patchy across countries. Gender and environment were not adequately integrated into the project. The project only reported on representation of women in the management of the project and participation of women in project activities. There were some examples of positive outcomes related to the environment.

f. **Sustainability:** Most NPPOs used either p-tracker or alternative surveillance apps to conduct surveillance after the project ended, expanding its use to new commodities and pests. Some countries developed their own apps, motivated by the positive results using p-tracker. For those using p-tracker, an ongoing challenge is the software license cost and, more importantly, the recent discontinuation of the software. The lack of operational alternatives for some of the countries curtails the sustainability of the benefits of the project. Most NPPOs have been able to sustain the capacity building results by passing on expertise to colleagues.

6. **Lessons learned:**

a. Importance of ensuring M&E requirements are fully understood by the implementing partner (DAFF) and the NPPOs, and that guidance and support are provided to ensure outcome/impact data is collected, including baseline data.

b. Some of the technological challenges highlight the importance of selecting technology relevant to the context.

c. Ensuring sustainability plans are in place earlier and communicated and understood by all stakeholders.

d. Importance of sharing innovations (e.g. use of alternative free software apps in some countries) and actively supporting countries to replicate and roll out similar.

e. The proliferation of mobile app technologies and examples of NPPOs using more than one app for surveillance purposes poses risks to efficiency and highlights the need to rationalize the use of multiple information platforms.

f. The p-tracker project demonstrated that close cooperation between the implementing partner and beneficiaries are important elements for successful implementation. It also demonstrated the usefulness of establishing a network for sharing experience, knowledge, expertise, lessons, problems and trouble-shooting between participants.

g. Limited appetite for virtual mentoring suggests the importance and need for in-person engagement and/or improved design of virtual components, and also highlighted language barriers and connectivity issues.

h. Close alignment with country priorities was important in ensuring active participation and that objectives were met.

i. Since capacity levels differed significantly across countries, the amount of support should reflect the different levels of need in each country, contributing to 'levelling the playing field'.

j. Reluctance to share information on pests and plant diseases via IPPC is likely to persist given many countries are reluctant to share given the potential negative impact on a country's exports.

7. **Recommendations**:

a. **Project-specific:**

   i. Follow up with all NPPOs to ensure they are aware of the status of the p-tracker software (responsibility: DAFF).

   ii. Organize virtual training on alternative software for all NPPOs, including PNG who can demonstrate how to use it successfully (responsibility: DAFF).

   iii. Support the establishment of a community of best practice across NPPOs, based on progress made during the project, to ensure sharing continues (responsibility: DAFF).

b. **STDF program**:

    i. Regularly check that partners are using STDF's guidance on MEL and check the quality of monitoring data frequently, and put in place remedial measures when needed (responsibility: STDF).

    ii. Ensure implementing partners and commissioned evaluators follow the guidance on end of project evaluations (responsibility: STDF).

    iii. Ensure all projects have a sustainability plan in place demonstrating how projects will continue and leverage activities in future (responsibility: STDF).

2   PURPOSE AND CONTEXT

### 2.1   SUMMARY OF THE SANITARY AND PHYTOSANITARY MEASURES PROBLEM AND SOLUTION IMPLEMENTED

8. The project 'Demonstrating the impact on trade and regional plant protection of streamlined information systems for pest surveillance and reporting' (hereafter referred to as p-tracker[1]) was a regional project that aimed to improve the design and implementation of pest surveillance in the Asia-Pacific region, implemented between 2016 and 2022.

9. Surveillance is an important element of plant health systems.[2] Surveillance for pests and diseases provides information on current and emerging threats to crop yield and quality. Reliable identification of pests and diseases and distribution/location data helps inform and improve responses to tackle pests and diseases and contain outbreaks. Well-designed surveillance enables early detection of pest and disease outbreaks and timely responses to minimize economic losses and spread of the pest or disease. Surveillance also provides information necessary to prepare reports to meet regional and international obligations and pest lists required for exporting.

10. The project aimed to tackle the inconsistent approach to pest surveillance and poor standard of pest reporting across the Asia-Pacific region by promoting best practices in surveillance and reporting. This included building capacity to improve pest and disease identification, data collection, management and analysis, and reporting, in line with international standards. The project supported activities in eight countries in the region: Cambodia, Lao PDR, Malaysia, Myanmar, Papua New Guinea (PNG), Philippines, Thailand and Vietnam.

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[1] It is important to note that, strictly speaking, "p-tracker" is the app that was developed and deployed under this project. However, the name p-tracker is typically used to refer to the entire project

[2] See IPPC's Surveillance Guide for a fuller discussion of the importance of surveillance strategies in pest management for plant health. https://www.ippc.int/en/publications/90618/

11.   According to the original project application form (submitted to Standards Trade and Development Facility (STDF) in 2015), most countries at that time lacked credible national pest lists, information on pest free zones/areas was often incomplete, ongoing monitoring of pest status was lacking, and officials typically had limited ability and/or willingness to report on emerging phytosanitary risks, all of which hindered efforts to develop regionally harmonized systems. Furthermore, the lack of credible information on pest status and pest free areas reduced the ability to countries to take advantage of trading opportunities.

12.   Factors contributing to poorly developed surveillance systems included lack of awareness of the benefits of surveillance; lack of capacity to plan and implement surveillance consistent with international standards; lack of diagnostic capacity; and poorly developed national, information management systems.

13.   **Expected results:** The expected results of the project were as follows:

- **Project goal:** Reduced likelihood that outbreaks of new pests spread to neighboring countries and trading partners through commerce[3] and increase in export performance and market access of plant products originating from beneficiary countries.[4]

- **Project immediate objective:** A regionally harmonized, pest information framework developed, demonstrated and adopted.[5]

FIGURE 1: PROJECT LOGIC

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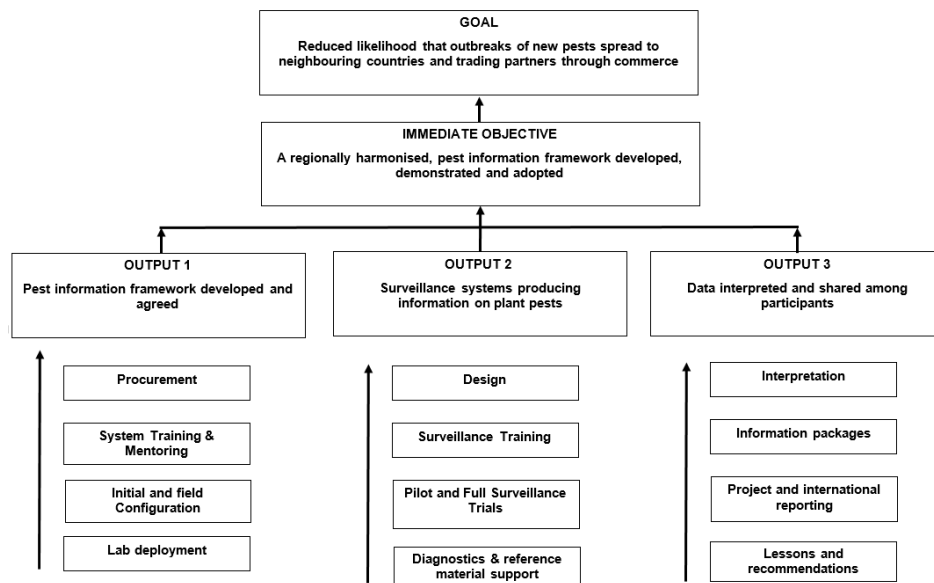
[3] From the project logic in the STDF application form
[4] From the log frame in the STDF application form
[5] From the project logic and log frame in the STDF application form

- **Project outputs** (see Figure 1 and Box 1)[6]:

  o **Output 1:** Pest information framework developed and agreed.

  o **Output 2:** Surveillance systems producing information on plant pests.

  o **Output 3:** Data interpreted and shared among partners.

BOX 1: EXPECTED PROJECT OUTPUTS[7]

- **Output 1: Pest information framework developed and agreed:** Implementing a pest information management system, including procuring mobile devices and licenses for the p-tracker app and Surveillance Information Management System (SIMS); training and mentoring in the use of p-tracker, SIMS and International Plant Protection Convention (IPPC)/APPPC reporting; configuration of mobile devices and SIMS to suit specific surveillance activities; and deployment of SIMS in National Plant Protection Organizations (NPPOs).

- **Output 2: Surveillance systems producing information on plant pests:** Implementing trial surveillance activities to demonstrate best practice in surveillance and management of pest information, including training.

- **Output 3: Data interpreted and shared among partners:** Digitizing data generated through surveillance in standardized format, in line with international standards, and incorporated into NPPO databases; assistance to report and share results among project participants and publish in standardized formats on IPPC and APPPC websites.

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14. **Activities:** The project provided technical assistance (capacity building), hardware and software, and some operational funding for surveillance activities including supporting National Plant Protection Organizations (NPPOs) to:

    - Use mobile devices and a customizable smartphone app (p-tracker) to collect and record surveillance data quickly and accurately in the field.

    - Import surveillance data into a low-cost, flexible, in-house information system.

    - Store records, analyze data, prepare reports and generate pest lists required for trade and to meet international obligations (e.g. International Plant Protection Convention (IPPC)).

15. **Logic:** According to the original application to STDF, participating countries were expected to "adopt and utilise a pest information management system and processes consistent with a regional, pest information

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[6] From the project logic and log frame in the STDF application form
[7] STDF application form

framework and relevant international phytosanitary standards". The project was expected to "demonstrate the use of standardised protocols for digitising pest records via mobile devices; performing surveillance for a diversity of pests and cropping systems; and reporting on pest status to the IPPC or APPPC".[8] The logic underlying the project was as follows:

- *"**IF** a regionally harmonised pest information framework can be developed and agreed and staff trained in its use (output 1)*

- *…and **IF** surveillance trials can be designed and implemented accordingly to best practice and with support for local surveillance and diagnostic capacity (output 2)*

- *…and **IF** NPPOs can be supported and encouraged to interpret, publicise and report pest information (output 3)*

- ***THEN** the pest information framework will have been demonstrated and adopted [objective]".*[9]

16. **Alignment with regional and international priorities and obligations:** The project aligned and aimed to contribute to relevant international and regional priorities and obligations under the IPPC, Association of Southeast Asian Nations (ASEAN) and Asia and Pacific Plant Protection Commission (APPPC).

- **IPPC**: The project aimed to contribute to delivering IPPC's strategic framework objectives and several of its key results areas (for example, "A1. all NPPOs have effective pest surveillance systems in place for timely detection of new pest arrivals and monitoring spread").[10] It aimed to support countries to implement International Standards for Phytosanitary Measures (ISPMs)[11], especially ISPM6 on surveillance[12] as well as other relevant ISPMs,[13] and the national reporting obligations[14] of IPPC signatories.

- **ASEAN**: The project aimed to contribute to delivering ASEAN's objectives to support the harmonization of protocols for handling phytosanitary risks and promote the adoption and

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[8] STDF application form
[9] STDF application form
[10] FAO (2020) Strategic Framework for the International Plant Protection Convention (IPPC) 2020-2030
[11] Developed under the auspices of the IPPC Secretariat, the WTO SPS Agreement recognizes ISPMs as the only international standards for plant health.
[12] ISPM6 describes the requirements for surveillance, including the components of a national surveillance system. FAO (2018), International Standards for Phytosanitary Measures: ISPM 6 – Surveillance.
[13] ISPM4 requirements for the establishment of pest free areas; ISPM8 determination of pest status in an area; ISPM17 pest reporting; ISPM26 establishment of pest free areas for fruit flies
[14] ISPM standards; IPPC (2016) National Reporting Obligations as provided by the IPP Convention, IPPC (2016) Bilateral National Reporting Obligations as provided by the IPP Convention and FAO (2016) The Guide to National Reporting Obligations (2016)

implementation of international standards and build capacity on pest surveillance, as outlined in the ASEAN Strategic Plan of Action (SPA).[15]

- **APPPC:** The project aimed to contribute to some of APPPC's key objectives including to promote the exchange of information about plant protection among member countries, including information on pest status, by encouraging project participants to report information through the APPPC.

17. In addition, the project aimed to support the **UN Sustainable Development Goals (SDGs)**, including SDG2 (zero hunger: end hunger, achieve food security and improved nutrition and promote sustainable agriculture) and SDG12 (responsible consumption and production: ensure sustainable consumption and production patterns).

2.2   IMPLEMENTATION CONTEXT

18. Agriculture is an important sector in the project countries, ranging from approximately 22% of GDP in Cambodia and Myanmar in 2020, and approximately 9% of GDP in the more diversified economies of Malaysia and Thailand.

19. In the region[16], the total value of agricultural, fisheries and forestry exports grew by 4.7% annually between 2015 and 2022, with exports to Asia[17] increasing by 7.7%, China increasing by 9.2%, US by 3.8%, EU (+UK) by 3.6%, Australia by 5.6% and New Zealand by 3.7%.[18] Approximately 42% of agricultural exports go to Asia, 28% to China, 10.1% to EU, 10.7% to North America, 1.9% to Australia and 0.4% to New Zealand. The share of exports to Asia has increased, with the share of exports destined to US, and EU(+UK) slightly decreasing.

20. ASEAN countries have joined several free trade agreements (e.g., with Australia and New Zealand, China, India, Japan and South Korea), providing opportunities for agricultural exports. However, the lack of credible information on pest status and the inability of NPPOs to utilize pest free areas has hampered countries ability to take advantage of potential opportunities. Plant pest status, either because the status is unfavorable or because pest status is poorly known, is a major impediment to expanding exports of agricultural commodities, especially to developed country markets.

2.3   IMPLEMENTING PARTNERS, BENEFICIARIES AND INVENTORY OF OTHER STAKEHOLDERS

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[15] ASEAN (2016) Strategic Plan of Action (SPA) for ASEAN Cooperation on Crops (2016–2020) and ASEAN (2020) Strategic Plan of Action for ASEAN Cooperation on Crops (2021–2025). The ASEAN Sectoral Working Group on Crop (ASWGC) and its Experts Working Group for the Harmonisation of Phytosanitary Measures (EWGPS) have oversight of the SPA's objectives and action plans on surveillance.
[16] Countries participating in the p-tracker program
[17] Top 5 destinations
[18] Annual Average Growth Rate

21. **Implementing partner:** The Australian Department of Agriculture, Fisheries and Food (DAFF) was responsible for overall project management, implementation and coordination of the project from December 2016 to September 2023 The project was implemented by the Technical Capacity Building Team, Plant Systems and Strategy Branch of the Biosecurity Plant and Science Services Division. ASEANET helped coordinate logistics for face-to-face meetings and multi-country workshops and assisted in project management including transfer of funds.

22. **Main partner and beneficiary:** The main project partners and beneficiaries were the NPPOs in the eight countries. The NPPOs are part of agricultural departments or ministries in each government. NPPOs' broad objectives include: to protect national plant resources through implementing appropriate phytosanitary measures in imports; to facilitate market access and safe international trade in plants and plant products through a robust export certification system; and, to reduce risks to national food security and the environment by protecting plant resources. [19] They have responsibilities across a range of phytosanitary issues, including: import verification and export certification including inspection; and pest surveillance including developing pest lists, conducting pest risk analysis, establishing pest free areas, determining pest status in an area, and reporting the occurrence, outbreak and spread of pests; maintaining pest free areas and areas of low prevalence.[20] NPPOs are the representatives of the IPPC Contracting Parties. They are encouraged to set their national phytosanitary measures in line with ISPMs adopted by IPPC Contracting Parties through the Commission on Phytosanitary Measures (CPM). ISPMs are recognized as the basis for their phytosanitary measures applied by Members of the WTO under the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) Agreement. The beneficiary countries of this project are members of WTO.

23. **Governance structure:** The project originally had two steering committees:

   - High-level steering committee comprising of NPPO senior officers (e.g. Directors) providing strategic oversight

   - Technical committee comprising of technical specialists from each country, as well as independent technical advisors who provided advice on surveillance design and other technical aspects of the project.

24. After the inception phase, the committees were combined into one committee to improve efficiency. The committee met annually and was responsible for ensuring that the project was delivered in line with the project goal, objectives and work plans. The committee met a total of five times in-person and virtually during the course of the project.

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[19] FAO (2015) Operation of a National Plant Protection Organization
[20] FAO (2015) Operation of a National Plant Protection Organization

3 EVALUATION METHOD AND APPROACH

25. The project was selected for impact evaluation as part of broader STDF programme evaluation.

3.1 DATA COLLECTION

26. During November 2023, the project evaluator undertook document reviews and joined initial meetings with each of the NPPOs, led by the STDF Secretariat with DAFF participating. The purpose of these meetings was to familiarize the project evaluator with the project, including progress to date, and give the project evaluator the opportunity to explore the feasibility of undertaking field work in one of the countries.

27. For the country selection, the project evaluator assessed each country against the following sampling criteria:

    1. Start and end date

    2. Progress to date

    3. Feasibility of field work to project sites (beyond capital cities)

    4. Availability of relevant NPPO staff and appetite for receiving a visit

    5. Capacity of NPPO staff to support logistics

    6. Coverage of beneficiaries

    7. Country status

28. Based largely on criteria 1 through 5, Thailand was selected for the country visit, including visiting plantations, a farmer field school and a factory in the south.

29. Between November 2023 and February 2024, the project evaluator reviewed documents and data, conducted virtual interviews in all eight countries and undertook field work in Bangkok and Krabi province in Thailand between 22nd and 27th January (see Annex A for documents reviewed and Annex B for people consulted).

30. The evaluation was able to draw on a recently completed evaluation, especially the survey responses, and project completion report (including country annexes) shared by DAFF in December 2023, as well as a range of other documents (see Annex A).

31. The project evaluator interviewed 40 people, including staff from participating NPPOs, DAFF and the STDF Secretariat, as well as departments and offices in the Ministry of Agriculture and Cooperatives (MOAC),

the private sector (plantation owner and factory owner), research and extension workers (farmer field school) in Thailand.

32. The project evaluator developed data collection tools (e.g. semi-structured interview and document review guides) based on the evaluation questions, sub-questions and indicators. The semi-structured interview tool ensured systematic coverage of questions, while retaining the flexibility to explore relevant questions for specific stakeholders and pursuing unforeseen avenues of enquiry. The tools helped ensure that data collection was relevant, consistent and comparable.

33. For the Thailand visit, the project evaluator provided a list of possible stakeholders to interview and requested suggestions from the NPPO. The project evaluator selected who to interview to avoid any bias. The project evaluator also identified other interviewees based on emerging information from the interviews. In some cases, interviews took place with the NPPO key points of contact (POC) present. To attempt to mitigate any bias, the project evaluator highlighted to each interviewee the importance of providing unbiased and independent responses.

34. All interview protocols included a script read out at the beginning of interviews covering confidentiality and anonymity of sources. Before interviews, the project evaluator ensured they secured the interviewee's informed consent. The project evaluator introduced herself and outlined the purpose of the meeting and its likely duration. She emphasized that the evaluation was an independent assessment and encouraged interviewees to speak openly about progress, challenges and lessons learned.

3.2 ANALYSIS

35. The project evaluator recorded and analyzed evidence across different sources, primary (interviews) and secondary (documents and data), against the evaluation criteria, questions and expected results of the project. This enabled triangulation of evidence across different sources. The project evaluator categorized and coded text in documents and interviews according to evaluation criteria and key questions/themes to enable systematic analysis across the sources. The coding table mirrored the broader evaluation matrix for the STDF evaluation, where each column was a unit of data collected (e.g., interview) and each row a dimension (question, criteria, theme).

3.3 LIMITATIONS

36. The main limitations are as follows:

- The narrow range of beneficiaries reduced the scope for deeper enquiry of the project's impact. The main project beneficiaries were the NPPOs in-country. Farmers had some, albeit limited, involvement with the project.

- The lack of monitoring data at the higher levels of the results chain (e.g., outcomes, impacts) limited the evidence available. The project evaluator attempted to fill the gaps through the document review and interviews, including secondary sources (e.g., IPPC website).

- Project activities ended earlier in some countries (e.g., project activities ended in 2019/20 in Cambodia and Vietnam), leading to possible issues with recall during interviews. However, this did not appear to be a problem as interviewees were able to provide significant amounts of detail that triangulated well with other evidence.

4 MAIN FINDINGS

4.1 RELEVANCE

Summary of findings: Overall, the project reflected the priorities of the main project beneficiaries, the NPPOs. The NPPOs considered the package of support relevant and appropriate to their surveillance needs. The project implementing partner considered local contexts and processes, tailoring activities to specific needs and circumstances. The project aligned with regional and international surveillance priorities and commitments and priorities related to maintaining and/or gaining market access and trade.

37. Overall, the project objectives and activities reflected the needs of the main project beneficiaries, the NPPOs, aligning to their core mandate, roles and responsibilities on phytosanitary issues, especially surveillance and reporting (see section 2.3). In many Asia-Pacific countries, inadequate and inconsistent approaches to surveillance have led to poor quality monitoring, data, analysis and reporting due to several factors, including lack of awareness on the benefits of surveillance, limited capacity to undertake surveillance consistent with international standards (ISPMs), insufficient diagnostic capacity and poorly developed information systems.

38. All NPPOs indicated the importance of developing their pest surveillance capacity to monitor and control pests and diseases, including improving identification, early detection, risk analysis and responses. In addition, they all emphasized the importance of improving surveillance to generate credible information and reports on pest status and pest free areas to maintain market access (reduce notifications) and/or negotiate and gain market access. In addition, some NPPOs mentioned the importance of surveillance to help control pests and diseases to maintain production levels and yields to satisfy both local and international demand. A few mentioned problems with frequent notifications affecting market access (e.g., white fly and nematodes on aquatic plants in Malaysia).

39. The project implementing partner, DAFF, worked with NPPOs to identify target crops, pests and diseases that reflected priorities for each country. According to several of the NPPOs (e.g., Lao PDR, Malaysia and Thailand), DAFF took into account local contexts and processes, tailoring surveillance processes and plans to specific needs and circumstances.

40. According to all participating NPPOs, the combination of technical assistance to improve surveillance systems and processes, support to undertaking surveys and the provision of hardware and software was relevant and appropriate to their surveillance needs and priorities. Most interviewees highlighted that the project aligned to some of the main capacity constraints in the NPPOs, including lack of surveillance expertise. All NPPOs highlighted the importance of addressing problems associated with manual surveillance processes, which the project sought to address through digital technology. According to the majority of interviewees, manual processes (where officers would collect data using pen and paper in the field) were time-consuming and prone to human error, leading to inconsistent data and discrepancies.

41. The project also aligned with regional (ASEAN, APPPC) and international (IPPC) surveillance priorities and commitments, including those in the ASEAN Strategic Plan of Action and IPPC Strategic Framework and ISPMs, especially ISPM6 (see section 2.3).

42. Across the stakeholders, the perception of the relevance of the project was broadly consistent. All NPPOs, DAFF and the STDF Secretariat stated that the project reflects priorities related to maintaining and/or gaining market access and trade.

43. In addition to market access, others (e.g. Thailand NPPO) highlighted the importance of surveillance activities to help maintain and/or increase production and yields. In Thailand, the relevance of the project for market access varied depending on the interviewee. For instance, according to the Plant Protection Research and Development Office (PPRDO), Department of Agriculture (DoA), who were the main points of contact for the project, the project was very relevant in helping to define pest lists and distribution and emphasized the importance of this information to reduce notifications (non-compliance) and facilitate exporting to existing or new markets. However, the National Bureau of Agricultural Commodity and Food Standards (ACFS) questioned the project's direct link and contribution to helping negotiate and gain market access, given there are so many other factors at play in negotiations. The ACFS were involved in the project mainly at the early stages of the project and were trained in the use of p-tracker which helped them understand the capabilities of the technology and software and gave them confidence in the data collected and reported.

4.2 COHERENCE

> *Summary of findings: There were several examples of complementarities between projects in some of the countries. The project complemented initiatives by STDF partners and donors, including other initiatives funded and implemented by Australia. However, opportunities for complementarities were not fully capitalized on. In some of the countries, the project led to subsequent projects and activities and continued use of the same or similar technology. However, more could have been done to leverage other activities and financial support.*

4.2.1 COMPLEMENTARITIES AND SYNERGIES

44. Across the participating countries, there are examples of the project complementing initiatives by STDF partners (e.g., Food and Agriculture Organization (FAO)) and donors (Australia, South Korea and New Zealand)[21]. The p-tracker project built on earlier FAO interventions (e.g., in Cambodia, Lao PDR and Malaysia). There were also similar initiatives taking place at the same time in Cambodia, Lao PDR and Thailand, such as the Pest Point app for collecting data on pests and diseases funded by the Australian Centre for International Agricultural Research (ACIAR) which is a government agency. Other examples include the ASEAN Regional Diagnostic Network (ARDN) project, also implemented by DAFF, which worked closely with the p-tracker project and provided support to NPPOs to improve their diagnostic capacity, complementing p-tracker activities. However, opportunities for complementarities were not fully capitalized on, highlighted by NPPOs continued constraints in diagnostic capacity (see section 4.4.1). A planned collaboration with CABI Plantwise (see section 4.4.1) did not materialize, which DAFF considered a missed opportunity.

45. There was limited evidence of any duplication of efforts between projects. However, the proliferation of mobile app technologies and examples of NPPOs using more than one app for surveillance, suggests potential risks to efficiency and possible scope to rationalize the use of different technologies.

4.2.2 LEVERAGE

46. In Thailand, after the p-tracker project ended, the FAO funded related activities. This included supporting the continued use of p-tracker for surveillance, covering new target pests and commodities (e.g., cassava, banana and shallots). In the Pacific, PNG received training from the South Pacific Community (SPC) on the use of an alternative app, KOBO Toolbox, for the surveillance of coconut rhinoceros beetle, which led to the adoption of KOBO Toolbox, saving resources and improving sustainability (see section 4.6.1). According to the PNG NPPO, their experience using p-tracker made it easier to use KOBO Toolbox.

47. At the final steering committee meeting, DAFF requested that the participating NPPOs provide a list of priority capacity building needs for potential support through STDF and narrowed it down to three priority areas: ASEAN regional pest list database, ASEAN regional fruit fly project and an alternative free surveillance app (KOBO ToolBox). DAFF planned to develop proposals and submit to STDF. However, the proposals were put on hold pending major restructuring of the department. Once the new structure and Director are in place, DAFF plan to submit proposals to STDF. To note, STDF does not encourage phase 2 projects since this would undermine the incentive to develop and put in place measures to ensure sustainability. Any future requests would need to comply with STDF requirements and priorities to qualify for potential new funding.

4.3 EFFICIENCY

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[21] All three are "donors" in the broad sense that they engage in bi-lateral development support. Of these, however, only Austrailia donates to STDF.

> **Summary of findings:** *The COVID-19 pandemic had a significant impact on the project, leading to a delay of nearly 3 years and an under-spend. Overall, apart from the delay and resulting extensions due to COVID-19, the project was efficient, delivering activities in a timely and cost-effective way. It was also flexible enough to adapt to changes in circumstances, such as the pandemic. There were some administrative challenges delaying payments. Moreover, staff turnover during the project contributed to delays.*

48.   As discussed in section 4.4.2 on COVID-19, the pandemic had a significant impact on the project, leading to a delay of nearly 3 years (original end date 31 December 2019; actual end date 30 September 2023) and an under-spend of approximately 20% (original STDF contribution = US$997,595; projected total disbursements = US$816,4912). The underspend was largely due to reduced travel expenses due to COVID-19 related travel restrictions, both domestic and international.

49.   Apart from the lengthy delays and resulting extensions due to COVID-19, most NPPOs considered the project efficient, delivering activities in a timely and cost-effective way. The DAFF team worked with the NPPOs to ensure that the project was delivered on time and within budget. In addition, the project was considered flexible enough to adapt to changes in circumstances (see section 4.4.2 on COVID-19). All countries provided in-kind contributions in the form of salaries for NPPO staff covering both management (coordination, planning, financial management, reporting, etc.) and technical responsibilities.

50.   There were some delays in milestone payments to countries. Payments were made only on receipt of satisfactory progress reports and some NPPOs sometimes had to revise their reports leading to delays. Also, the logistics of receiving payments were problematic for a few countries (Malaysia, Philippines and Vietnam) due to local systems, which led to delayed transfers, but DAFF managed to identify and implement solutions (for example, working with ASEAN Net who acted as an intermediary banker). Both DAFF and some of the NPPOs faced challenges of staff turnover during the project which contributed to delays in administration of project activities, including milestone payments. Also, during the pandemic, surveillance activities were suspended and many NPPO staff were unable to visit their offices, leading to delays in conducting administrative duties (e.g., reporting and invoicing) and therefore receiving milestone payments. In addition, payments were received after work was undertaken, involving countries having to pay upfront (e.g., fieldwork costs).

4.4   EFFECTIVENESS

> **Summary of findings**: *Overall, the project has helped all NPPOs to improve their surveillance capacity, systems, data collection and reporting. However, limited progress was made in reporting data to international information systems, largely due to concerns about revealing information (e.g., on pests and diseases) which may undermine market access. The main challenges highlighted by all NPPOs was the cost of the license, some operational problems with the technology, COVID-19 travel restrictions, inadequate staff capacity and/or high staff turnover. In addition, the quality of the M&E data, reporting and evaluative work was variable and often quite poor.*

4.4.1 SUMMARY OF RESULTS (OUTPUTS)

51. According to NPPO interviews, the project has helped all NPPOs to improve their surveillance capacity and systems, including improving identification of pests and using more efficient and effective methods to collect data on pests and diseases, saving time in the field compared to manual processes, and leading to more reliable and robust pest data and information for developing and/or updating pest lists, pest free areas, reporting, etc. NPPOs have learnt how to create surveillance plans and protocols and improved their understanding on how to collect and manage survey data in accordance with ISPM6, as well as improved their reporting, helping improve SPS compliance. In addition, by providing better information on prevalence and spread of pests and diseases, the project has led to improvements in the control of pests and diseases to prevent spread and outbreaks.

52. The following summarizes progress by output, including some of the challenges faced (see section 4.5.1 for results at outcome and impact levels).

53. **Output 1 – pest information framework developed and agreed**: All NPPOs were provided with mobile devices (iPad minis), usually two, which included the p-tracker app and GeoJot+ spatial software to collect and record surveillance data, including photos and geo-references of the location of the crops and pests, in line with ISPM6. In addition, the project provided SIMs, installed and used on a laptop to import and store surveillance records, analyze data and prepare reports. The laptops were configured with the p-tracker app and Geo-Jot+. DAFF procured software licenses for two years.

54. DAFF worked with NPPOs to configure the software to suit specific surveillance requirements of each country and provided effective ongoing support (e.g., in-country and remote mentoring; follow-up workshops) when they faced any challenges. At least one official from each NPPO received training in the use of the technology and they found it relatively simple to use. There are several examples of trained officials teaching others on how to use the technology (e.g., Cambodia, Lao PDR, Malaysia, Philippines, Thailand and Vietnam). Overall, the feedback from NPPOs on the technology was positive, with all NPPOs able to undertake surveys using the technology. Nevertheless, NPPOs faced a number of challenges, some of which could have been avoided through better design (e.g., use of android technology rather than IOS):

    - The main challenge highlighted by all NPPOs was the cost of the license, which has also increased each year. Most NPPOs reported limited resources to renew software licenses, although some were able to renew the license (e.g., Cambodia, Malaysia and Thailand) using resources from other sources (e.g., FAO project in Thailand and government resources in Cambodia and Malaysia). Thailand developed an alternative method to record data using android phones and google forms, reducing the need to pay for licenses on mobile devices and enabling more staff to undertake surveys, but they still needed to pay for software licenses on the laptop to download and extract data. In Thailand, once the FAO project ended, the NPPO did not renew the license on the laptop again due to lack of funding. They requested funds from the government but no budget was available. As a result, they are no longer using p-tracker, but their IT department are exploring

free software options. Others have developed their own apps (e.g., Philippines) or used alternative free apps such as KOBO toolbox (e.g., PNG).

- Another challenge encountered during fieldwork was overheating iPads which led to iPads shutting down suddenly (Lao PDR, Malaysia and Thailand) requiring officers to use paper as a back-up until the iPads cooled down and restarted.

- Philippines and Thailand mentioned that the iPads have insufficient memory. According to the Philippines, the app on the iPad was often slow and crashed, but this was overcome by extracting data off the device to increase memory.

- Reception was often limited in the field (Lao PDR, Myanmar, PNG and Thailand) but officers were able to use the devices offline and download data later once they were able to connect to the internet.

- Some of the NPPOs mentioned problems downloading data from the iPads to laptops and extracting data to generate reports (Myanmar, PNG, Thailand and Vietnam). DAFF staff were able to resolve some of these issues.

- A couple of NPPOs mentioned they did not have enough iPads (Malaysia and Thailand) and could not provide devices for local officers in the provinces. However, Malaysia was able to buy more with their own resources and Thailand found a method of using android phones to collect data using google forms, expanding their data collection capacity. According to the Thai NPPO, if the technology was cheaper, this would enable the technology to be shared at the local level, reducing the expense of travelling to the districts/provinces.

- Thailand also mentioned challenges of limited iPad battery life when covering large areas in the field.

- In addition, android devices are used more in the region, leading some NPPOs to question the appropriateness of using Apple IOS systems (Philippines, PNG and Thailand).

55. **Output 2 – surveillance systems producing information on plant pests:** The project successfully supported all NPPOs to develop surveillance plans and protocols for target crops and pests. These were developed and used by all countries in their surveillance activities, as evidenced by the pilot surveys conducted. Through workshops and mentoring (in-country and remote), NPPO staff were trained in surveillance methodology and how to detect the presence and extent of pests and diseases. Most of the staff trained then went on to train other officers.

56. Planned surveillance activities were completed in all countries, with Malaysia and PNG the last to complete their surveys. All countries conducted surveillance of new target crops and pests, in addition to the initial targets, using the technology and expertise learnt from the pilot surveys conducted. For

instance, in Thailand, the NPPO conducted surveys and prepared pest lists for cassava (cassava mosaic virus), banana (Fusarium oxysporum tropical race 4, TR4) and shallots (smut) under the FAO project.

57. Some progress was made on improving diagnostics but several countries and DAFF highlighted a continued lack of expertise in pest diagnostics across the region. DAFF are supporting other projects in this area (e.g. ARDN) – see section 4.2.1.

58. Surveillance activities faced several challenges:

- Surveillance activities were delayed for most countries due to COVID-19 travel restrictions.

- Cambodia mentioned they do not have enough staff and experts to conduct surveillance activities while Malaysia mentioned they suffered from insufficient expertise amongst officers who needed a lot of support from senior staff.

- A high turnover of staff in some of the NPPOs (e.g., Malaysia and Vietnam) necessitated frequent retraining of new staff in surveillance methods.

- Myanmar did not receive any resources for surveillance activities in the field and had to use very limited funding provided by government.[22]

- In Vietnam, difficult terrain and poor weather made surveying difficult.

59. **<u>Output 3 – data shared and interpreted among partners:</u>** The project helped NPPOs digitally record data in a standardized format in line with relevant ISPMs (especially ISPM6 and ISPM8), providing data to determine pest status (absence and presence in a specific location and at a given time) and pest free areas. However, some of the staff lacked experience in interpreting surveillance data.

60. There is limited evidence of NPPOs developing centralized databases to store data, with data often remaining on individual laptops (e.g., PNG and Thailand), posing a significant risk that data could be lost if a laptop stopped working, was lost, etc. Some of the countries requested support to develop databases on pest management information, however, this was not in the original scope of the project.

61. Limited progress was made in reporting data on pest detections to international information systems (e.g., IPPC and APPPC). Sometimes it is not the responsibility of the NPPO to upload information onto the IPPC website. For instance, in Thailand, the ACFS is the main IPPC focal point and is responsible for uploading information. A few of the countries had concerns about data security and sovereignty (Malaysia, PNG and Thailand). Participating countries are typically reluctant to share information on pest status, etc. in case it undermines their ability to export. Table 1 shows that half of the participating countries (Cambodia, Lao PDR, PNG and Vietnam) did not post any pest reports ('pest status' and 'pest reports') on the IPPC website.

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[22] Myanmar was added to the project through funding from ARDN which only covered limited training and equipment

Also, according to a survey conducted as part of an end of project evaluation, only three countries (Malaysia, Myanmar and Thailand) stated that they have used the knowledge gained from the project to identify and report plant pests through the IPPC.[23] For comparison purposes, Table 1 also shows reporting by other countries, including importing countries and more developed economies.

TABLE 1: REPORTS ON THE IPPC WEBSITE[24]

	Project countries								Other countries						
	Cambodia	Lao	Malaysia	Myanmar	Philippines	PNG	Thailand	Vietnam	China	Australia	New Zealand	Singapore	USA	EU	France
Description of NPPO	3	1	3	1	3	0	2	1	2	1	2	1	0	1	1
Legislation (phytosanitary requirements, restrictions, prohibit	10	1	6	3	10	1	12	15	11	28	3	24	0	1	1
Entry points	1	1	3	3	2	2	1	1	2	3	2	1	0	0	1
List of regulated pests	4	1	1	1	1	3	1	4	7	3	1	1	0	1	1
Pest reports	0	0	2	19	2	0	5	0	2	112	12	10	303	0	1
Organisational arrangements of plant protection	1	0	0	1	1	1	2	0	0	1	3	4	0	0	0
Rationale for phytosanitary requirements	0	0	1	0	0	0	0	0	0	6	0	2	0	0	0
Non-compliance	0	0	0	0	0	0	2	3	0	2	0	4	0	1	1
Pest status	0	0	3	0	0	0	3	0	0	0	2	11	0	0	1
Emergency action	0	0	1	0	0	0	0	0	0	7	0	0	0	1	1
Total pest reports + pest status =	0	0	5	19	2	0	8	0	2	112	14	21	303	0	2

62. According to interviews, the NPPOs did, however, share some information and lessons with participating countries, for example, early warning signs of new pests and expertise on identification (e.g. fall armyworm) and experience and expertise on surveillance (e.g., Thailand), often through steering committee meetings but also informal groups established through WhatsApp etc.

63. A planned small initiative linking surveillance data outcomes with the CABI Plantwise database was not pursued. According to DAFF, it "fell through the cracks" partly due to the COVID-19 pandemic but also because there was no budget line attached to it for CABI to do it or for the NPPOs to engage.

64. Some of the countries (Cambodia, Lao PDR, PNG, Vietnam) developed information (e.g., videos, leaflets and posters) to share with others (e.g., farmers) to improve their ability to identify and control pests in the field.

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[23] Pederson (2023) End of Project Evaluation Report: STDF / PG / 432 'Promoting IT Solutions for Pest Surveillance and Reporting in the Asia-Pacific

[24] Compiled from the IPPC https://www.ippc.int/en/

65. All NPPOs have produced regular progress reports to DAFF. An end of project evaluation report and project completion report (PCR) were conducted in 2023, both including lessons and recommendations, and most countries shared their future priorities including target crops and/or pests.

4.4.2   ADAPTING OPERATIONS AND DELIVERY IN RESPONSE TO THE COVID-19 PANDEMIC

66. STDF and DAFF demonstrated significant flexibility to adapt to the COVID-19 pandemic. DAFF developed a COVID-19 risk strategy, including the likely effects of the pandemic on project implementation and performance and actions to manage risks. NPPOs also provided an assessment of the effects of COVID-19 on project delivery in their country reports.

67. As mentioned above (see section 4.3 on efficiency), the Covid-19 pandemic had a significant impact on the project, leading to a delay of nearly 3 years and an under-spend of approximately 20%, largely due to delays in surveillance activities and cancellation of in-person meetings and training significantly reducing travel expenses. Most of the participating countries implemented both domestic and international travel restrictions to manage the spread of COVID-19. Project activities were finished in Vietnam before the pandemic and just at the start of the pandemic in Cambodia. DAFF requested no-cost extensions three times, which STDF granted, largely due to the delays caused by the restrictions on movement.

68. COVID-19 travel restrictions led to delays in conducting surveillance activities as officers could not travel to sites to undertake surveillance. However, the Philippines was able to deploy mobile devices to the local level which allowed some surveillance activities to continue. Thailand used Zoom to share knowledge with local officers who then shared with farmers. Once surveillance activities resumed, NPPOs also provided videos of surveillance activities undertaken and shared these with DAFF.

69. In-person meetings, mentoring and training were put on hold, with much of the planned in country activity going online. Many of the project participants were unable to attend their offices, which delayed delivery as well as reporting and invoicing and, consequently milestone payments. The pandemic prevented face-to-face meetings with the NPPOs and DAFF and led to the postponement of face-to-face Steering Committee meetings in 2020 and 2021 which eventually went online in December 2021.

70. In Thailand, the NPPO originally planned to train officers at farmer field schools in each province on how to identify basal stem rot (oil palm), thrips (flowers) and fruit fly, with the intention that they would pass on this knowledge to farmers. However, COVID-19 prevented key staff travelling to conduct the training.

71. The NPPO adapted their plans to produce a manual instead and distribute to officers and farmers in each province. However, this activity was never undertaken as the project ended.

72. Before COVID-19 struck, the project already had built-in remote mentoring with minimal costs. It was set up so that staff could have video sessions to help them through problems with IT, identification, data collection, identifying and/or processing specimens, etc. While NPPO staff became more familiar with

remote technologies during COVID, according to DAFF, "they did not really warm to remote workshops or mentoring".

4.4.3   MONITORING AND EVALUATION

73.   NPPOs reported according to milestones and produced annual country reports ahead of project steering committees, including information against the work plan and logframe indicators. DAFF provided templates to use for reporting but did not provide any training on M&E. DAFF provided feedback on the reports, often asking for more explanation of results achieved. Overall, NPPOs considered the reporting appropriate and easy to follow. In some cases, the reports were submitted late.

74.   The quality of monitoring data was variable and often quite poor. There was a lack of data on progress against indicators at the goal and objective level (impacts and outcomes), with no quantitative data reported against market access, exports, non-compliance rates, etc. Data on actual performance against outputs was measured using percentage completion rates, which were often determined arbitrarily with insufficient data to back up the completion rates, however, narrative descriptions of progress were also provided in some cases. Key DAFF staff involved in the project were technical experts, with limited expertise on M&E. Consequently, NPPO staff received limited guidance on M&E apart from templates and feedback on reports shared.

75.   The project did not provide any baseline data. No baseline studies were undertaken and, as is the regular practice for STDF, the project was not evaluated at regular stages (e.g. annual, mid-term) apart from the end of project evaluation[25]. There were issues with the quality of the end of project evaluation and final project completion report which took considerable time to resolve. The implementing team in DAFF had limited expertise on M&E, which contributed to some of the challenges. The evaluation was undertaken very quickly, with limited guidance from DAFF on how to conduct an evaluation. Also, the evaluator did not receive any responses from NPPOs to his request to conduct interviews. Also, there were delays in receiving comments from STDF on both the evaluation and project completion report, largely due to staff turnover, delaying completion of both reports.

4.5   IMPACT

Summary of findings: Overall, the project contributed to all countries gaining and/or maintaining market access. In some cases, this took place after the project ended. Information on non-compliance notifications (rejections) is patchy across countries. Gender and environment were not adequately integrated into the project. The project only reported on representation of women in the management of the project and participation of women in project activities. There were some examples of positive outcomes related to the environment.

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[25] Per STDF's MEL Framework, the progress report is the main monitoring tool.

4.5.1   SUMMARY OF RESULTS (GOAL)

76. The project's goal was to increase market access and exports of plant products from participating countries (log frame), measured by % increase in exports, % reduction in time taken to negotiate market access and % reduction in non-compliance notifications related to pest detections. The project logic includes a different goal, "reduced likelihood that outbreaks of new pests spread to neighboring countries and trading partners through commerce". Below we summarize the results by country against the goal(s) and indicators, drawing on available data and information from a recent evaluation, reporting against the logframe, and interviews. In most cases, only qualitative data on market access is available.

77. Overall, the project has contributed to all countries gaining and/or maintaining market access. In some cases, this took place after the project ended (for example, Thailand, supported by an FAO project which funded the continued use of p-tracker). Table 2 shows where surveillance data was used to develop pest lists to support exporting.

TABLE 2: COUNTRIES AND COMMODITIES WHERE SURVEILLANCE DATA WAS USED TO SUPPORT EXPORTING

Exporter	Commodity	Importer
Cambodia	Banana and mango	China
	Mango	South Korea
Lao PDR	Orange	China
Malaysia	Pineapples	Australia and New Zealand
	Aquatic plants	EU and Singapore
Myanmar	Mango, jackfruit and pineapple	China
	Mango	South Korea
Philippines	Durian	China
	Mango	Australia
PNG	Vegetables	Federated State of Micronesia
	Sweet potato	Singapore
	Vanilla beans	Indonesia
	Capsicum	Australia
	Ginger	New Zealand
Thailand	Shallots	Indonesia
	Banana	Japan
	Cassava	China and EU

	Flowers	Taiwan
	Tomatoes	EU and South Korea
Vietnam	Lychee and longan	Australia, China, Japan, Singapore and USA

78. There is no reported information or data on whether countries were able to negotiate market access more quickly. Information on non-compliance notifications (rejections) is patchy across countries. In some cases, NPPO key POCs for the project mentioned they are not responsible and do not have the data on notifications. Table 3 provides information on notifications drawn from available evidence.

TABLE 3: INFORMATION ON CHANGES IN NON-COMPLIANCE NOTIFICATIONS

	Information on any decrease in non-compliance notifications by trading partners
Cambodia	Information not available
Lao PDR	Information not available
Malaysia	Received notifications of nematodes and white fly from EU and Singapore – project helped address by supporting surveillance activities and the development of pest lists. Measurable decline in the number of non-compliance notifications for aquatic plants – rejections by Singapore declined by 20% in year 2021 – as a result of the project.
Myanmar	Decrease in non-compliance notifications for export of fresh fruits to China, Russia and Singapore.
Philippines	NPPO POC stated that there has been no decline in the number of non-compliance notification, but also mentioned that the National Plant Quarantine Service Division is responsible for this information, implying that the POC does not have access to this information.
PNG	Not sure whether there has been any decrease in non-compliance notifications
Thailand	The NPPO POC did not have the information, however, in an interview with the officers in the Export Plant Quarantine Service Group, they mentioned there have been no rejections for oil palm seedlings, bananas (TR4), flowers (thrips) and shallots (smut) over the last few years.
Vietnam	The NPPO POC stated that they have not received any non-compliance notifications for lychee and longan exports (phytophthora, fruit fly and litchi fruit borer).

4.5.2 GENDER

79. The project did not integrate gender in the application, design, expected results (logframe) and project activities.[26] Neither the application or logframe included references to gender and inclusion, except for mentioning that "women are well represented in these sectors [agriculture], especially in farming and

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[26] Note that the project was designed prior to STDF's Gender Action Plan.

local sales". However, the project did report on representation of women in the management and coordination of the project (# of female key POCs) and participation of women in meetings and training in the final project completion report. Overall, there was a higher number of women than men in the project teams in NPPOs, partly since women are typically well-represented in plant health related professions (e.g., laboratory workers) and also because many of the departments implemented equal opportunity policies. According to the project completion report, approximately 170 women (56%) out of 304 participants participated in meetings and training, and 67 (52%) women out of 129 participants participated in the steering committee meetings. According to one interviewee, DAFF did not request NPPOs to integrate gender and inclusion in the project.

4.5.3 ENVIRONMENT

80. There was no evidence of environmental issues integrated in the application, design, expected results (logframe) and project activities. The project provided limited reporting on environmental issues. However, the interviews highlighted positive outcomes related to the environment. DAFF encouraged the NPPOs to search for biological agents during surveillance to reduce the use of pesticides and increase the use of biological agents. Moreover, more accurate identification of pests and survey data has helped inform pest management and control measures (e.g., through issuing pest advisories, sharing extension materials and providing direct advice to farmers during surveillance visits), including when and where to use chemicals and how much, leading to more targeted, efficient and effective usage. Six of eight NPPOs mentioned that this has led to less use of chemicals, reducing environmental impacts. According to one NPPO, by reducing unnecessary treatment measures, this has also helped reduce farmers costs, leading to increased incomes.

4.6   SUSTAINABILITY

Summary of findings: Most NPPOs used either p-tracker or alternative surveillance apps to conduct surveillance after the project ended, expanding its use to new commodities and pests. Some countries developed their own apps, motivated by the positive results using p-tracker. For those using p-tracker, an ongoing challenge is the software license cost and, more importantly, the recent discontinuation of the software. The lack of operational alternatives for some of the countries curtails the benefits of the project. Most NPPOs have been able to sustain the capacity building results by passing on expertise to colleagues.

81. According to the original application, aligning with national, regional and international surveillance priorities and commitments, developing expertise and experience amongst NPPO staff, demonstrating the benefits of the new technology, and giving participants the opportunity to reflect on what they learnt and plan for follow up in the future, were all expected to help promote sustainability. In addition, the technology was designed to be simple and customizable and easy to update without specialist expertise after the project ended. At project completion, DAFF expected NPPOs to take responsibility for the maintenance and replacement of devices and laptops, and the renewal of licenses.

4.6.1 TECHNOLOGY

82. Most countries reported using either p-tracker or alternative surveillance apps to conduct surveillance after the project ended, expanding its use to new commodities and pests, and plan to continue using. However, an ongoing challenge is the cost of the annual renewal of software licenses (GeoJot+) required to use the p-tracker app, which has increased every year (approximately AUD$500 per device). The cost per device and the requirement for IOS technology has made it challenging to roll out the technology to more devices (see section 4.4.1). The project funded renewals during implementation, after which countries had to find alternative funding. Some of the NPPOs (Cambodia, Malaysia and Thailand) reported renewing licenses after the project ended using funds from other projects or government resources (see section 4.4.1). Malaysia managed to secure funding for 2022-25 to cover the costs of 4 iPads and license fees and distributed the devices to the regions. They are planning to use p-tracker across all regions in Malaysia in future.

83. The Philippines developed their own free apps (BPI Collect and PRIME Collect), PNG used an alternative free app called KOBO toolbox and Thailand used google forms on mobile devices (although they still needed a license for GeoJot+ on their laptop to extract data and produce reports), all installed on Android mobiles. According to PNG, p-tracker is now obsolete but it was a useful "stepping stone" to improve capacity and enable them to use KOBO toolbox. Malaysia still uses p-tracker for certain commodities and pests (tuta absoluta and fusarium TR4) but they have also integrated p-tracker into their own apps for surveillance (for red palm weevils and rice pests).

84. Alternative free apps were discussed at the 4th steering committee in December 2021 and the final steering committee in August 2022 where DAFF gave a presentation on KOBO toolbox, including its benefits and how it could overcome some of the challenges faced with the current software. KOBO toolbox is free, simple to use, open-source based on OpenDataKit (ODK), and uses Android technology (only).

85. Unexpectedly, in August 2023, the GeoJot+ software developers announced to customers that they were discontinuing the software. Existing licenses are valid until the expiration date but will not be renewed afterwards. DAFF informed all NPPOs in September 2023 and shared the information on KOBO Toolbox from the last steering committee, links to the KOBO Toolbox help page and virtual training resources on how to use KOBO Toolbox. In addition, DAFF offered a virtual training and Q&A sessions with a contact in the SPC who uses KOBO Toolbox. A couple of NPPOs had previously shown interested in virtual training on how to use KOBO Toolbox to collect surveillance data. However, DAFF received no replies to the offer of virtual training. DAFF also asked if anyone, apart from PNG, was using KOBO Toolbox but did not receive any replies.

86. During interviews between November 2023 and January 2024, a few NPPOs (e.g. Cambodia, Lao PDR and Malaysia) discussed the need to renew their existing GeoJot+ licenses, suggesting that they were not aware of the discontinuation of the software. A few (Malaysia, Myanmar and Vietnam) of NPPOs

mentioned they are exploring using KOBO Toolbox. Thailand is exploring developing their own free software since their licenses expired as they had no funds to renew (see section 4.4.1). Other NPPOs no longer able to use p-tracker include Myanmar, whose license expired in August 2023.

87. A few NPPOs noted that DAFF had continued to provide advice after project closure (for example, on alternative technologies), attempting to sustain project results. However, the lack of operational alternatives for some of the countries has curtailed the benefits of the project, with countries such as Thailand reverting to manual processes in some cases, while others who still have a GeoJot license will not be able to use the technology once the license expires.

4.6.2 CAPACITY DEVELOPMENT

88. According to most NPPOs, developing the capacity of key staff in surveillance, many of whom have passed on the expertise to colleagues and others, has helped sustain results after the project ended. Some of the NPPOs highlighted challenges to sustainability such as staff turnover (see section 4.4.1). However, most NPPOs are ensuring that those trained in surveillance methods pass on their knowledge and expertise to others, for example, through on-the-job training (most NPPOs) and training material (Malaysia NPPO) (see section 4.4.1). Also, the surveillance protocols and plans developed through STDF provide instruction on how to conduct surveillance for new staff.

4.7   UNANTICIPATED RESULTS

89. The project did not systematically report on unintended effects. However, examples were provided, such as the reduced use of chemicals and associated positive environmental outcomes (see section 4.5).

90. The project adapted well to unexpected effects, namely the COVID-19 pandemic (see section 4.4.2), and both DAFF and STDF were praised for their flexibility, enabling the project to make adaptations.

5   LESSONS

Below we list some of the lessons which emerged from the project:

- Importance of ensuring M&E requirements are fully understood by the implementing partner (DAFF) and the NPPOs, and that guidance and support are provided to ensure outcome/impact data is collected, including baseline data.

- Some of the technological challenges highlight the importance of selecting technology relevant to the context. For instance, Android rather than IOS technology would have helped extend the use of the technology and potentially avoided hardware challenges.

- Ensuring sustainability plans are in place earlier and communicated and understood by all stakeholders. A sustainability plan would have helped ensure that NPPOs had feasible and viable options and plans in place before the project close to continue activities, especially continued use

of surveillance apps including better software (e.g., more up-to-date, and cheaper). Where possible and suitable, low or no cost software options should be used. To ensure the continued use of surveillance technologies and sustainability of results, beneficiaries should allocate budgets for staff training, equipment and software.

- Importance of sharing innovations (e.g. use of alternative free software apps in some countries) and actively supporting countries to replicate and roll out similar. Insufficient attention was given to helping countries copy innovations made by others.

- The proliferation of mobile app technologies and examples of NPPOs using more than one app for surveillance purposes poses risks to efficiency and highlights the need to rationalize the use of multiple information platforms.[27]

- The p-tracker project demonstrated that close cooperation between the implementing partner and beneficiaries are important elements for successful implementation. It also demonstrated the usefulness of establishing a network for sharing experience, knowledge, expertise, lessons, problems and trouble-shooting between participants.

- Limited appetite for virtual mentoring suggests the importance and need for in-person engagement and/or improved design of virtual components, and also highlighted language barriers and connectivity issues.

- Close alignment with country priorities was important in ensuring active participation and that objectives were met.

- Since capacity levels differed significantly across countries, the amount of support should reflect the different levels of need in each country, contributing to 'levelling the playing field'.

- Reluctance to share information on pests and diseases via IPPC is likely to persist given the potential impact on a country's exports.

6   RECOMMENDATIONS

The table below lists preliminary prioritized recommendations.

#	Action	Timing	Responsible party
	Project-specific		
1	Follow up with all NPPOs to ensure they are aware of the status of the GeoJot software	Within 1 month	DAFF

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[27] Note that CABI is currently developing an overview/directory of all apps

2	Organize virtual training on KOBO Toolbox for all NPPOs, including PNG who can demonstrate how to use it successfully	Within 2 months	DAFF
3	Support the establishment of a community of best practice across NPPOs, based on progress made during the project, to ensure sharing continues	Within 3 month	DAFF
	STDF programme		
1	Regularly check that partners are using STDF's guidance on MEL and check the quality of monitoring data frequently, and put in place remedial measures when needed	Within 6 months	STDF
2	Ensure implementing partners and commissioned evaluators follow the guidance on end of project evaluations	Within 6 months	STDF
3	Ensure all projects have a sustainability plan in place demonstrating how projects will continue and leverage activities in future	Within 6 months	STDF

ANNEX A: DOCUMENT LIST

#	Document title
1	Project grant application
2	Project contract and extension documents
3	Project inception report
4	Project log frame
5	Project budgets
6	Project work plans
7	Progress reports (1-7) and country annexes
8	Progress reports
9	Progress Reports 1 – 5
10	End of project evaluation report
11	Project completion report
12	Training workshop materials
13	Surveillance plans and protocols for all countries
14	DAFF presentations on p-tracker and alternative technologies
15	YouTube videos demonstrating p-tracker use
16	FAO. 2020. Strategic framework for the IPPC 2020–2030. Rome. Published by FAO on behalf of the IPPC Secretariat.
17	FAO. 2018. International standards for phytosanitary measures: ISPM 6 surveillance. Rome. Published by FAO on behalf of the IPPC Secretariat.
18	IPPC (2016) The list of national reporting obligations as provided by the IPP convention
19	IPPC (2016) The list of bilateral national reporting obligations as provided by the IPP convention
20	FAO (2016) The guide to national reporting obligations: For IPPC Contact Points and IPP editors
21	ASEAN (2016) Strategic plan of action for ASEAN cooperation on crops (2016-2020)
22	ASEAN (2020) Strategic plan of action for ASEAN cooperation on crops (2021–2025)
23	FAO (2015) Operation of a national plant protection organization. Published by FAO on behalf of the IPPC Secretariat.
24	STDF (2021) Guidelines for the evaluation of projects funded by the Standards and Trade Development Facility
25	STDF (2020) Monitoring, evaluation and learning framework

ANNEX B: STAKEHOLDER LIST

#	Name, role, department and organization	Country
1	Mr Heng Chhun Hy, Supervisor, Department of Plant Protection Sanitary and Phytosanitary, General Directorate of Agriculture, Ministry of Agriculture, Forestry and Fisheries	Cambodia
2	Mr Sar Chanthy, Vice Chief, Department of Plant Protection Sanitary and Phytosanitary, General Directorate of Agriculture, Ministry of Agriculture, Forestry and Fisheries	Cambodia
3	Mr Hean Sereivuth, Technical Officer, Department of Plant Protection Sanitary and Phytosanitary, General Directorate of Agriculture, Ministry of Agriculture, Forestry and Fisheries	Cambodia
4	Mr Somkhit Sengsay, Technical Officer, Plant Protection Centre, Department of Agriculture, Ministry of Agriculture and Forestry	Lao PDR
5	Ms Khonesavanh Chittarath, Plant Pathologist, Plant Protection Centre, Department of Agriculture, Ministry of Agriculture and Forestry	Lao PDR
6	Ms Laila Jumaiyah Saleh Huddin, Senior Principal Assistant Director, Plant Biosecurity Division, Department of Agriculture	Malaysia
7	Ms Nur Zaitasha Mahmudin, Assistant Director for Surveillance Systems, Plant Biosecurity Division, Department of Agriculture	Malaysia
8	Dr Mu Mu Thein, Assistant Director, Plant Protection Division, Department of Agriculture, Ministry of Agriculture, Livestock and Irrigation	Myanmar
9	Mr John Paul Maminta, Agriculturist, Crop Pest Management Division, Bureau of Plant Industry, Department of Agriculture	Philippines
10	David Tenakanai, General Manager, Technical and Advisory Division, National Agriculture Quarantine and Inspection Authority	PNG
11	Marjorie Kemoi, Senior Technical Officer, Plant Health Services, Office of the Chief Plant Protection Officer, Technical and Advisory Services, National Agriculture Quarantine and Inspection Authority	PNG
12	Tran Thi Hong Thuy, Plant Quarantine Inspector, Vice-head of Pest Surveillance and Monitoring Division, Post Entry Plant Quarantine Center No.1 (PEQ1), Plant Protection Department (PPD), Vietnam Ministry of Agricultural and Rural Development (MARD)	Vietnam
13	Dr Thoa Hoàng, Post Entry Plant Quarantine Center No.1 (PEQ1), Plant Protection Department (PPD), Vietnam Ministry of Agricultural and Rural Development (MARD)	Vietnam
14	Roshan Khan, Legal and Technical Assistance Officer, Intellectual Property, Government Procurement and Competition Division, WTO	Switzerland
15	Carol Quashie-Williams, Director (Acting), Technical Capacity Building, Plant Systems and Strategies Branch, Biosecurity Plant and Science Services Division, Department of Agriculture, Fisheries and Forestry (DAFF)	Australia
16	Adam Herden, Project Officer, Technical Capacity Building, Plant Systems and Strategies, Biosecurity Plant and Science Services, Department of Agriculture, Fisheries and Forestry (DAFF)	Australia

#	Name, role, department and organization	Country
17	Dr Ian Naumann, ex-Director, Technical Capacity Building Section, Plant Export Operations Branch, Department of Agriculture, Fisheries and Forestry (DAFF)	Australia
18	Chris Dale, Acting Director, International Capacity Department, Department of Agriculture, Fisheries and Forestry (DAFF)	Australia
19	Pete Pederson, Evaluation Consultant	Australia
20	Dr Ravi Kheterpal, Executive Secretary, Asia-Pacific Association of Agricultural Research Institution (APAARI)	Thailand
21	Mrs Sumana Simasaalit, Director, Plant Protection Promotion and Soil Fertilizer Management Division, Department of Agriculture Extension	Thailand
22	Kanyakorn Uthai, Agricultural Extension Officer, Department of Agriculture Extension	Thailand
23	Thanana Choochuai, Agricultural Extension Officer, Department of Agriculture Extension	Thailand
24	Dr Yuvarin Boontop, Senior Entomologist, Plant Protection Research and Development Office, Department of Agriculture	Thailand
25	Dr Chanintorn Doungsaard, Senior Plant Pathologist, Mycology Section, Plant Pathology Research Group, Plant Protection Research and Development Office, Department of Agriculture	Thailand
26	Dr Phoowanarth Maneechoat, Professional Plant Pathologist, Virology section, Plant Pathology Research Group, Plant Protection Research and Development Office, Department of Agriculture	Thailand
27	Mr Udorn Unahawutti, Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture	Thailand
28	Mr Alongkot Phodee, Adviser, Pest Risk Analysis (PRA) Section, Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture	Thailand
29	Mr Wanich Khampanich, Chief Surveillance, Senior Agricultural Research Specialist, Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture	Thailand
30	Mrs Chortip Salyapongse, Director, Plant Protection Research and Development Office, Department of Agriculture	Thailand
31	Dr Nuttima Kositcharoenkul, Director, Plant Pathology Research Group, Plant Protection Research and Development Office, Department of Agriculture	Thailand
32	Sasithorn Khaoweangjan, Officer, Export Plant Quarantine Service Group, Agricultural Regulatory Office, Department of Agriculture	Thailand
33	Yinglak Tongin, Officer, Export Plant Quarantine Service Group, Agricultural Regulatory Office, Department of Agriculture	Thailand
34	Prateep Arayakittipong, Standards Officer, Office of Standards Development, National Bureau of Agricultural Commodity and Food Standards, Ministry of Agriculture and Cooperatives	Thailand
35	Dr Orawan Jittham, Director, Oil Palm Research Centre and , Farmer Field School	Thailand
36	Miss Supawadee Naktae, Agricultural Officer, Farmer Field School	Thailand

#	Name, role, department and organization	Country
37	Miss Yodsavadee Mengead, Agricultural Officer, Farmer Field School	Thailand
38	Mr Watthikorn Phuntarak, Agricultural Officer, Farmer Field School	Thailand
39	Kraiwut Sirianuntapat, Managing Director, SPO Agroindustries Co Ltd	Thailand
40	Ms Sukanya Srisubat, Plantation Owner	Thailand

Project Title: Demonstrating the impact on trade and regional plant protection of streamlined information systems for pest surveillance and reporting

Objective: The project goal is: Reduced likelihood that outbreaks of new pests spread to neighbouring countries and trading partners through commerce

The immediate objective is: A regionally harmonised, pest information framework developed, demonstrated and adopted

The project will be implemented over three years commencing in 1 December 2016.

The project will demonstrate that a regionally harmonised, pest information framework can be developed, based on streamlined data collection, internationally recognised data standards, and simple protocols for exchanging data with existing, national systems.

A series of case studies, including surveillance to support market access proposals and assist early detection of high priority quarantine pests, will be used to demonstrate that such a regional framework can enable more cost-effective collection of pest records, more robust management of pest data, and more credible and timely reporting of pest status.

Budget requested from STDF:

- STDF Project Contribution (US $) 897,595

- Overhead (US $) 100,000

- Total STDF Funding (US $) 997,595

- Total project budget $1,705,455

Requesting organization(s):

- Plant Health Policy Branch, Australian Government Department of Agriculture and Water Resources, Australia

- Department of Agriculture, Malaysia.

- Department of Plant Protection, Sanitary and Phytosanitary, General Directorate of Agriculture, Cambodia.

- Department of Agriculture, Ministry of Agriculture and Forestry, Lao PDR.

- National Agriculture Quarantine Inspection Authority, Papua New Guinea.

- Bureau of Plant Industry, Department of Agriculture, Philippines.

- Plant Protection Research and Development Office, Department of Agriculture, Thailand.

- Plant Quarantine Division, Plant Protection Department, Ministry of Agricultural and Rural Development, Vietnam.

ANNEX D: EVALUATION MATRIX

See separate document.