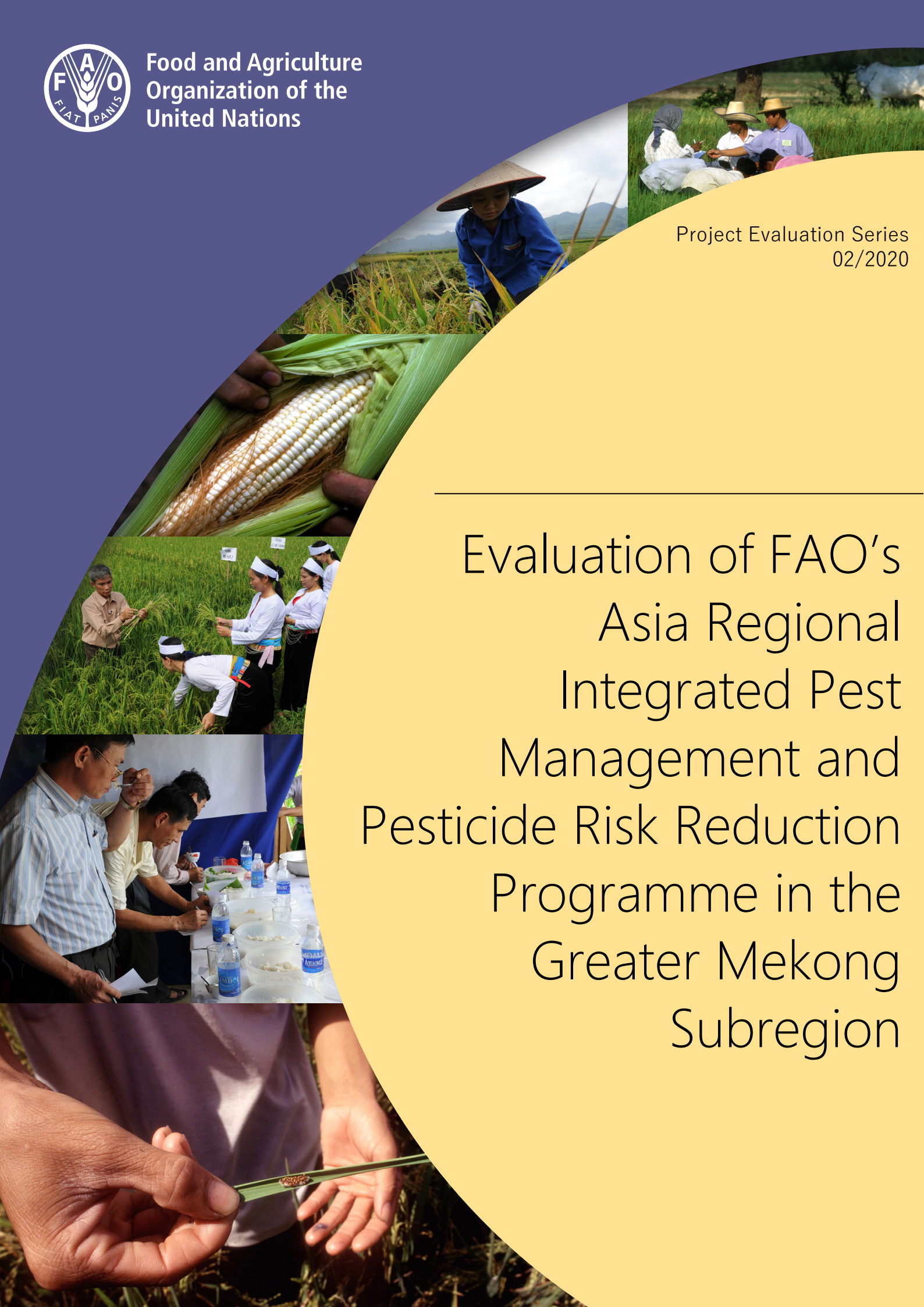




Food and Agriculture  
Organization of the  
United Nations

Project Evaluation Series  
02/2020

A collage of four photographs illustrating agricultural and research activities. The top-left photo shows a person in a blue shirt and a traditional conical hat working in a rice field. The top-right photo shows a group of people, including a woman in a white headscarf, sitting in a field. The middle-left photo shows a group of people in white shirts and black pants examining rice plants in a field. The middle-right photo shows a group of people sitting around a table, possibly in a meeting or training session. The bottom photo shows a close-up of hands holding a rice leaf with a small insect on it, likely a pest.

# Evaluation of FAO's Asia Regional Integrated Pest Management and Pesticide Risk Reduction Programme in the Greater Mekong Subregion

**Project Evaluation Series  
02/2020**

**Evaluation of FAO's Asia Regional  
Integrated Pest Management and  
Pesticide Risk Reduction Programme  
in the Greater Mekong Subregion**

**Project code: GCP/RAS/229/SWE**

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## Acronyms and abbreviations

ADB	Asian Development Bank
APPPC	Asia and Pacific Plant Protection Commission
ASEAN	Association of Southeast Asian Nations
CoC	FAO/WHO International Code of Conduct on Pesticide Management
CPF	Country Programme Framework
CSO	Civil society organization
DoA	Department of Agriculture
ET	Evaluation team
FAO	Food and Agriculture Organization of the United Nations
FAO RAP	FAO Regional Office for Asia and the Pacific
FFS	Farmer field school
GAP	Good Agricultural Practices
GEF	Global Environment Facility
GHS	Globally Harmonized System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HHP	Highly hazardous pesticide
IOMC	Inter-Organization Programme for the Sound Management of Chemicals
IPM	Integrated pest management
KemI	Swedish Chemicals Agency
MAF	Ministry of Agriculture and Forestry (Lao People's Democratic Republic)
MARD	Ministry of Agriculture and Rural Development (Viet Nam)
MoA(I)	Ministry of Agriculture and Irrigation (Myanmar)
MTR	Mid-Term Review
NGO	Non-governmental organization
OED	FAO Office of Evaluation
PAN-AP	Pesticide Action Network in Asia and the Pacific
PPD	Plant Protection Division
PRR	Pesticide Risk Reduction
RAP	FAO Regional Office for Asia and the Pacific
SDG	Sustainable Development Goal
SEA	Southeast Asia
SEK	Swedish Krona
Sida	Swedish International Development Cooperation Agency
SO	Strategic Objective
SRI	System of Rice Intensification
TFA	The Field Alliance
ToT	Training of trainers
WHO	World Health Organization

## Executive summary

1. This is the final evaluation report of FAO's role and work in the Swedish International Development Cooperation Agency-funded regional programme "Towards a Non-toxic South-East Asia", which was led by the Swedish Chemicals Agency (KemI) together with the Pesticide Action Network Asia and the Pacific (PAN-AP) and The Field Alliance (TFA), apart from FAO, between 2007 and 2018. The programme was implemented in six countries – Cambodia, China, Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam.
2. The long-term vision for the programme was better management and more sustainable use of chemicals, reduced risks from chemicals to health and the environment, more sustainable intensification of agricultural production, and improved resilience to climate change. The FAO was responsible for strengthening regulatory systems for pesticide management and capacity building for implementation of pesticide risk reduction (PRR)/integrated pest management (IPM) through farmer training. PAN-AP and TFA were responsible for reducing risks associated with pesticide use and enhancing use of alternatives through advocacy and awareness raising in farming communities, schools and institutions, and among consumers in partner countries. KemI was responsible for the overall management of the programme in addition to strengthening the capacity for chemicals management within authorities, industries and among relevant civil society organizations (CSOs).
3. This evaluation assessed the role and contributions of FAO against the programme outcome-level results: (i) strengthened regulatory framework for the control and registration of pesticides; and (ii) adoption and economic benefits of the community-level farmer field school (FFS) activities in all partner countries within Phase II (from 2013 to 2018). In addition, the evaluation assessed FAO's work on gender mainstreaming, communication and follow-up actions taken in response to the 2016 mid-term evaluation. The evaluation analyzed and identified success areas and lessons, and made appropriate recommendations to the project team, the donor and other stakeholders to guide decision-making and planning for subsequent phases or similar projects. The evaluation was carried out by a team comprising two independent evaluators working under the management and guidance of an evaluation officer of FAO's Office of Evaluation (OED), from November 2018 to May 2019.
4. The evaluation concluded that pesticide governance with a focus on PRR is a national and regional priority now within the Greater Mekong Sub-region countries. FAO's components were extremely relevant to the programme objectives and complementary to the other implementing partners. The interventions were timely, needs- oriented, important and effective. Pesticide-specific regulations are mostly in place, and/or in advanced stages of formulation (e.g. in Lao People's Democratic Republic and Cambodia, work is still ongoing), and inspection systems are being set up to strengthen the control and sale of pesticides. However, pesticide governance is a very demanding task requiring highly qualified staff, regular upgrade of scientific, technical know-how and, if possible, analytical capacities and facilities. The capacities and capabilities of the Pesticides Regulatory Authorities are limited in most countries.



5. Most of the trained farmers use less hazardous pesticides and biological control methods. The economic situation of the farmers has improved. In the last phase, the Programme /FAO facilitated farmers' access to markets for the safer food produced by farmers following good agricultural practices (GAP). The participation of women, labourers, tribal and other marginalized sections of society has improved. Indeed, the Programme has advanced in addressing gender equality and a human rights-based approach in its Programme activities.
6. However, some issues are yet to be fully addressed, including: issues that were addressed during the programme but require longer-term assistance, such as strengthening capacity for registration of pesticides; new issues that were not prioritized in the programme, such as the implementation of the Globally Harmonized System (GHS), disposal of pesticide waste, control over illegal trade; and newer challenges due to climate change, increased demand for safer food and population growth, among others. The programme has generated adequate interest among the governments of the participating countries, which are demanding continued support. In all the programme countries, Myanmar, Cambodia, Lao People's Democratic Republic, Thailand, Viet Nam and China, there are demands and strategic opportunities, for the continuation of current interventions and support to new areas not addressed during the previous programme.
7. There is scope for further strengthening functional collaboration with a diversified set of stakeholders, particularly private sector and strategic collaboration with the Ministries of Public Health and Environment. FAO is well placed and competent to engage policymakers in preparing country-specific plans and to enhance regional collaboration in consultation and cooperation with a wide range of technical and resource organizations, in particular through the established and well-functioning regional bodies under the Asian-Pacific Plant Protection Commission (APPPC) and the Association of Southeast Asian Nations (ASEAN).
8. Hence, the evaluation recommends that FAO continue working on integrated pest management (IPM)/Pesticide Risk Reduction (PRR) in South-East Asian (SEA) and that Sida support both regional and country-level work. It is not only important, but also critical to sustain and upscale capacity building of farmers on PRR for *sustainable* intensification of crop production within the context of globalization trends and of climate change. The momentum gained through the current programme for phasing out highly hazardous pesticides (HHPs) and adopting IPM needs to be maintained in order to achieve the larger goals of poverty alleviation, gender equality and environmentally sound production methods and to develop resilience for climate change adaptation.

# 1. Introduction

1. This is the final evaluation report of the Food and Agriculture Organization of the United Nations' (FAO) role in and contribution to the regional programme, "Towards a non-toxic environment in South-East Asia". The programme was funded by the Swedish International Development Cooperation Agency (Sida) and implemented by four partners, Swedish Chemicals Agency (KemI), FAO, Pesticide Action Network Asia and the Pacific (PAN-AP) and The Field Alliance (TFA), between 2007 and 2018, divided into two phases, Phase I, 2007–2013, and Phase II, 2013–2018.
2. The long-term vision of the Programme was better management and more sustainable use of chemicals, reduced risks from chemicals to health and the environment, more sustainable intensification of agricultural production and improved resilience to climate change. FAO was responsible for (i) strengthening regulatory systems for pesticide management; and (ii) capacity building for the implementation of pesticide risk reduction (PRR)/integrated pest management (IPM) through farmer training in support of sustainable intensification of agricultural production. The second phase had a total funding from Sida of SEK 99.3 million (USD 14.19 million), out of which SEK 47.25 million (USD 6.75 million) was allocated to FAO (SEK 38.5 million for the IPM component, and SEK 8.75 million for the policy component).
3. The programme implementation is now concluded, country status reports are prepared, and a series of evaluations are being carried out to assess the contribution of implementing organization. This evaluation covers FAO's performance and contributions with respect to the planned results, particularly those of Phase II. The evaluation is commissioned by KemI and carried out by FAO's Office of Evaluation (OED), implemented with FAO-TF-GCP/RAS/229/SWE funding from November 2018 to July 2019.

## 1.1 Purpose of the evaluation

4. This evaluation is expected to contribute to the full programme evaluation ("Towards a Non-toxic South-East Asia" programme). The discussions with multiple stakeholders underlined a forward-looking perspective of the evaluation while focusing on three key dimensions:
  - i. **Accountability:** The main purpose of the final evaluation is to provide accountability to the donor and partners by assessing FAO's contribution to: (i) the reform of the regulatory frameworks and policies for the control of pesticides in the project countries and the enforcement capacity/tools of pesticide legislation and registration; and (ii) strengthening of the capacities of the extension services, increasing farmers' awareness and community action towards higher quality farm produce with reduced or no pesticide residues in the project countries.
  - ii. **Improvements:** The evaluation aims to draw lessons from the implementation processes that could inform future decisions by the donor and FAO on the formulation of follow-up interventions. The participant countries' governments would be provided with some direction on improving their own work on pesticide risk reduction (PRR) and promoting integrated pest management (IPM).

- iii. Knowledge building: Another purpose of the evaluation is to offer information and analysis to the project staff, which will provide them with insights. Other practitioners in this sector can also draw lessons from this programme.

**Box 1: Main purposes and intended users of the evaluation**

Purpose		Intended user
<b>Accountability:</b> To respond to the information needs and interests of policy makers and other actors with decision making.	Inform decision making, Provide accountability.	Donors, FAO Management, Governments.
<b>Improvement:</b> Program improvement and organizational development provides valuable information for managers or others responsible for the regular program operations.	Improve program.	Project management and PTF.
<b>Enlightenment:</b> In-depth understanding and contextualizing of the program and its practices normally caters to the information needs and interests of program staff and sometimes participants.	Contribute to knowledge.	FAO Staff and future developers and implementers.

5. The primary users of the evaluation will be Sida/Keml and FAO for decision-making on future programmes. The project staff, participating country governments and practitioners in the sector will also benefit from the information and outcomes.

## 1.2 Scope and objective

6. The evaluation focused on the components implemented by the FAO Regional Office for Asia and the Pacific (FAO RAP), particularly those undertaken in the Phase II, i.e. from 2013 to 2018. It primarily assessed the outcome-level results:
- i. strengthened regulatory framework for the control and registration of pesticides;
  - ii. adoption and economic benefits of the community-level farmer field school (FFS) activities in all partner countries.
7. Although the evaluation was limited to FAO contribution towards the expected outcomes, for analytical purposes, references are made to activities undertaken by the other implementing partners as relevant.. The Evaluation Terms of Reference (ToRs) are provided in Annex 1.

**The objectives of the evaluation** were:

- 1) Assess the strategic relevance of the geographical and thematic scope of the programme.
- 2) Assess the complementarity and synergy between the implementing partners.
- 3) Assess the role and contribution of FAO's work on:
  - i. the strengthening of regulatory framework for the control and registration of pesticides;
  - ii. the adoption of IPM and other lower risk measures, such as biological control as pesticide alternatives.
- 4) Assess FAO's work on pro-poor, gender mainstreaming and communication.
- 5) Assess FAO's uptake and follow-up actions taken in response to the 2016 mid-term evaluation.
- 6) Identify success areas, gaps and lessons, and make the appropriate recommendations to the project team, the donor and other stakeholders to guide decision-making and planning for subsequent phases or similar projects.

**Evaluation questions**

1. How relevant were the FAO components to the overall needs of the targeted communities/governments to strengthen capacity for efficient PRR?
2. How effective were the FAO partnerships across the programme in fostering collaborative actions and complementarity, as well as synergy between the implementing partners?
3. How effective was FAO's policy support to strengthen pesticide regulatory management capacity? Did the policy changes translate into concrete financial support and mechanisms to upscale and sustain the results?
4. How effective was the implementation, monitoring and follow-up of the FFS (including the IPM/PRR curricula and training materials) in raising awareness, and achieving and institutionalizing the results of the programme?
5. What were the actual and potential impacts of women's participation in FAO's work?
6. How has FAO followed up on the 2016 mid-term evaluation recommendations?

### **1.3 Methodology**

8. The evaluation team adhered to the United Nations Evaluation Group Norms and Standards (UNEG, 2005) and was in line with the OED Evaluation Manual and methodological guidelines and practices, such as the Beneficiary Assessment methods (Swiss Agency for Development Cooperation, 2013).
9. The evaluation process began during the Final Regional Forum in Bangkok, Thailand in November 2018. Joining this Forum helped the Evaluation Team (ET) develop a better understanding of the project implementation process, outcomes and stakeholders. It also allowed the ET to be introduced to the regional and country-level project teams.
10. The evaluation questions were broken down into sub-questions, which are presented in an evaluation matrix (Annex 3). The ET used a combination of quantitative and qualitative methods to seek responses and data to the Evaluation Questions, as follows:

- i. a desk review of existing project documents, reports and studies conducted by FAO and other partners in addition to the 2016 mid-term review and IPM impact assessments;
  - ii. semi-structured interviews with key informants, stakeholders, including project partners and beneficiaries at the national, district and local level;
  - iii. direct observation during field visits to the project sites selected with the project teams during the evaluation mission schedule in the two countries.
11. The ET started by determining whether the project was relevant to the evolving needs of different stakeholders, for example, the government, communities and non-governmental organizations (NGOs), what these needs were, and whether the project responded to them.
12. As regards assessing the programme results at the country level, the evaluation team decided to investigate a case where major regulatory progress has been reported, a case of a new programme country (joining the Phase II), and finally, a case that was examined in the programme midterm review. To this end, the ET selected three out of the six programme countries in consultation with the national project coordinators and the regional project team in the FAO Regional Office for Asia and the Pacific (FAO RAP) during the Bangkok meeting in November 2018. This helped making contacts in advance and planning visit itineraries. These countries were selected to gather evidence on the specific outcome results (Table 1).

**Table 1: Programme countries selected by the evaluation team**

No.	Country	Rationale for selection
1	Viet Nam	To review progress post-Midterm Review (MTR) since this was also covered in the MTR; one of the long-term partners in FAO IPM work
2	Lao People's Democratic Republic	Reported as a priority country of the project where significant development had taken place in both regulatory and policy change.

3	Myanmar	Last to join the project, the country was not visited by earlier evaluation teams; had expressed a commitment to taking forward policy implementation and IPM/PRR work on the ground.

13. The ET carried out stakeholder mapping in the three selected countries in consultation with the project team and the country office. Key stakeholders were approached in advance. During the country visits, the ET conducted semi-structured interviews and reviewed available documents related to the project activities. Wherever the identified stakeholder representatives were not available, the country project coordinators approached an alternative representative who could respond to the evaluation questions. The ET depended on virtual interviews and secondary data to collect information from the remaining programme countries (Cambodia, China and Thailand).
14. As regards the FAO IPM component, the ET referred to the quantitative data presented in the Country Status reports and Results Matrices<sup>1</sup> for the evaluation findings, particularly for the output-level findings. In addition, the ET verified the institutionalization of the IPM/PRR curricula and training materials, and the consolidation of learning at the farmer level.
15. With regards to the FAO policy component, the evaluation team mapped and analysed the relevant pesticide management regulations, laws and policies in the project countries to assess the quality of the frameworks and the formulation process. The ET examined the institutional arrangements, instruments and capacities needed to enforce these frameworks. It met with policymakers, government authorities and communities to assess changes brought by the interventions to reform the regulatory frameworks and policies for pesticide control. The extent of institutionalization and sustainability of the outcomes was also studied.
16. The evaluation adopted a consultative and transparent approach with internal and external stakeholders throughout the evaluation process including FAO and national partners. Triangulation of evidence and information gathered underpinned the validation and analysis, conclusions and recommendations.
17. A list of stakeholders to be interviewed was prepared at the beginning of the evaluation, which included more than 70 stakeholders, more than 50 farmers (75 percent female) and more than ten international partners. Within the countries, the provinces to be visited were selected by the national coordinator and the Plant Protection Departments; within the province, the ET interviewed all available Plant Protection Officers and IPM/FFS trainers. In each province, ET visited farmers who had attended PRR, IPM training or FFS training as well as farmers who did not attend. The ET also ensured interactions with as many women farmers as possible, which was a significant number, to assess gender impacts. In addition, the ET prepared a set of questions with reference to the Evaluation Matrix for different stakeholders for the sake of uniformity and also allowed the interviews to be spontaneous.

<sup>1</sup> Results matrices for FAO-TF-GCP/RAS/229/SWE in support of the regional programme, "Towards a non-toxic Southeast Asia", with data from 2013–2018.

A checklist for observation of farmers and farm practices was also prepared and used by ET.

18. The detailed country missions to Viet Nam, Lao People's Democratic Republic and Myanmar are attached in Appendix 1. The list of people interviewed is provided in Appendix 2. The report Bibliography provides a list of documents referred to in the evaluation.

## **1.4 Limitations**

19. One of the limitations in carrying out the Evaluation was that the project had already been finalized and most of the FAO staff had left the project and in some cases, were not approachable. The central FAO team in Bangkok provided comprehensive support to the ET by supplying information, contacts and documentation, even though they were officially discontinued from the project roles. The ET acknowledges their extraordinary support to the process.
20. The ET visited three countries (Viet Nam, Lao People's Democratic Republic and Myanmar). However, since each country is unique, by not covering half of the project countries (Cambodia, China, Thailand), this may have resulted in not capturing some country-specific results, achievements and challenges. Nevertheless, the ET synthesized the most significant changes from secondary data.
21. Initially, this project was operated from Rome, at FAO Headquarters, and later from Bangkok, the FAO RAP office. The FAO country offices' interest and engagement in the evaluation was limited since the project had already been closed.
22. It was not possible to meet some important stakeholders, such as Ministries of Health and Environment, pesticide associations and the private sector, because they were often not directly involved in the project and did not see the benefits of the programme or the relevance of the activities.
23. Although significant changes are observed in most of the outcome indicators, they cannot be attributed to FAO alone, FAO being but one among many actors affecting change; these changes were due to composite impact of collective work. FAO, through project interventions, pioneered the IPM/PRR training content, methods and approach, and worked with numerous partners and projects, both within FAO's portfolio of projects and beyond with that of other resource partners. The aim was to integrate this work into their respective programme and project work for upscaling and sustainability. For example, IPM/PRR components are now included in many projects by different agencies. Interventions concerning regulatory work and the pesticide industry were part of Kemi activities. Although interventions concerning IPM training and awareness raising about pesticide risks and mitigation were also carried out by PAN-AP and TFA, these agencies were not covered in the evaluation.

## **1.5 Structure of the report**

24. The report is published with the following annexes:

Annex 1. Terms of Reference for the evaluation:

<http://www.fao.org/3/ca7528en/ca7528en.pdf>

Annex 3. Evaluation matrix:

<http://www.fao.org/3/ca7529en/ca7529en.pdf>





## **2. Background of the project**

### **2.1 Context**

25. Chemical production, use and disposal will continue to increase worldwide; assessments and forecasts predict that global chemical sales will grow by about 3 percent per year until 2050, the major part of which will take place in Asia. Chemical manufacturing and processing activities are steadily expanding into developing countries and countries with economies in transition. South-East Asian countries in particular have shown strong industrial growth in agriculture during the last two decades. The use of pesticides as part of this development has continuously increased and will further increase in the region since the application of chemical pesticides is one of the most effective and efficient practices contributing to increased crop yields. Food insecurity issues are mostly challenges of the past; trade and international market access, food safety, food hygiene, farmers/workers health and safety as well as environmental health are the topics of today.
26. The application of chemical pesticides is one of the effective and efficient practices that have contributed to increased crop yields during the last three decades. However, widespread use of these pesticides has resulted in significant increases in insect resistance as well as ecological, public health, and worker safety concerns. Thus, the IPM approach was developed to protect the agro-ecosystems.
27. Ignorance about pesticides and limitations in the choice of available products have led to the widespread overuse, misuse and inappropriate selection of products. Such indiscriminate use of chemical inputs, both fertilizer and pesticides, puts sustainable agricultural production at risk. In particular, overuse of pesticides is known to harm vitally important ecosystem services such as natural biological pest control, pollination and nutrient recycling systems. Furthermore, excessive use of insecticides can result in secondary pest outbreaks. Intensive use of hazardous chemicals by smallholder farmers causes frequent farmer poisonings and chronic health problems. Women and small children in rural communities are also often directly or indirectly exposed to toxic pesticides. Farmers' income is negatively affected by unnecessary spending on pesticides. In addition, pesticide residues on fresh produce regularly exceed maximum residue levels, raising food safety concerns and jeopardizing export potential.
28. Many countries in Southeast Asia lack the capacity to handle chemicals management issues and are in great need to develop institutions, legislation, knowledge and general awareness. The countries face many challenges in the area of chemicals management, in particular pesticide governance. The intensive and often insufficiently controlled use of pesticides in the large agriculture sector is a major part of the issue. The most readily available pesticides in Southeast Asia were often the older broad-spectrum and high-risk products. The effects on public health and the environment can be devastating. Institutions, legislation, enforcement and general awareness is needed at the national and regional level.

## 2.2 About the programme

29. The programme "Towards a Non-Toxic Environment in South-East Asia" was designed and funded by Sida and coordinated by Keml. It was implemented in association with the FAO RAP; PAN-AP and TFA, which aimed to reduce health and environmental risks by monitoring, regulating and managing agricultural, industrial and consumer chemicals.
30. The programme covered the Mekong Region countries: Cambodia, Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam as well as the Yunnan, Guangxi and Hainan provinces of China. The 11-year programme was initiated in 2007. A second phase started in 2013, which is the focus of this evaluation. It ran from 2013 to 2018 with a total funding from Sida of SEK 99.3 million (USD 14.19 million), out of which SEK 47.25 million (USD 6.75 million) were allocated to FAO (SEK 38.5 million, or USD 5.5 million for the IPM component and SEK 8.75 million, or USD 1.25 million for the policy component).
31. This initiative is to be seen as part of the international strategic approach for the sound management of chemicals and waste beyond 2020 of the Inter-Organization Programme for the Sound Management of Chemicals (IOMC). For FAO, it signified PRR, including the phase-out of highly hazardous pesticides (HHPs), according to the FAO/World Health Organization (WHO) International Code of Conduct on Pesticide Management (CoC) and the strengthening of IPM towards a highly productive and environmentally sustainable crop production system following the Save and Grow approach (FAO, 2016). Furthermore, as Secretariat of the Asian-Pacific Plant Protection Commission (APPPC), FAO RAP's mandate is to foster regional cooperation among governments on plant protection matters, including pesticides.
32. The long-term objective of the ten-year programme was to strengthen capacity and regional collaboration for efficient PRR and chemicals management within and among partner countries. It aimed to reduce health and environmental risks by monitoring, regulating and managing agricultural, industrial and consumer chemicals. This was implemented through a multi-pronged approach that combines advocacy and grassroots mobilization (led by PAN-AP and TFA) with direct technical and policy assistance to governments (led by Keml and FAO).
33. The programme's overall aim was to contribute to reduced health and environmental risks from chemicals through better management of agricultural, industrial and consumer chemicals, and sustainable intensification of agricultural production.
34. The programme considers safe food a right of all and not a privilege of a few. Farmers, their families and their communities have a right to live and work in a non-contaminated environment, and consumers have a right to eat food that is healthy and safe. To protect themselves, everyone has a right to know about health and environmental risks from chemicals and about what can be done at the individual and community level to achieve risk reduction.
35. Five immediate objectives were divided among the implementing partner organizations:

**Immediate objective 1:** Reduced risks associated with pesticide use and enhanced use of alternatives through increased awareness and enhanced capacity in farming communities, schools and institutions, and among consumers in partner countries.

**Immediate objective 2:** Enhanced international, national and local advocacy on sustainable pest management/agriculture.

**Immediate objective 3:** Strengthened capacity to innovate and scale up IPM and PRR training for sustainable intensification of crop production in partner countries.

**Immediate objective 4:** Strengthened regulatory framework for the control of pesticides in selected partner countries.

**Immediate objective 5:** Strengthened capacity for chemicals management within authorities, industries and among relevant civil society organizations (CSOs) in the partner countries.

36. FAO RAP was the implementing partner responsible for immediate objective 3 (the IPM component) and immediate objective 4, together with Keml (the policy component). Objectives 1 and 2 were addressed by PAN-AP and TFA, and objective 5 was addressed by Keml.
37. The envisaged main role of the IPM component included: (i) enhancing reform of government policy on pest management towards integrated approaches in the project countries, (ii) developing capacity in national and decentralized governments to implement such reform and achieve a broad and sustainable impact on poor smallholder farmers through IPM training; (iii) enabling innovations, concepts and curriculum development and training quality assurance; and (iv) coordinating and facilitating regional exchange. Further, the FAO IPM field programme was expected to provide the mechanisms for overall coordination of programme components related to PRR, both at the regional and national level.
38. The main role of the policy component was to: (i) support reform of the regulatory framework for the control of pesticides in Cambodia, Lao People's Democratic Republic, Myanmar and Viet Nam; (ii) roll out and consolidate nation-wide inspection schemes in Cambodia, Lao People's Democratic Republic and Myanmar; (iii) build capacities in pesticide registration by the staff of the regulatory authorities; and (iv) strengthen the regional collaboration with the APPPC for the harmonization of regulations and the establishment of schemes for the exchange of information on registration decisions and monitoring of illegal pesticides.
39. The IPM component was implemented in Cambodia, Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam, as well as in the Chinese provinces of Yunnan, Guangxi and Hainan.
40. The FAO-specific outputs and activities under the Immediate objective 3 and 4 were as follows:

### **IPM component**

- i. Functional networks of programme partners were established.
- ii. Farmers participated in FFS and PRR farmer training using specialized curricula and training materials.
- iii. Capacity of national programmes to train farmers in IPM and PRR was developed or strengthened.

- iv. FFS quality standards were set at the national and regional levels, and staff trained for internal monitoring and evaluation.

### **Policy component**

- i. Pesticide legislation was strengthened in Cambodia, Lao People's Democratic Republic, Myanmar and Viet Nam.
- ii. Registration and inspection of pesticide importers, distributors and retailers were scaled up to the national level in Cambodia and Lao People's Democratic Republic.
- iii. The private sector engaged in enhancing the availability of biological control agents and bio-pesticides.
- iv. The regional, national and local governments provided policy and funding support.

- 41. In 2016, a mid-term evaluation was commissioned by Keml with the aim to make a well-informed assessment of progress in programme implementation and to spell out recommendations for the remaining years of Phase II. Under Evaluation Question 6, this report addresses in detail the outcome of the mid-term evaluation. In 2018, at the end of the second phase, a programme proposal was developed in collaboration between Keml, FAO and UN Environment, and in dialogue with the ASEAN Working Group on Chemicals and Waste. This was in response to needs and requests from countries in the region, taking into account experiences and lessons learned from previous years of collaboration and implementation of activities of the current programme in Southeast Asia.
- 42. The project was closely aligned to the FAO global Strategic Objective 2: "Make agriculture, Forestry and fisheries more productive and manageable." The project was also in line with the Regional Priorities of FAO RAP, such as "Sustainable and Safe Agri-food systems, Regional Initiatives on Rice, One Health and Climate Change."
- 43. Furthermore, the project objectives had substantial linkages towards helping member countries deliver on key Sustainable Development Goals (SDGs), in particular on: SDG 1, Poverty Alleviation; SDG 2: Zero Hunger SDG 3: Good Health and Well-Being for people, SDG 6: Clean Water and Sanitation SDG 8: Decent Work and Economic Growth, SDG 11: Sustainable Cities and Communities SDG 12: Responsible Consumption and Production SDG 14: Life Below Water SDG 15: Life on Land. Programme activities are also contributing to other goals, such as SDG 5: Gender Equality SDG 13: Climate Action and SDG 17: Partnerships for the Goals.
- 44. Moreover, SDG target 17.9 addresses enhanced international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all of the SDGs, including through North-South, South-South and triangular cooperation. This is also in line with the global strategy for chemicals including pesticides, as addressed in the Strategic Approach to International Chemicals Management, through IOMC and the CoC.
- 45. Finally, project findings and experiences provided important inputs to broader FAO processes, such as the development of: FAO/World Health Organization (WHO) Guidelines on Pesticide Legislation; the FAO Pesticide Registration Tool Kit; the FAO/WHO Guidelines on Highly Hazardous Pesticides (HHPs); and the Strategic Approach to International Chemicals Management (SAICM) resolution on HHPs.

### 3. Evaluation Questions: Key findings

#### 3.1 Evaluation Question 1

*How relevant were the FAO components to the overall programme design and the needs of the targeted communities and governments to strengthen capacity for efficient PRR?*

**Finding 1. FAO's components were responsive to country and regional priorities. The annual planning was consultative and included the most relevant issues, which led to alignment with national policies and programmes. FAO's policy and capacity development activities were guided by local context and farmers' needs.**

46. FAO's role and components were extremely relevant to the programme objectives and complementary to other implementing partners: Given that the programme aimed to reduce risk to human and crop health due to use of excessive, unsuitable, unnecessary pesticides, FAO's farmer training sessions leading to greater awareness and change in agricultural practices were vital. FAO facilitated experimentation and adoption of alternative practices and provided access to biological control, especially in response to invasive pest problems. FAO built on its strength of working with farming communities through organizing FFS sessions under the IPM component that expanded the reach to more farmers, more areas and more crops.
47. FAO's role of developing the capacity of national governments to implement IPM and sustainable agriculture is recognized, particularly by the Plant Protect Departments. The emphasis of the work was determined by local priorities, such as:
  - i. Cambodia, China, Lao People's Democratic Republic and Viet Nam: FAO continues to develop farmer training curricula and structured learning exercises for IPM in new crops and for new invasive pest species.
  - ii. Lao People's Democratic Republic : In 2017, FAO developed the PRR training manual and revised the farmers' workbook.
  - iii. Myanmar: FAO developed new curricula for field training on IPM and traditional biological control in 2018 and provided technical advice to the ongoing Parliamentary Inquiry in Agro-chemical Residues.
  - iv. Viet Nam: FAO prepared and distributed leaflets and posters on pesticide risks and guidelines for mass production and the application of the biological control agent *Metarhizium anisopliae*.
48. At the policy level, significant needs-based support was provided by the PRR group at FAO Headquarters and the FAO RAP Crop Protection Programme for strengthening the regulatory control of pesticides in the Asia region, and to develop the legal frameworks and regulatory regimes needed to implement IPM. This has helped generate more interest and faith in the agro-ecological approach at the government levels.
49. Project components were responsive to country and regional priorities. The annual planning was consultative and included the most relevant issues. This led to alignment with national policies and programmes, such as support to Green Growth Agriculture in Viet Nam, designing the "Green Extension" Strategy and the "Green Rice Landscape" initiative

in Lao People's Democratic Republic, drafting Registration Regulations based on 2016 Pesticide Law in Myanmar.

50. The Regional Workshops facilitated exchange and alignment on issues identified as critical by the government representatives, such as developing mechanisms for container disposal, and combating invasive pests and diseases such as cassava pink mealybug, fall armyworm, brown plant hoppers (BPH) in rice.

**Finding 2: FAO's rolling work plans provided flexibility and scope for the participatory selection of strategic issues as well as the possibility of responding to unforeseeable developments and emerging needs.**

51. FAO coordinated project implementation on the basis of rolling work plans, which provided flexibility and scope for a participatory selection of strategic issues as well as the possibility of responding to unforeseeable developments, such as government staff changes in Cambodia or political influences in Myanmar. The presence of the project staff in Bangkok increased their accessibility for giving instant responses to ground-level demands, for example, to control the invasive cassava pink mealybug and the more recent fall armyworm epidemic.
52. Through project rolling plans and the annual and biannual planning meetings, FAO responded to some of these needs, for example, by: providing technical inputs for the "Green Extension" strategy for sustainable crop intensification in order to increase production in Lao People's Democratic Republic; including agro-tourism for gainful employment in the agriculture sector in Viet Nam; and introducing Good Agricultural Practices (GAP) certification for increasing agriculture exports in Myanmar. Although improving pesticide testing laboratories was not part of the project, FAO included in the work plans the budget training for staff in charge of operating laboratory facilities, as well as the provision of guidance to fulfil the conditions for becoming signatories of international conventions.

**Finding 3: FAO had extensive stakeholder engagement and provided relevant technical inputs to a broad range of stakeholders; however, some of the key outcome-level stakeholders did not fully engage in the project.**

53. Although stakeholder mapping was not formally conducted at the beginning of the project, FAO continued working with its traditional partner, the Ministry of Agriculture, as the primary stakeholder. The project focused on strengthening the Plant/Crop Protection Units and concerned subdivisions<sup>2</sup> by responding to their requirements while implementing the planned project activities. Here are some examples of how the primary stakeholder's needs were aptly addressed. Plant Protection Departments recognize FAO's contribution through strategic, technical and capacity development inputs.<sup>3</sup> FAO is recognized by a broad range of stakeholders, such as World Bank/Asian Development Bank (ADB), CSOs such as PAN-AP and TFA, regional and bilateral donors, and other United Nations agencies.

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<sup>2</sup> In Viet Nam: PPD, RPPC, PPSD; in Lao People's Democratic Republic: Plant Protection Centre (PPC), Department of Agriculture (DoA), PAFO; in Myanmar: DoA, PPD, D-PPD, in Cambodia, Thailand and China.

<sup>3</sup> Interviews with the Director/Deputy Directors of the PPD by the ET.

54. The programme's overall mandate, of "reducing health and environmental risks from chemicals" demanded working with other related stakeholders, namely, Ministry of Health, Ministry of Commerce and Industries/Trade, the private sector, Pesticide Associations and consumer associations. FAO made efforts to engage them, but they were not as consistent or effective as desired, possibly because their involvement depended on the preparedness or willingness of the Ministries of Agriculture as primary stakeholders and on the priorities of the concerned stakeholders.
55. FAO focused more on the functional level in the governments –technical officers, extension workers and functional government staff – than on policymakers, recognizing that inter-ministerial coordination and collaboration are always a challenge for development work. In hindsight, have FAO negotiated at a higher/apex level of policymaking, the programme could have brought health, industries and agriculture-related interests together.
56. Partnerships with the pesticide industry and their associations were very limited, although in some countries, functional pesticide associations exist. This issue had been addressed at the MTR in 2016 (see Question 6 for more details). A comprehensive strategy for engaging the private sector would have been beneficial, in particular, the pesticide industry and their associations. In Myanmar ET met both Industrial Chemical and Pesticide Producers association and they expressed interest and willingness to participate in programmes such as "Towards a Non-toxic South-East Asia".

**Finding 4: The project is well aligned to national priorities and programmes and injected targeted support to key national policies and programmes.**

57. FAO's work has been aligned with the national programmes. CPFs reflected commitment to IPM/PRR. Through the project technical and capacity-building inputs were provided for the development and implementation of the Regional Rice Initiative, SRI promotion and Save and Grow, which were ongoing FAO-supported initiatives in the project countries.
58. There are a number of examples in each country indicating FAO's proactive support to national policies, programmes and projects through and during the project period:
  - i. In response to the requests by the Vietnamese Government, FAO has given strategic directions and capacity development inputs on PRR to the national programmes on food security, food safety and climate change. FAO piloted models of community education programmes on PRR, which helped develop standards for the Nong Thon Moi Commune, which is part of the Prime Minister's programme, "Agriculture, Farmers and Rural Development" (Tam nong). Notable contributions were made by the project to the Green Growth Strategy, the Safe and High Quality Rice strategy and the national programme on Safe Vegetables.
  - ii. In Lao People's Democratic Republic, FAO has contributed to the development of the "Green Extension" strategy, the promotion of organic rice production, rice fish experimentation, and has now deployed the Strengthening Agroclimatic Monitoring and Information Systems project and the Climate Change Adaptation Wetlands Areas project.
  - iii. In Myanmar, FAO supported the Agriculture Development Strategy, and provided technical inputs for the Commonwealth Agricultural Bureau International and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) programmes.



- iv. China: FAO supported the regulation of Pesticide Administration (March 2017) and the adoption of the pesticide life cycle approach following the International Code of Conduct on Pesticide Management (FAO/WHO).
  - v. Thailand: FAO supported The Green Growth Strategy, the promotion of SRI and strategic technical support for standards and indicators development developed by the Sustainable Rice Platform, a public-private sector partnership, whose Secretariat is based in Bangkok and hosted by UN Environment and IRRI.
59. The project also supported government participation in the regional and international conventions and regional conventions of APPPC. FAO's engagement with pesticide authorities since 1990s helped in harmonizing registration requirements and strengthening implementation of CoC in SEA. Strengthening of Standing Committees on IPM and on Pesticides Management within APPPC is another example of alignment.
60. FAO is now involved in the preparation of several Global Environment Facility (GEF) project proposals that have a bearing on the project-related topics and outcomes, including on inclusive and sustainable rice landscapes and involving a multitude of stakeholders, including the private sector (e.g. World Business Council). The project staff has provided inputs in preparing these proposals in Lao People's Democratic Republic, Viet Nam and Thailand.

**Finding 5: FAO has effectively responded to the needs of all the beneficiaries and small-scale farmers, particularly women and indigenous communities, which has been reflected in their active participation.**

61. Some examples of activities that respond directly to beneficiaries include:
- i. Smallholders benefited from the introduction of IPM practices of mixed cropping and evolving IPM for short-duration crops, in particular, vegetables. FAO has been working on standard IPM practices for a range of crops in addition to rice, maize, cassava, potato, coconut, various vegetables and fruit crops, etc. This increased the interest of many farmers, particularly those in the mountains who are not engaged in rice paddy farming. These crops are useful when the major crops are lost to drought or delayed monsoons.
  - ii. Increasing availability of access to bio-control agents through Regional Plant Protection Centres has proved helpful by the IPM practitioners whose demand is increasing. In Lao People's Democratic Republic and Myanmar, women prepared efficient microbial solution and sprayed bio agents.
  - iii. The selection of women as master trainers and FFS participants was given particular attention; wherever country coordinators were women, the outreach was even better. Decisions such as training time and venue took into consideration women's participation. In Lao People's Democratic Republic, the three-day PRR course was further broken into smaller sessions for women with smaller children and those living in the mountainous areas.
  - iv. Promoting potato as a second crop is reported to have reduced labour for weeding in Viet Nam. The innovative practice of no-tillage potato cultivation introduced by the programme made it possible for elderly women who were left behind in villages to grow potato again. Prior to this, potato cultivation had decreased as men and young

women migrated to the cities to work in the service sector. In Lao People's Democratic Republic, small-scale mechanization in rice production was promoted to reduce labour for crop establishment and weeding.

- v. The training materials now have more images of women and more local languages, and dialects were used in Lao People's Democratic Republic for the posters.
- vi. Different designs of safety gadgets for women were available in Myanmar.

**Finding 6: Inclusion of some critical aspects of good pesticide governance could have broadened the impact of the project had they been included in the design. Pro-active action from the government, the pesticide industry and farmers' associations was very limited.**

62. The disposal of empty pesticide containers is a serious concern in all countries, in particular for the farmers who bury the leftover containers in the soil due to lack of alternatives and limited knowledge, as observed by the ET, i.e. farmer's knowledge and practice was not up to the required standard. Although FFS training curricula include this issue to some extent, the project did not actively pursue it nor include it into the programme design. With the exception of Viet Nam, where an inter-ministerial circular had been published, no clear guidance or advice on disposal was given to extension workers, shopkeepers or farmers. An FAO/WHO guidance document under the CoC is available on this subject of disposal. However, Viet Nam's legal provision has not been implemented (see Appendix 5). The problem will grow with the increased imports of pesticides and subsequently, the current practice will lead to soil and water contamination.
63. Another subject that could have broadened the impact of IPM/PRR governance is the issue of illegal trade and the sale of counterfeit pesticides and banned chemicals such as paraquat and glyphosate. With the exception of China, the illegal trade of pesticides is growing and an increasing area of concern among the bordering Southeast Asian countries.

## 3.2 Evaluation Question 2

*How effective were the FAO partnerships across the programme in fostering collaborative actions as well as complementarity and synergy between the implementing partners?*

**Finding 7: According to the programme design, each implementing partner was assigned a distinct role and operated through their own country-level counterparts; hence, they executed their plans independently.**

64. Some coordination took place during the joint meetings and in preparation for the annual regional fora. All the programme partners (KemI, FAO, PAN-AP, TFA) worked through their local partners (government agencies and CSOs) in the six programme countries. Funding was also scheduled through their partners. At the joint annual work plan workshops, information was exchanged regarding priorities, activities, timing, locations and funding for each partner. The project activities were then carried out separately. These workshops were also used to provide a common priority focus for all partners for their activities; for example, in 2017 and 2018, phasing out of HHPs continued to be the prioritized area among all partners.

65. The annual regional fora were used to present and discuss results, findings and experience, and served for personal get-togethers among project staff and counterparts. The selection of areas of interventions/project activities in the specific provinces of the six countries was based on the priorities of the local partners of each implementing organization.
66. A number of joint activities were successfully carried out; for example, FAO and CSO's conducted PRR surveys together. The Registration Toolkit workshops were sometimes jointly executed and jointly funded by Keml and FAO. Publications and communication materials were often shared initiatives among the implementing partners.

**Finding 8: A wide range of synergies have been generated through the project, including national to regional FAO-TCPs, FAO-GCPs, different initiatives, interventions and international approaches in the programme countries.**

67. The CPFs in all countries reflected either a continued focus on IPM and/or PRR approaches supporting environmentally sound and sustainable crop production. For example, the project promoted participation in the "Regional Rice Initiative" as well as in the EU-funded and AIT-implemented Sustainable Rice Intensification (SRI) in the Lower Mekong Basin (LMB) project, supported the FFS training within "Save and Grow". It also made contributions to the preparation of GEF-project proposals in various countries.
68. Case studies of the project are another example of continued focus on IPM and/or PRR approaches, in particular, those developed by the Institute for Poverty Alleviation based in Beijing. They entered a national competition for China and have been recently selected as the most promising case studies to learn from in view of the national government's commitment to deliver on FAO's priority SDG 1.
69. Synergies could also be observed at the regional level, such as in the strengthening of participation and engagement within APPPC and at the international level, such as in supporting the implementation of the Rotterdam Convention (RC) and the International Plant Protection Convention (IPPC). Such synergies have been used in fostering global knowledge products on IPM and farmer field schools (FFSs). For example, the co-authoring of FAO's 2016 Farmer Field School Guidance document and the hosting/co-organizing of several international FFS workshops convened in Bangkok in recent years. Regional activities under this programme at times involved other countries from the region, such as Bhutan, Indonesia and the Philippines.
70. The following examples highlight some synergetic projects and complementarities with other organizations at the national level observed during the evaluation:
  - i. Viet Nam: FAO supported the development of the "Green Growth" Strategy and Safe and High Quality Rice-Initiative with Regional Plant Protection Centres.
  - ii. Lao People's Democratic Republic: FAO collaborated with ADB to support the capacity development of laboratory staff. The project was in line with the NGO Lao People's Democratic Republic Upland Rural Advisory Service (LURAS) project on the Promotion of Organic Produce and with the World Bank on the Green Agricultural Policy.
  - iii. Myanmar: FAO collaborated with ADB to support the capacity development of laboratory staff. FAO's activities complemented the work of the Commonwealth Agricultural Bureau International for PPD capacity development; GIZ promotion of GAP

for export; World Bank on agricultural policy; and, Wageningen University & Research supporting PPD registration.

**Finding 9: Various types of productive and fruitful partnerships have been installed by FAO at the national, regional and global levels. However, effective coordination with other ministries was limited in most of the countries.**

71. The main partner at the national level is the Ministry of Agriculture in every country, and within the Ministry, the respective departments responsible for pesticide governance and/or plant protection extension. Existing or developed national IPM programmes favoured the inclusion of PRR strategies and the focus on HHPs. The programme activities led to the commitment and provision of financial resources of the governments (MoA), for example, in China through the National Agro-tech Extension and Service Centres. Also the programme provided direction to other donors, international organizations and NGOs in Cambodia, Lao People's Democratic Republic, Myanmar and Thailand. In addition, it created occasional partnerships with other ministries: for example, in Cambodia, the Ministry of Agriculture, Forestry and Fisheries collaborated with the Ministry of Education and its higher education institutions on agriculture, and with the Ministry of Environment on campaigns on the danger and disposal of pesticides.
72. However, it was observed during the evaluation that collaboration and effective coordination with other ministries was limited in most of the countries. Although all international guiding documents and national legislation require a holistic governance system of pesticides, in particular between the authorities for health, the environment and agriculture, the ET observed lack of knowledge about the project objectives and the work of PPD at the Crop Production Department even within the Ministry of Agriculture and Rural Development (MARD) in Viet Nam (Appendix 3: Field Visit Data).
73. A fruitful partnership model at the community level in Viet Nam has emerged from the Initiatives for Community Empowerment on Rural Development; similar examples were presented by PAN-AP at the forum in Bangkok in November 2018. The Community Education Programme on Pesticide Risk Reduction has been piloted in Viet Nam for seven years. The approach built on creating partnerships between and among government organizations, local CSOs, mass organizations, schools as well as local groups and networks of smallholder IPM farmers to jointly address pesticide risks and related issues, develop their local food safety and sustainable intensive production, improve the rural environment and facilitate market access for farmer's products as a community. A similar observation was made by the ET in Lao People's Democratic Republic in Xieng Khouang Province (Appendix 3).
74. At the regional level, the intergovernmental APPPC is an example of productive and fruitful partnerships. The two established Standing Committees on IPM and Pesticide Management serve as a regular exchange, information and coordination mechanism for the region and its members. The Committees initiated and facilitated various regional workshops and joint approaches on IPM for specific pests and on regulatory issues such as HHPs. A productive relationship was established with ASEAN as contributions were made by the project in support of the ASEAN Guidelines on the Regulation, Use and Trade of Biological Control Agents. Harmonization efforts among ASEAN countries on setting maximum residue limits progressed continuously, and mainly FAO/WHO CODEX values were adopted as the regional/national residue limits facilitating trade of agricultural

commodities among its members; a similar advancement was made in the definition of ASEAN-GAP for a number of crops.

75. At the global level, FAO has been organizing Vegetable IPM webinars and facilitated an e-group on Vegetable IPM. There are 119 909 pages of targeted technical material that has been accessed through almost 800 000 hits, from a total of at least 125 000 visitors on the site. The site has become an FAO-Global Knowledge Product and is linked to the Global FFS Platform site hosted at the FAO website.

**Finding 10: FAO encouraged the formation of farmer producer groups. The master trainers and country programme coordinators supported their linkages with markets and wholesalers, with guidance from FAO technical staff. These farmer organizations have sustained and were growing beyond the project.**

76. The Rice Farmers' Cooperative in Viet Nam, the Vegetable Growers' Association in Lao People's Democratic Republic and the Mango Growers' Cooperative in Myanmar are self-governed structures whose members find these profitable ventures. These farming models were also supported by other donors and organizations such as Japan International Cooperation Agency in Lao People's Democratic Republic or GIZ in Myanmar. In the last two years of the project, FAO focused on facilitating market linkages by branding green products (Green Rice in Lao People's Democratic Republic). At the field level and in connection with IPM/FFS, work partnership models with the private sector had been established in various countries for safe vegetable/rice value chain initiatives, sometimes supported by governmental entities such as Regional Plant Protection Centres in Viet Nam providing certification for high quality products. These initiatives included contract farming. The project supported the Public-Private Sector Sustainable Rice Platform standard setting. This included work with representatives from the food retail sector as well as input providers, including the chemical industry.
77. The CoC adopted in all countries provides a framework that guides government regulators, the private sector and civil society on best practices in managing pesticides. The Code clearly defines the responsibilities of governments and the pesticide industry. Such collaborative options remained untapped by the project.
78. In Viet Nam, the project piloted the collection and disposal of empty pesticide containers and the subsequent incineration at a cement kiln with the involvement of pesticide companies. The results of this pilot were used by MARD and the Ministry of Natural Resources and Environment to issue the 2016 Inter-Ministerial Circular providing guidelines for the collection, transport and treatment of empty pesticide containers; however, the implementation of the circular is hampered due to the difficult administrative situation of dealing with rural waste (see Appendix 5, Newspaper Article).
79. The project supported the regional "Public-Private Sector Sustainable Rice Platform" on sustainability standard and indicator setting. This included work with representatives from the food retail sector as well as input providers, including the chemical industry.

### 3.3 Evaluation Question 3

*How effective was the FAO policy support in strengthening pesticide regulatory management capacity? Did the policy changes translate into concrete financial support and mechanisms to upscale and sustain the results?*

**Finding 11: The policy component supported the development of new pesticide legislation in four countries and the development, piloting and scaling up of inspection schemes in two countries, namely Cambodia and Lao People's Democratic Republic. In addition, in Viet Nam and Myanmar, legislative documents were improved.**

80. At the national level, the countries followed the orientation given through the CoC towards PRR, focusing on HHPs, which has led to the phase-out/ban or restricted use of many pesticides, in particular, of World Health Organization (WHO) Class I compounds. Examples from China, Lao People's Democratic Republic, Myanmar and Viet Nam demonstrate this movement, and the recent ban of chlorpyrifos, fipronil and glyphosate in Viet Nam in 2019 indicate the sustainability of this process.
81. The development of legal documents and guidelines towards their implementation are evidence of awareness and knowledge, which reflects the long-lasting impact of the project. The policy component supported the development of new pesticide legislation in four countries and the development, piloting and scaling up of inspection schemes in two countries, namely in Cambodia and Lao People's Democratic Republic; as well as, legislation improvement in Viet Nam and Myanmar. The process continues in Lao People's Democratic Republic as it was confirmed to ET that the Regulatory Division of the DoA is currently developing additional guidelines for the field testing and registration of pesticides. The inspection guidelines were also revised (Appendix 3).
82. References to HHPs and PRR approaches are described in many documents and are subject of many meeting agendas in the countries. They are also addressed through new policies on green agriculture and on safe food production. These new policies are supported by the World Bank and the ADB, which also provided infrastructure support to Lao People's Democratic Republic and Myanmar, mainly laboratory equipment. The World Bank published various studies for the region, including on agricultural pollution in Viet Nam. A broad supportive and enabling environment raised awareness of the problems associated with the use of pesticides in agriculture and encouraged pesticide reduction approaches as well as the application of non-chemical-based control methods.

**Finding 12: The FAO Pesticide Registration Toolkit is a very valuable training and practical education instrument.**

83. The FAO Pesticide Registration Toolkit is an English-only, Internet- based information system targeted at government officials of pesticide registration authorities. National and regional workshops were conducted by FAO, sometimes with Keml and Wageningen University & Research, in China, Myanmar, Thailand and Viet Nam. The participants found the toolkit very useful for their day-to-day work while evaluating applications for the registration of pesticides. Tools like the standard checklist strengthen the systematic review of the data submitted by the applicants. Also, registration allows for comparison with the decision/situation in other countries. However, the limited knowledge of English of some participants reduced the use and the full understanding of the toolkit.

84. However, the lack of sufficient resources at some of the government pesticide registration offices, such as the number of staff and their technical, scientific skills, were relatively weak in relation to the legal tasks given to them. For example in Lao People's Democratic Republic, the ET found that the full benefits and usefulness of the toolkit is only partially utilized. Furthermore, participants reported gaps and limitations in applying certain international standards, e.g. labeling of pesticide containers according to the GHS classification (Appendix 3). Through this toolkit, pesticide authorities in the region and globally communicate and share information. The workshops contributed effectively to this approach. China and Myanmar publish their registered pesticides on the Internet, and the toolkit supports access to these data.

85. The 2016 Toolkit Workshop in Myanmar was a good example of timely utilization as it was included in the 2017 evaluation of the IOMC Toolkit, which states that:

The PPD used the toolkit guidance and resources to update their national pesticides registration process. Indeed, the toolkit – specifically the 'Information Sources' component – is now an integral part of that registration process: regulators are essentially obliged to access and use the toolkit when reviewing pesticide approval applications. The authorities' engagement with the toolkit is therefore likely to continue in the long-term.

**Finding 13: The project developed suitable guidelines and widely applicable manuals for the inspection of pesticide retailer and dealer shops in Cambodia and Lao People's Democratic Republic.**

86. Inspections schemes are important elements supporting the application and implementation of legal frameworks. The guidelines and manuals were not only used to train the national governmental inspectors, but also to educate the owners of the shops. They serve as a reference because implementation of regulations and enforcement practices vary from country to country. The project supported a licensing scheme in Lao People's Democratic Republic under which a shopkeeper had to obtain a license from the local agricultural authority. The training of the inspectors and of the shopkeepers was provided by the Department of Agriculture (DoA), the national pesticide authority in Lao People's Democratic Republic, and implementation was carried out through the local authorities.

87. As a pilot, exemplary inspections missions had been conducted by FAO in Cambodia and Lao People's Democratic Republic in order to optimize the inspection manual. The manual has been regularly updated by the DoA. Licences were presented in shops in Lao People's Democratic Republic, Myanmar and Viet Nam; however, the situation at the shops visited during the evaluation greatly varied — from acceptable in Myanmar, to often unacceptable in Lao People's Democratic Republic; in Viet Nam it was partially acceptable (see Appendix 4).

88. The pesticide label is the essential communication tool for the user/farmer and had received a priority status among the project activities for Cambodia and Lao People's Democratic Republic. It was also used by inspectors as a simple and effective tool for pesticide control tool. A substantial increase of labels in Khmer language could be observed in Cambodia. The new Prime Minister's Decree on Pesticide Management in Lao People's Democratic Republic provided the legal basis for mandatory improvements in

labeling, with some impact, as confirmed by the latest DoA /PPC surveys; however the observations during the evaluation visits indicate the need for continuous efforts in order to provide the appropriate information in the local language to farmers and applicators (Appendix 4).

**Finding 14: Information on pesticides at the national level has improved at the governmental level: there are lists of registered pesticides in China, Myanmar, Thailand and Viet Nam, which are sometimes shared, for example, with customs and other ministries.**

89. Various field surveys, in Lao People's Democratic Republic and Viet Nam, were conducted and published to identify HHPs and problems with registered pesticides, and to look for alternative pest control methods. The surveys provided evidence for the ban, phase-out or restriction of various pesticides. The annual regional fora of the project provided an opportunity for the countries to exchange information and to discuss among experiences towards a non-toxic Southeast Asia. The formal umbrella of APPPC as an intergovernmental institution led to commitments to and agreements on action in relation to hosting of workshops, for example, on the Pesticide Toolkit, under the Rotterdam Convention and on fruit fly control approaches. FAO has always supported these meetings through funding of delegates from countries and through information inputs under the Standing Committees on IPM and Pesticide Management. Regional information exchange procedures on regulatory decisions for pesticides have yet to be put into practice. At the last meeting in November 2017, the enhancement of collaboration on pesticide quality and residue detection and on the implementation of Prior Informed Consent and pesticide disposal information exchange were planned for the next biennium (APPPC 2017 report).

**Finding 15: Inspection and licensing schemes in Cambodia as well as Lao People's Democratic Republic enforcement capabilities and capacities were enhanced, which indicates that the aim was to put the governance policy instruments into action.**

90. Lao People's Democratic Republic and Cambodia received major attention from the project in relation to pesticide governance and the development of policy instruments; in Viet Nam and Myanmar, legislative policy documents were also supported. Initial discussions were also held in Myanmar with strong interest in strengthening inspection capacities, as cited in the IOMC evaluation on Myanmar:

[M]ore rigorous pesticides registration and monitoring processes should improve food safety, which in turn should improve the agriculture sector's access to export markets. With the more rigorous registration process in place, farmers in particular should also stand to benefit from reduced exposure to hazardous substances (Evaluation of the IOMC Toolbox).

91. In 2018, pilot testing of the scheme was carried out in Lao People's Democratic Republic and in two provinces of Cambodia. However, in Cambodia, inspections remained on hold due to delays in government clearances for the planned inspections. In Lao People's Democratic Republic, good progress was made in the clarification of the legal basis for enforcement; the inspection guidance materials were updated accordingly. Due to government delays in the approval of the implementation of inspections, the project support could not be utilized because the inspection work was scheduled for late December 2018. The Government confirmed that it would attempt to seek additional resources to continue the inspection and the trainings work.



92. The force of a legal provision is as strong and effective as its implementation. Certain difficulties to put such legal provisions into action were noted by the ET:
- i. In Lao People's Democratic Republic, the authority structure at the local level that reports violations but lacks the mandate of enforcement.
  - ii. In Viet Nam, local authorities limited the number of inspections of pesticide dealers to a one inspection per year in their area.
  - iii. In all countries, there are informal imports where farmers cross borders and buy supplies (Appendix 3).
93. Anti-corruption measures were particularly highlighted and addressed. Enforcement manuals included clear procedures for inspectors, and inspections had always to be carried out by two inspectors. However, there are various obstacles that governments face in overcoming these difficulties and that FAO faces in providing effective guidance.

**Finding 16: At the regional and international levels, pesticide-related issues were regularly addressed.**

94. At the annual Regional Fora organized by all implementing partners, new developments were presented, exchanged and discussed in relation to awareness, campaigns, legal framework and related experiences. These occasions were also used to present documents, leaflets and other information materials produced by the implementing organizations.
95. Within the ASEAN Secretariat, the subject of pesticides is included in the agenda of various meetings, and the focus is placed on harmonization efforts among its member states on pesticide regulatory subjects, such as the regulation, use and trade of biological control agents and on pesticide residue levels in agricultural products; around 800 ASEAN-Maximum Residue Limits have already been established, supporting trade among the member countries.
96. The Intergovernmental Forum APPPC, for which FAO RAP provides the Secretariat, has two Standing Committees, on *IPM* and on *Pesticide Management*. At the biannual meetings, the APPPC regularly reported and exchanged information on these subjects, and the project often supported the participation of country delegates. In addition, specific meetings were organized under this umbrella, for example, on HHPs in China in 2014, with a lead role by the project. Being an intergovernmental Commission, the outcome of these meetings had a strong influence on decision-making at the national level because the countries were formally requested to report on a specific subject, for example, pesticide management, at its next meeting and indicate follow-up to the APPPC decisions.
97. Two examples of broadening knowledge at the international level are the growing participation of the project countries within the Rotterdam Convention and the FAO Registration ToolKit as part of the IOMC Toolkit.
- i. Lao People's Democratic Republic, Cambodia and Viet Nam hosted national workshops with support from the project to strengthen their engagement within the Rotterdam Convention and to participate in programmes of the Convention such as the identification of HHP formulations; in turn this would help to address HHPs in the country. At various occasions, the PPD of Myanmar confirmed its interest in becoming a party to the Convention.

- ii. From 2017, Myanmar has served as a positive example for the world-wide evaluation of the IOMC Toolkit. The two national FAO Registration Toolkit workshops in Myanmar served as a trigger for improved country-level collaboration, policy harmonization and long-term sustainability.

### 3.4 Evaluation Question 4

*How effective was the implementation, monitoring and follow-up of the FFS in raising awareness, and achieving and institutionalizing the results?*

**Finding 17: Significant capacity development efforts to promote IPM/PRR with farmers, farmer groups and cooperatives were combined with a strong participatory monitoring and evaluation system for IPM FFS programme.**

98. Built on its historical strength as leading agency on IPM and as convener for pesticide regulatory issues in the region, FAO RAP continued various initiatives for raising awareness on IPM and PRR, and setting mechanisms to sustain the outcomes. The project not only increased outreach, but also broadened the discourse on IPM.
99. The project implemented training of trainers (ToTs) sessions in all the project countries and has created a cadre of 2 099 IPM master trainers, a 700 percent increase over the baseline. The project targets were upgraded twice during the project due to 100 percent achievement and increasing demand. The ToTs have increased the capacity to conduct IPM and PRR farmer training. Refresher ToT courses were also conducted for past trainers to update on PRR. During 2018 alone, 364 IPM trainers (41 percent female) from the Government and farmer associations were actively involved IPM-PRR farmer training.
100. Through the traditional season-long FFS, 84 131 farmers (100 percent increase over the baseline) were trained in PRR and IPM, during the programme period. Thousands of additional farmers benefited from participation in local government and/or other donor-funded FFS programmes that were implemented with FAO's technical and coordination support provided under the project. In addition, FAO designed and implemented shorter versions of PRR courses. A total of 4 199 (46 percent female) additional farmers in the Mekong region participated in 'fortified' FFSs or focused three-day PRR training sessions with direct support from the project. For example, in Lao People's Democratic Republic, these were three-day sessions; in Myanmar, training was included in the GAP certification process for the export of mangoes and in Viet Nam, for export of rice. The season-long FFSs created packages of good IPM practices.
101. IPM takes an ecosystem approach to crop production and protection that combines different management strategies and practices to grow healthy crops. The IPM training included an analysis of the agro-ecosystem and pest management with respect to the economic, health and environmental requirements.<sup>4</sup> FAO's FFS and PRR training methodologies were participatory and used a solution-oriented approach.
102. A participatory monitoring and evaluation system for IPM FFS programme, with a focus on monitoring implementation of PRR learning activities, has been set up in all programme countries. FAO convened the Global Workshop on Impact Assessment and Monitoring and Evaluation on farmer field school programmes in Bangkok during August 2018. Participants

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<sup>4</sup> MTR of "Towards a Non-toxic Environment in South-East Asia".

from all programme countries and from elsewhere in the world participated in this workshop and pledged to utilize workshop results as input to curriculum development and FFS standard-setting exercises at the national level.

**Finding 18: Based on the country visited, the standard IPM practices in short-duration vegetables crops and fruits helped to reach out to smaller-scale farmers and added food value and income in a shorter time.**

103. As a result of these concerted efforts, the FFS graduates practice IPM and have reduced their use of hazardous pesticides. They reported a significant reduction in sprays. There is a distinct difference in practices of the FFS graduates and the other farmers. The neighbouring farmers were influenced and mentioned that they had been consulting the trained peers and asking for help.
104. In visited countries, the ET found that the master trainers are equipped with quality training materials, which are made available in local languages. Effectiveness of IPM implementation is evident in the following outcomes observed by ET during the field visits:
  - i. FFS graduates continue to function as a collective groups even after the closure of the last phase of the project.
  - ii. Interest in mixed cropping systems (rice and fish, rice and ducks, rice, and vegetables) is increasing, and its adoption has increased the food security of subsistence farmers.
  - iii. Small-scale farmers stated that they avoided chemicals for agriculture produce because they were mostly used for home consumption. Some FFS graduates said that even if they were to receive free pesticides, they would not use them; they would give away their old stock.
  - iv. The tendency to spray in panic has reduced.
  - v. FFS farmers consistently reported a reduction in input costs and stated improvements in production and productivity (to a greater extent in Lao People's Democratic Republic than in Viet Nam and Cambodia.
  - vi. FFS master trainers have been absorbed in the government, international projects and NGOs due to increasing demand.
  - vii. There is increasing demand for bio pesticides, and supplies are not sufficient; some families were preparing EM solutions and herbal sprays.
  - viii. FFS graduates are gaining importance in village governance because they are seen as smart and knowledgeable.
105. Confirmed by science-based, longer-term impact studies, IPM adoption among FFS graduate farmers has led to more than a 50 percent reduction in total pesticide use in all programme countries. All of the trained farmers stopped the use of WHO Class I pesticides, which will help towards the elimination of the use of WHO Class I pesticides. Consequently, exposure is reduced due to mixing less hazardous pesticides, which is the project objective.
106. During the field visits in the selected countries, ET found almost all the FFSs carefully followed IPM/GAPs. It was notable that when asked what actions they took when faced with a pest attack, most of them sought and extended peer support informally since they

trusted their peers who had attended training. Farmers reported the following concrete benefits of applying IPM (as reported during the field visits and quantified by the ET):

- i. a 10–30 percent reduction in input costs, since they reduced spraying by 50 percent;
  - ii. a 10–20 percent increase in production and productivity (up to 40 percent in Lao People’s Democratic Republic);
  - iii. a 10 to 50 percent increase in market price for organic produce;
  - iv. awareness by farmers of the harmful effects of chemicals on their health and ‘living’ environment;
  - v. an increase in demand and market value of quality produce reported by farmers;
  - vi. Farmers’ willingness to pay for GAP certification and attend training sessions;
  - vii. an increased use of safety equipment, which are sometimes available free of charge.
107. The adoption of IPM practices is mainly driven by the experience of more effectiveness at a lower cost and lower damage to soil/crops. All countries except Cambodia reported better market prices for organic produce in the market (between 10 and 50 percent reported). There is an apparent increase in consumer demand for better food quantity and quality due to growing populations, rising incomes and changing dietary patterns. This raises hope for sustaining this trend of IPM application by farmers. There is continued experimentation and exchange of experiences of IPM practices among the FFS graduates. The neighboring farmers are looking up to them for guidance.
108. The long-term monitoring conducted by the Center for Development Oriented Research in Agriculture and Livelihood Systems in Cambodia found that almost 100 percent of the respondents used protective materials on their heads and bodies. In addition, the use of protective materials on arms and legs improved over the course of the study, from 47–50 percent to 87–100 percent among vegetable farmers, and from 23–33 percent to 83–90 percent among rice farmers.

**Finding 19: Quality training materials and national FFS standards were developed in all six partner countries.**

109. Curriculum development and design of structured learning exercises for IPM in new crops and for new invasive pest species continued in all four countries - Cambodia, China, Lao People’s Democratic Republic and Viet Nam.
110. In Lao People’s Democratic Republic, the pesticide risk reduction training manual and farmers workbook was revised in 2017 and further pilot tested in farmer training on PRR in central and southern Lao People’s Democratic Republic provinces in 2018.
111. In Myanmar, new curricula for field training on IPM and traditional biological control were developed and pilot tested within the context of a training of trainers for Brassica IPM Farmers held in 2018.
112. In Viet Nam, FAO documented and disseminated the IPM/PRR curricula and training materials; published a Farmer Field School Implementation Guide; provided technical support for PPD to develop standards and modalities for FFSs and ToTs; and printed and distributed leaflets and posters were to disseminate information on pesticide risks and

guidelines for mass production and application of the biological control agent *Metarhizium anisopliae* and SRI for the sustainable intensification of rice production. Also, the ecological guide and field exercises for rat management were updated.

113. A curriculum for integrated agro-aquatic biodiversity was designed with a strong focus on PRR to make fish/shrimp rearing possible. In 2018, in the Mekong Delta, FFSs were implemented to test the curriculum materials.

**Finding 20: China and Viet Nam have institutionalized IPM policies and capacity development programmes, financed by national and local governments. In the other countries, there is greater interest in IPM, but there is dependence on external support.**

114. The evaluation team found a number of mechanisms deployed by FAO to foster the sustainability and institutionalization of IPM for PRR as follows:

- i. supporting the mobilization of financial investments for the National IPM Programme, both from the government at all levels and resource partners (e.g. World Bank, IFAD, bilateral donors, NGOs);
- ii. promoting IPM/PRR practices through exchange visits, social media, awards and incentives;
- iii. fostering IPM skills/practices through farmers' participatory action research and peer learning and exchange;
- iv. facilitating market linkages for organic produce, by developing contacts with the private sector, mentoring producer groups, certifying GAPs, etc.;
- v. extending support for contract farming to make it a fair option for farmers, since it is emerging as a new opportunity for the continuation of work with farmers, guiding master trainers to provide technical support to both the companies and the farmers in the contract;
- vi. organizing the Global Workshop on Impact Assessment and Monitoring and Evaluation for FFS in Bangkok in August 2018;
- vii. exchanging best practices through thematic workshops, such as the regional Bactrocera Fruit Fly IPM Workshop, in Bangkok in March 2018 and the regional consultative meeting on Fall Armyworm in Asia, in Bangkok in 2019;
- viii. regularly updating FAO's regional IPM programme website, which is widely and frequently used, (124,000 hits, 83 percent of target value) as of December 2018. Despite effective implementation of IPM/PRR, some challenges remain to be addressed, some which are inherent to the nature of work/context. This demands more work for upscaling IPM/PRR in the SEA region.

115. Similarly, the ET found some issues that can impede the institutionalization of IPM/PRR efforts, such as:

- i. Large unreached populations and areas: The number of farmers practicing IPM is still limited; many continue calendar spraying and apply higher doses of pesticide, leading to resistance; areas that are not fully covered increases risks to IPM practitioners; banned herbicides such as paraquat and glyphosate are used due to labour shortage,

- ii. Lack of availability of bio-pesticides: The cost of bio-pesticides is higher than the chemical pesticides and the implementation of quality standards and registration of bio-pesticides yet to begin.
- iii. The shortage of trained person power: There is a demand for more ToTs, season-long FFSs as well IPM/PRR orientation sessions with fewer days. Master trainers are severely limited because they are either being absorbed in the government and other projects, or becoming retirees, making it difficult to reach out to critical mass of farmers.
- iv. A decision has not yet been made on how to continue the administration of the regional IPM programme website and to regularly update and keep it running beyond the project.

### 3.5 Evaluation Question 5

*What was the actual and potential impacts of women's participation in FAO's work?*

**Finding 21: FFS work has been inclusive and responsive to the needs of the most vulnerable rural community members, in particular, women and children. In this project, particular attention was paid to health risks of pesticide exposure to women and children.**

- i. Based on the project documentation and the validation in the field by farmer groups, women FFS master trainers, women farmers and extension departments, the ET found an exemplary gender mainstreaming and gender-sensitive approach in the programme, which included the following dimensions, among others:
  - ii. Tailor-made learning modules were designed on gender and pesticides for use in FFS settings. The effects of pesticides on women and children are discussed in the PRR modules, which underline the risks and desirable practices.
  - iii. The selection of participants for the FFS was primarily carried out by the local communities, in order to ensure coverage of a cross-section of farmers. As a result, the FFS graduates consist of smallholders, tribal communities, educated and less educated farmers, and the landless. Efforts were made to involve the members who actually do the work, which resulted in more women covered in every training batch, whether season-long or shorter versions of PRR courses.
  - iv. The project ensured that both men and women could participate in appropriate and relevant capacity-building interventions, including in FFSs. Care has been taken in planning the time and venue of training to suit women participants.
  - v. The training materials were prepared with a gender perspective to highlight women's roles, and the effects on the health of pregnant women and children.
  - vi. The selection of women as master trainers and FFS participants was given particular attention; wherever country coordinators were women, the outreach was even better. Decisions such as on training time and venue took into consideration the need to ensure women's participation. In Lao People's Democratic Republic, the three-day PRR course was further broken down into smaller sessions for women with smaller children and those living in the mountainous areas.
116. In the second phase of the project several success stories documented and published are of women farmers. This has improved women's image as farmers. In Lao People's

Democratic Republic, the “best farmer award” was granted to a woman who received it during a formal World Food Day celebration event held at FAO RAP in Bangkok in October 2018. Coverage of this award function in print, audio-visual and digital media has made a significant difference in the way women are perceived in the agriculture sector.

117. The programme supported the United Nations Special Rapporteur (UNSR) on the Right to Food, with the development of a pesticides-focused report, which was launched on 7 March 2017. The report stresses that the international community must work on a comprehensive, binding treaty to regulate hazardous pesticides throughout their life cycle, taking into account the human rights principles. The project, through its PRR work, therefore contributed to an overall human rights agenda, in particular, the right to diversified and healthy/safe food and decent work for farmers and rural labourers without exposure to toxic pesticides, and the right to information/ knowledge in general.
118. The fact that a gender analysis was performed at the beginning of the project was not mentioned or referred to in reporting of the project. However, there is evidence of gender equality measures taken:
  - i. the inclusion of women at all levels of the project from staff to farmers. In many cases, more than 50 percent of staff and farmers were women, and up to 80 percent in some FFS batches. Among the master trainers, the number of women increased substantially, by 41 percent, over the last year of the project;
  - ii. discussions on the gender-based division of work included in FFS design;
  - iii. awareness about pesticide spraying in the presence of children or near schools;
  - iv. small sachets used for packing pesticides, for reducing storage/ handling risks to children as well as adults;
  - v. gender-disaggregated data collected and reported on a regular basis and used for annual reporting.
119. The logic framework included gender-disaggregated targets for the coverage of farmers and trainers’ data were collected on a regular basis and used for annual reporting.
120. During the field visits, women’s confidence and participation was evident. Their active participation in decision-making related to crops, pesticide purchase and marketing was reported by the project staff. It is also reported by all the master trainers and many Agriculture Extension staff that there is a qualitative difference in women’s participation. Participation of women in pesticide shop for purchase and in the market for sale has increased. In the farmers groups number of women was equal or more.
121. The programme produced a publication, “Stories from the field: Women Working Towards A Non-Toxic Environment”, which details 25 case studies of women farmers from Lao People’s Democratic Republic, Cambodia, Viet Nam, Thailand and China. The booklet, published in 2016, highlights how women farmers were influenced by the programme interventions, how they benefited and how these interventions resulted in community mobilization for PRR and improved livelihoods. Examples were:
  - i. The formation of women self-help groups has given a platform for women to discuss their own issues and to develop leadership skills.

- ii. Labour saving devices were introduced in Lao People's Democratic Republic and China.
  - iii. Zero-tillage potato production in rice-based landscapes resulted in labour saving in Viet Nam and Lao People's Democratic Republic.
  - iv. Rice fish farms have been encouraging for women due to their direct connection with food consumption.
  - v. Most of the documented case studies highlight women as success stories, which has helped improve the image of women farmers and their acceptance as key stakeholders.
  - vi. Women were included in Farmer Producer Groups as independent or joint members.
  - vii. Stall spaces were provided to women in local markets, leading to their distinctly greater presence.
122. The women farmers reported their mobility and the burden of their domestic work as a problem, affecting their participation. There is scope for introducing labour-saving devices, which occurs only in China and Lao People's Democratic Republic, and on a smaller scale than may be needed. No systematic study is documented of gender-based division of labour to design this component. Gender sensitization and skills development of men in domestic chores would help reduce constraints on women.
123. The project implementation raised some issues; going forward, there will be challenges to gender equity and the human rights approach, such as:
- i. The feminization of agriculture: While women are taking on increasingly more responsibilities, men's engagement, particularly young men in agriculture, is now a major challenge, primarily because agriculture is not as lucrative as other jobs in urban areas.
  - ii. Lack of gender-sensitivity in the agriculture value chain: The triple burden on women continues; limited mobility affects their access to market and credit; and there is need for both technology transfer and a change in mind-set.
  - iii. Labour, health, safety and human rights: Landlessness is increasing with urban migration; there is need to include labourers in IPM/ PRR training who most often involved in the spraying task and are at higher risk.

### 3.6 Evaluation Question 6

*How FAO followed up on the 2016 mid-term evaluation recommendations?*

**Finding 21: FAO made serious, praiseworthy efforts in response to the MTR 2016 recommendations, which focused on continuing the established cooperation among the implementing organizations towards achievable results within the remaining months and in support of the main conclusions/recommendations.**

124. At the end of 2016, the MTR commissioned by Keml provided a set of recommendations for the second phase of the programme to all programme partners. The MTR's main recommendation was that preparations for an upcoming new phase starting mid-2018 should be initiated very soon. The new proposal should focus on country-based institution-building in Cambodia, Lao People's Democratic Republic and Myanmar. The project partners provided a detailed management response to the recommendations made by the



- MTR, which was reviewed by the ET (Appendix 6). The partners addressed the MTR in its 2017 work plan, in particular, the findings and recommendations applying to country programmes in Cambodia and Viet Nam.
125. The programme partners held discussions with government counterparts in the countries with regard to the findings, recommendations and the implications of adjusting the work plans at the national level, as well as to improve, in a structured manner, the collaboration and communication with the local partners. A national meeting was organized in Myanmar mid-2017 as a direct follow-up and in support of the build-up of local implementation networks in the country and with the aim of intensifying the activities after the new political situation. Further workshops/consultations were organized in Cambodia, Lao People's Democratic Republic
  126. , Myanmar and Viet Nam in 2018 prior to the final Regional Forum in Bangkok in November 2018.
  127. In preparation for a new phase – the main MTR recommendation – concept notes for a follow-up project were drafted for discussion with potential donors, and comprehensive country status reports on pest and pesticide management were drawn up for Cambodia, China, Lao People's Democratic Republic, Myanmar and Viet Nam, which gave a broad overview of progress on PRR and of challenges for the future. The executive summaries of the status reports could have been used as input for a national policy dialogue; they would definitely serve well for any future PRR work on pesticides in any of the countries and in the region (Annex 2).
  128. FAO intensified its communications by developing case studies, publications and other communication products, in particular those with clear economic and poverty alleviation results. Examples include: the Cambodia case studies on saving groups; the Chinese case studies; and the Lao People's Democratic Republic case study "Save and Grow/Green Rice" landscapes products, where the positive economic impact was observable during the evaluation.
  129. However, there is still a need and a demand for labour-saving devices because labour is moving out of agriculture, in particular of younger men, due to the burden of domestic work on women. The continued focus on small-scale farmers has reduced the potential of the programme to reduce the quantities of pesticides applied in the big farms; however, the focus of the programme has been on phasing out HHPs, i.e. the ban and restriction of specific highly toxic compounds and not on the volume of pesticides.
  130. Two additional important points were addressed by the MTR: engagement with the pesticide industry and the coordination and collaboration at the national level among the four implementing organizations. However, the four organizations had different opinions with respect to engaging with the pesticide industry and the current project design. This presented an obstacle for FAO, which consequently made no changes in this regard for the remaining 18 months (see Appendix 6).

## 4. Lessons learned

**Lesson 1.** Importance of all-encompassing stakeholder engagement and participation:

- i. Ensure broad stakeholder analysis at the national and regional level for projects of such a complex nature (government, civil society, the private sector and pesticide industries, in particular).
- ii. Recognize the importance of the indirect stakeholders (consumer and market influences) on project outcomes and engage them from the beginning.
- iii. Involve policymakers as a prerequisite for legal provisions.
- iv. Overcome political and party hierarchies, particularly in SEA region.

**Lesson 2.** The importance of research and innovation for a paradigm shift:

- i. Keep the academic and scientific community involved, which will help anticipate more appropriate solutions based on fundamental research, such a programme needed to reserve some funds for scientific work.
- ii. Bear in mind that simple innovations can bring a larger impact; for example, the design of smaller sachets reduce exposure to farm chemicals.



## 5. Conclusions and Recommendations

### 5.1 Conclusions

131. The evaluation team summarized its strategic findings in categories of strengths, weaknesses, opportunities and threats.

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Awareness was increased on pesticide problems from farmers to consumers.</li> <li>• HHPs were banned and phased-out.</li> <li>• Contributed to improved legal framework.</li> <li>• Further demonstrated IPM, which gave recognition to IPM as a proven technology.</li> <li>• Farmer producer organizations/ common interest groups/cooperatives were formed.</li> <li>• Technical capacities were built, particularly of master trainers.</li> <li>• The work was complementary to other partners and players – World Bank, Asian Development Bank, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).</li> </ul>	<ul style="list-style-type: none"> <li>• The focus on limited stakeholder groups could have included other ministries, the pesticide industry and consumer associations.</li> <li>• Progress on pesticide labelling remains slow (Cambodia/Lao People’s Democratic Republic ).</li> <li>• There is little improvement through licensing and training of pesticide dealers and traders.</li> <li>• There has been limited uptake of regional pesticide regulatory initiatives, e.g. under Association of Southeast Asian Nations (ASEAN) and the Asian-Pacific Plant Protection Commission (APPPC).</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Pesticide control problems and agriculture conditions are similar in the five SEA countries.</li> <li>• Linkages are growing among the six countries.</li> <li>• The World Bank is supporting Green Rice and endorsing IPM, and countries are in favour of ‘cleaner’ agriculture.</li> <li>• The local demands for farmer-to-farmer extension and the institutionalization of farmer organizations.</li> <li>• Know-how has been exchanged on alternatives and on pesticide restrictions/bans.</li> </ul>	<ul style="list-style-type: none"> <li>• Climate change, new pests, diseases</li> <li>• Demand for quantities from contract farming</li> <li>• Continued production of cheap pesticides and aggressive marketing by the pesticide industry,</li> <li>• Inter-ministerial competition for project funds,</li> <li>• Inter country competition for similar markets.</li> <li>• Possibility of falsified pesticides (such as Hidden ALs), requiring stricter quality control.</li> </ul>

**Conclusion 1. FAO’s components were extremely relevant to the programme objectives and complementary to the other implementing partners. The interventions were timely, needs-oriented, important and effective.**

132. In summary, synergies have been created, and government organizations as well as other technical cooperation agencies have benefited from FAO and its work on IPM and pesticide management at the national, regional and international levels.
133. Important stakeholders such as the pesticide industry, and Ministries of Health and Environment were not engaged in project activities, which limited their impact and sustainability.
134. The project achieved its foreseen outputs and resulted in lasting impact, contributing to a reduction in the use of hazardous pesticides, improved control and management of pesticides, and the promotion of sustainable IPM approaches to crop production in the Greater Mekong Subregion. However, the exact impact on health and environment is unknown.

**Conclusion 2. Pesticide governance with a focus on PRR is a national and regional priority now within the Greater Mekong Sub-region countries. Furthermore, substantial work has been accomplished and is being sustained, in particular, pesticide legislation and bans/restrictions on HHPs.**

135. HHPs pesticides, such as WHO Class I paraquat, have been banned in various countries and continue to be banned or restricted in use. Schemes for the inspection of pesticide distributors and retailers were developed and piloted in Cambodia and Lao People's Democratic Republic. The parties to the Rotterdam Convention – Cambodia, Lao People's Democratic Republic and Viet Nam – strengthened their national capacity for its implementation. APPPC has become a regular and formal forum for information exchange on pesticide management and on IPM, and further served as an initiator for regional work on these two matters. The Registration Toolkit supported registration authorities in their day-to-day work. As an Internet-based tool, it is accessible and continues to be used in the countries.
136. However, pesticide governance is a very demanding task requiring highly qualified staff, regular upgrade of scientific, technical know-how and, if possible, analytical capacities and facilities. The capacities and capabilities of the Pesticides Regulatory Authorities are limited in most countries. Furthermore, in relation to the implementation of regulations in Cambodia and Lao People's Democratic Republic, continuous work is needed to further strengthen enforcement mandates and capacities, and to fill legal gaps.

**Conclusion 3. Awareness and knowledge on pesticides and related management issues have been widely increased in all countries, in the region and internationally, at different levels, from policymakers and high-level governmental officials to technicians, farmers, consumers and many others. This development has been supported directly and indirectly through FAO and its partner organizations.**

137. Almost all the FFS graduates are following IPM and have reduced use of hazardous pesticides. The economic situation of the farmers has changed for the better. In the second phase the programme, FAO facilitated farmers' access to markets for the safer food produced by farmers following good agricultural practices. There is increasing demand for organic and safe food and readiness to pay better value.
138. Although FAO focused on target groups that offered the highest potential for improvement, a large proportion of farmers is still unreached, more land is coming under cultivation and climate change risks are increasing, reflecting in an overall increase in pesticide sales. There is scope to improve container disposal and use of personal protective equipment (PPE) by farmers. The availability, quality and cost of biocontrol agents remain a challenge.

**Conclusion 4. The project had a human rights-based, gender equality and poverty alleviation approach.**

139. The project by design involved farm laborers and tribal and other marginalized sections of the population, particularly women and their participation has certainly improved in the second phase of the programme. The programme has advanced in addressing gender equality and a human rights- based approach, in particular on the right to food in its programme activities.
140. However, against the backdrop of the increasing feminization of agriculture, there is need for both men and women to work on the gender-based division of work, and safety is critical; more efforts must be made in the next phase.

**Conclusion 5. FAO has been an enabler in the PRR sector by helping national governments comply with international standards and conventions. However, a number of challenges remain, which should be addressed in the short term.**

141. Inter-ministerial collaboration is requested in the legal provisions for pesticide governance, i.e. the participatory engagement and cooperation of three national authorities, namely, the Ministry of Agriculture, Health and Environment. Such inter-ministerial cooperation is not yet effectively taking place in Cambodia, Lao People's Democratic Republic, Myanmar and Viet Nam.
142. Post-registration activities are important for monitoring the fate of pesticides and impact on health and environment. Capacity- building efforts in this context would provide input to future regulatory decisions and would be required for further PRR work on pesticide governance.
143. The number of master trainers for FFS and ToT is already limited and reducing quickly; therefore, it is important to use the available resources as much as possible for the training of future master trainers.
144. The different status reports provide clear recommendations to the countries for improving pesticide governance and IPM/PRR approaches. Efforts should be made for the direct implementation of these recommendations.
145. Addressing the issue of the disposal of empty pesticide containers is needed in all countries, and a focus on the implementation of established legal provisions such as inspection and labelling should be developed.

**Conclusion 6. The Southeast Asia context in which the project is implemented has several new opportunities and threats, such as climate change, new pests, diseases, demand for more quantities of food from contract farming, continued production of cheap pesticides, inter-country competition for similar markets, and the possibility of falsified pesticides such as Hidden Ais.**

## **5.2 Recommendations**

**Recommendation 1. To FAO: Continue PRR work in the SEA region at all three levels, with an enhanced focus on the following:**

At the field level on IPM: Develop models for alternative IPM-practices and institutionalizing the models within communities, in cooperation with national research institutions, Plant Protection Centres, NGOs, farmers organizations, schools, local health and environmental authorities, etc. as well as developing engendered needs assessment to address both needs of men and women and better tailor IPM interventions.

At the country level on policy and regulation: Build capacities for the sound management of pesticides with a life cycle approach, placing a special emphasis on PRR and HHPs. This would be achieved in cooperation with all concerned ministries, pesticide industries and producers of biocontrol products, farmer organizations, consumer organizations and CSOs in order to foster economic, human and social linkages among these countries.

At the regional level on knowledge management: Foster regional collaboration through regular and continuous information sharing and joint action within established regional entities (APPPC and ASEAN)

and continued harmonization efforts, for example, on GAP, the maximum residue limit, border control, registration procedures on biological control agents, and control of invasive and epidemic pests and diseases.

**Recommendation 2. To Sida/Keml: Continue to provide support to multi-partner programmes in the region on PRR for sound chemicals management.**

Address common and upcoming issues that were highlighted during the current programme, for example, on GHS, the disposal, storage and transport of dangerous goods, inter-ministerial collaboration, continued improvement of legislation as well as strengthening of enforcement and inspection capacity.

Demand the involvement of the top-level policymakers to ensure sustainability through institutionalization, through a project design with more collaborative approaches of programme partners in the project activity areas.

Consider adding more countries in the region to widen information exchange and expand the community of practice across all the ASEAN/APPPC member countries,

**Recommendation 3. To all stakeholders: Continue joint efforts by all the implementing partners together with respective government entities with an enhanced design, resources and inclusivity of stakeholders.**

At the grassroots level: Strengthen bottom-up planning, decentralized training, implement legal provisions, improve monitoring, and on the whole, encourage sustainable intensification of crop production in the area of IPM/PRR. Consolidate and continue to apply the gender-sensitive approach by targeting more women groups.

At the country level: Deploy ministerial mechanisms for institutionalizing IPM / PRR work, including financing; invest in and/or mobilize resources to complement the programme funds by negotiating with international resource agencies.

At the regional level: Actively contribute to the proceedings of the regional bodies APPPC and ASEAN with support and follow-up, and implement their decisions.

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## Appendix 1: Schedule of visits by evaluation mission: GCP/RAS/229/SWE

### Vietnam: 19-25 March 2019

<b>Date/time</b>	<b>Activities</b>	<b>Responsible persons</b>
19 March 2019	Arriving in Hanoi	Evaluation team
Tuesday	Working with country office staff (4pm)	Ms. Le Thi Ha
20 March 2019	Wednesday	
09:00-11:30	Working with Plant Protection Department, Ministry of Agriculture and Rural Development of Vietnam	Mr. Nguyen Quy Duong Mr. Do Hong Khanh Ms. Le Thi Ha
13:30-16:30	Working with Mr. Ngo Tien Dung, Former FAO consultant, Vietnam Pest and Pesticide Management Status Report	Mr. Ngo Tien Dung Ms. Le Thi Ha
21 March 2019 (Thursday)	Working with Northern RPPC in Hung Yen province (100 km by car)	Ms. Le Thi Ha Mr. Tran Quyet Tam
22 March 2019	Friday	
AM	Working with Vietnam Chemicals Agency, Ministry of Industry and Trade	Ms. Le Thi Ha Mr Nguyen Van Thanh Mr Luu Hoang Ngoc Mr Le Viet Thang Ms Nguyen Thi Ha
13:30-15:00	Briefing on the National IPM Programme (including all partners as National IPM coordinator, SRD, CGFED, ICERD...)	Partners (PPD, SRD, CGFED, ICERD...) Ms. Le Thi Ha , FAOR
15:30-16:30	Briefing with FAO Representative in Vietnam at FAOR Office	FAOR
23 March 2019 (Saturday)	Working with PPSD Nam Dinh Field visit in Nam Thanh co-operative, Dong Son commune, Nam Truc district to see the supply chain of safe and quality rice (150 km by car)	Ms. Le Thi Ha PPSD Nam Dinh Key farmers
24-25 March 2019	Drafting report	Evaluation team

**LAO PEOPLE'S DEMOCRATIC REPUBLIC : 26 March – 01 April 2019**

<b>Date/time</b>	<b>Activities</b>	<b>Responsible persons</b>
<b>26 Mar 2019 Tuesday</b>	Arriving in Vientiane	Evaluation team
<b>14:00</b>	Working with country office staff	Ms. Vornthalom
14:30-15:00	Meeting with FAOR & FAOR Assistant	Mr. Nasar Hayat
	Continue working with country staff	Ms. Vornthalom
<b>27 March 2019</b>	<b>Wednesday</b>	
09:00-10:00	Working with Director of Plant Protection Centre & National IPM & PRR Project Coordinator at PPC	Mr. Siriphon Phitaksoun Mr. Phoukaothong Sikaysone
10:30-11:30	Meeting with FAO Consultant	Mrs. Khamphoui Luanglath
14:00-15:00	Meeting with local NGO, SEADA	Evaluation team Mr. Bounlap Phathilath
15:00-17:00	Meeting with DDG DTEAP & DTEAP staff responsible for farmer action research, SRI LMB	Mr. Thongsavanh Mr. Viengxay Photakoun Mr. Kongsy Xaiyavong Ms. Vornthalom
<b>28 March 2019</b>	<b>Thursday</b>	
<b>10:00-11:00</b>	Visiting importers/distributors/pesticide shops in Thatluang, Saisettha district, Vientiane Capital	Evaluation team Mr. Phoukathong Sikaikone & Mr. Phoumy Kanya Ms. Vornthalom
<b>Mission team split into 3 individuals from noon of Thursday 28<sup>th</sup> March 2018 onwards</b>		
<b>Plan Seema Khot</b>		
<b>28<sup>th</sup> March 2018</b>	14:00-14:30 Travel to Xiengkhouang 14:30 Meeting with PAFO 15:30-16:00 Check in AnnoulakkaenLao People's Democratic Republic Hotel	Vornthalom & Phoukaothong
<b>29 March 2019</b>	08:30-09:30 Meeting with Head DAFO, Phaxay district 10:00-11:00 Field visit Phaxay district: Nahoung Village (Former FFS Village) Horkang Village (Former FFS Village) 13:00-14:00 Nasome Village (Former PRR Village) 15:00-16:00 Working with FFS & PRR Trainers 16:30-17:00	Agriculture & Extension Staff/FFS Trainers Farmers in former FFS village Vornthalom & Phoukaothong Urm Amphonepheng & Thormua
<b>30 March 2019</b>	Field visit in Khoun district Farmers in former FFS village and PRR village Meeting with farmers & their neighbors in Kua Village	Vornthalom Phoukaothong
15:30-16:10	Travel back to Vientiane	
16:30	Meeting	
<b>Plan DR. Gero Vaagt</b>		
<b>28 March 2019 (Thursday)</b>	Working with Regulatory Division (Pesticide Control and Registration teams) at DOA 13:30-14:30 Meeting with Clean Agriculture Development Centre (Boutsakone) on the link between commercial farming and use of pesticide, the market capacity/demand for organic products at DOA 14:00-14:45 15:00	Mr. Somvang Phanthavong Mr. Souliya Souvandan & the team
<b>Plan Omar</b>		
13:30-14:30	Meeting with SAMIS Meeting with Coordination Office of Lao People's Democratic Republic Farmer Network at CLICK	Monic Petri Phouthasin

<b>Date/time</b>	<b>Activities</b>	<b>Responsible persons</b>
<b>29 March 2019 Friday</b>	Gero and Omar	
11:00-12:00	Meeting with Director of Green Agriculture Extension Project at DTEAP	Mr. Souvanthong Namvong
<b>30 March and 31<sup>st</sup> 2019 Saturday and Sunday</b>	Working with Country Staff Meeting with Jan Katelar	Evaluation team
<b>01 April 2019</b>	Departure	Evaluation team

**Myanmar 1-6 April 2019**

<b>Date</b>	<b>Activities</b>	
1Apr 2019 12:00 2:00 pm	Arrival Yangon Check in at Grand-Palace Hotel Meeting with the National Coordinator	San San Lwin, National Coordinator
2 Apr 2019 09:00 10:00 -12:00  12:00 – Lunch 13:00 - 13:30 - 15:30	Meeting with AFAOR (Programme) at FAO office Meeting with Dr. Kyin Kyin Win (IPM section) , Dr Khin Moe Kyaw ( Food Safety Laboratory), Daw Khin Lay Zan (Pesticide Laboratory), Daw Seng Raw (Pesticide Registration Board), Dr San San Win (PPD staff in Yangon), Ms Tin Hla (Agriculture Extension in Yangon) and Daw Swe Swe Oo (on behalf of Daw Sandar Myo from MFVP) at Plant Protection Division (Visit to Laboratory of PPD) Visit to Pesticide Dealer Shops Appointment with Mr. Win Htin, Chairman of MCIA. (Focal point for Industry Perspective)	Dr. Kyin Kyin Win
3 Apr 2019 09:30 – 11:00-11:55 am 3:00-5:00pm –	Leave for Heho by Flight Proceed to Yatsout by car (2:00pm) Meeting with PPD-DOA staff • Review of GCP/RAS/229/SWE project in Myanmar • Status of Pesticide Management in Myanmar National Pesticide Law & legislation • National Guideline for IPM in PPD • National Guideline for GAP • Improved IPM based on GAP Practices on Mango Farmers Night stop in Yatsout	San San Lwin, and Dr. Kyin Kyin Win
4 Apr 2019 08:00-10:00 am 10:00- 12:00 - 2:00 - 3:00 pm	Meeting with 20 mango farmers in Yatsout Visit to Mango farm (Pin Pyit village, Yadana Pon village and Pein Hnae Kone village) in Yatsout Meeting with PPD, DoA in Yatsout Finding results on field Survey of Mango farmers Discussions on priorities to strengthen pest and pesticide management • National priorities and recommendations for strengthened pest and pesticide • Management and regional collaboration for Mango Farmers Improvement of IPM with GAP to Mango Farmers Leave Yatsout for Heho, Night stop at Heho	San San Lwin, and Dr. Kyin Kyin Win

<b>Date</b>	<b>Activities</b>	
3:00 pm		
5 Apr 2019 09:45 – 11:00 13:00-	Leave Heho for Yangon) by flight Meeting with Pesitice Association, Wrap up meeting with mission Members	
6 Apr 2019	Mission members will leave for duty station	

## Appendix 2. List of people interviewed by evaluation team

Title	Surname	Name	Position	Institution	Location
<b>Vietnam</b>					
Mr	Chinh	Vu Cong	Director	PPSD Nam Dinh	Nam Dinh
Mr	Cuong	Nguyen Nhu	Director	DCP, MARD	Ha Noi
Mr	Dinh		Master Trainer, FFS	Northern RPPC	Hung Yen
Mr	Dung	Ngo Tien	Former FAO consultant, now with an NGO ICERD	ICERD	Ha Noi
Ms	Dung	Vu Thi	Woman farmer, FFS Alumni, member	Nam Thanh Agri Service Co-operative, Dong Son commune, Nam Truc district	Nam Dinh
Mr	Dung and 4 other Directors		Chairman and leaders	Nam Thanh Agri Service Co-operative, Dong Son commune, Nam Truc district	Nam Dinh
Ms	Ha	Le Thi	Acting Head	Dept of Science Management and International Cooperation	Ha Noi
Mr	Ha	Nguyen Thi Ngoc	Deputy Head, Plant Protection Division, PPSD Nam Dinh	PPSD Nam Dinh	Nam Dinh
Ms	Hue		Master Trainer, FFS	Northern RPPC	Hung Yen
Mr	Khanh	Do Hong	Vice Chief & National IPM coordinator	Plant Protection Division, Ministry of Agriculture and Rural Development of Vietnam	Ha Noi
Mr	Kien	Nguyen Ngoc	Vice President	ICERD	Ha Noi
Mr	Lan	Vu Cong	Sustainable Agriculture Manager	Center for Sustainable Rural Development (SRD)	Ha Noi
Dr	Lieberg	Albert	FAOR	FAO	Ha Noi
Mr	Manh		Head, Industrial Crops Division	DCP, MARD	Ha Noi
Ms	Nga		Deputy Director	Northern RPPC	Hung Yen
Ms	Nguyet	Vu Thi	Woman farmer, member	Nam Thanh Agri Service	Nam Dinh

Title	Surname	Name	Position	Institution	Location
				Co-operative, Dong Son commune, Nam Truc district	
Mr	Nho		Master Trainer, FFS	Northern RPPC	Hung Yen
	Proprietor		Proprietor	Agri Input Shop	Nam Dinh
Mr	Tam	Tran Quyet	Director	Northern RPPC	Hung Yen
Mr	Thong	Nguyen Huy	AFAOR	FAO	Ha Noi
Ms	Thuy	Le Phuong	Official	Division of Convention and International Cooperation	Ha Noi
Mr	Viet	Nguyen Van	Head, Plant Protection Division, PPSD Nam Dinh	PPSD Nam Dinh	Nam Dinh

Title	Surname	Name	Position	Institution	Location
Lao People's Democratic Republic					
Mr	Amphonepheng	Urm	Master Trainer , now DAFO	DAFO	Phaxay
Mr	Bartlett	Bartlett	Project Director, LURAS	Helvetas	Vientiane
Mr	Bounlap	Phathilath	Project Coordinator	SEADA, local NGO	Vientiane
Mr	Hayat	Nasar	FAOR	FAO	Vientiane
Mrs	Khamphoui	Luanglath	National Consultant, Ex Head of National IPM & PRR	FAO Consultant	Vientiane
Mr	Kongsy	Xayavong	Director of Division Promotion Seed Production and Utilization Division	DTEAP	
Mr	Mavout	BoulithThoun	Deputy Head, PAFO	PAFO	Xiengkhouan g
	n/a	Farmers group	Non FFS and FFS		Nasome, FFS Village
	n/a	19 women and 1 man	FFS graduates	Organic Farmers Group	Kua
Mr	Namvong	Souvanthong	Director of Green Agriculture Extension Project at DTEAP	Director of Green Agriculture Extension Project at DTEAP	Vientiane
Mr	Nanthepha	Nanthepha	Head of Project Field Office	LURAS	Xiengkhouan g
Mr	Nhiaveu	Nhiaveu	Master Trainer , now DAFO	DAFO	Phaxay
Ms	Petri	Monica	Strengthening Agro-climatic	FAO-GEF Project	Vientiane

Appendix 2. List of people interviewed by evaluation team

Title	Surname	Name	Position	Institution	Location
			Monitoring and Information Systems (SAMIS) to improve adaptation to climate change and food security in Lao People's Democratic Republic.		
Mr	Phitaksoun	Phitaksoun	Director of Plant Protection Centre	DOA	Vientiane
Mr	Phoukaothong	Sikaysone	National IPM & PRR Project Coordinator at PPC	DOA	Vientiane
Mr	Phoumy	Kanya	DOA Regulatory Division	DOA	Vientiane
	Phouthasin		Clean Agriculture Development Centre (Boutsakone)	DOA	Vientiane
Mr	Sayathong		Section Head Regulatory Division	DOA	Vientiane
Mr	Somboun	Mr. Somboun , Mr La Sivanh + 2 neighbouring farmers	FFS graduates, Award wining woman farmer	Organic Farmers Group	Horkang, FFS Village
Mr	Sonlut	Mr. Sonlut +7 neighbouring farmers	FFS graduates		Nahoung, FFS Village
Mr	Souvanduan	Souvanduan	Deputy Director Regulatory Division	DOA	Vientiane
Mr	Thammavare	Thammavare	Master Trainer , now DAFO		Khoune
Mr	Thongsavanh	Phantalavong	Deputy Director , DTEAP	MOAF	Vientiane
	Vang	Phonesamay Phouang Kham	Head DAFO, Phaxay district	DAFO	Phaxay
Mr	Viengxay	Photakoun	DTEAP staff responsible for Farmer Action Research, SRI LMB	DTEAP	Thatluang, Saisetha distict, Vientiane
Ms	Vornthalom		Consultant FAO	FAO	Vientiane

Title	Surname	Name	Position	Institution	Location
Myanmar					
		19 Mango farmers	Members of the Mango Association	Organic Farmers Group	Yatsaut
Ms	Hla	Tin	Extension Officer from Yangon Region		Yangon
Ms	Htein	Ni Ni	Plant Protection Division	DOA	Yangon



<b>Title</b>	<b>Surname</b>	<b>Name</b>	<b>Position</b>	<b>Institution</b>	<b>Location</b>
Mr	Htin	Win	Chairman, Focal Point for Chemical Industry Perspective	Myanmar Chemical Industrial Association	Yangon
Mr	Khine	Tint	AFAOR - Programmes	FAO	Yangon
Ms	Lwin	San San Lwin	Consultant FAO	FAO	Yangon
Ms	Lwin	Zin Mar	Extension Staff	DOA	Yatsaut
Ms	Oo	Swe Swe	Plant Protection Division	DOA	Yangon
Mr	Oo	Soe Naing	Deputy Head, Agriculture Extension, PPD	DOA	Yatsaut
Mr	Oo	Myint	Chairman, Mango Association		Yatsaut
Ms	Raw	Seng Raw	Pesticide Registration Board		Yangon
Mr	Soe	Nyi Nyi	Mango Association		Yatsaut
Mr	Thammavare	Philavanh	Master Trainer , now DAFO		
Dr	Win	Kyin Kyin	Deputy Director of Plant Protection Department	DOA	Yangon
Dr	Win	San San	Manager of Plant Protection Division	DOA	Yangon
Ms	Zan	Khin Lay	Pesticide Laboratory, PPD	DOA	Yangon

<b>Title</b>	<b>Surname</b>	<b>Name</b>	<b>Position</b>	<b>Institution</b>	<b>Location</b>
Other					
Mr	van der Wulp	Harry	Former Senior Policy Officer (retired)	FAO	Rome
Mr	Willem Katelaar	Jan	Chief Technical Advisor/Team Leader	FAO	Rome
Ms	Rönnngren	Jenny	Adviser/ Programme Manager, International Unit	Swedish Chemicals Agency	Sweden



## **Appendix 3: Field visit data references (compilation of raw data)**

### **Vietnam**

Salient Features of the Project / project design? according to National Coordinator, Le Thi Ha:

- i. Keml worked with Private sector, chemical industry, PPD worked with FAO.
- ii. Major concerns / obstacles in project implementation was Inter-ministerial collaboration.
- iii. The Field Alliance: Work with NGOs on Ecological Agriculture.

### **Value added of the Project**

IPM office established in Vietnam since 1990s, to be precise in / 1995; This Swedish project started in 2013, salient features of the project included;

- i. PRR was the major value added.
- ii. LOA included support to provinces apart from PPD; All equipment and facility now transferred to PPDs.
- iii. Decision to continue TOTs – which were closing down, ToT for Rice + Prawns, Rice + fish.
- iv. Safe and Quality rice demos through the project ; became a topic of interest for all; govt promoted Safe and Quality Rice after the project.
- v. Vietnam Good Agri Practices got developed; VGAP introduced in 2008 -government is encouraging to follow, but still very few farmers are following.
- vi. Focused on pesticide management – did trainings of shopkeepers and farmers in particular.
- vii. Increased awareness about biological agents.
- viii. The farmers who follow VGAP – get better access to markets.
- ix. Women’s role in farming has changed, previously they only worked more – now they even come for training – this is due to the emphasis on equity.
- x. However – still there is no information about whether women’s health is affected differently than that of men.
- xi. Container disposal is established, there were visits from Lao People’s Democratic Republic and Cambodia to learn best practice of disposal in Vietnam.
- xii. The project helped in Locust control.
- xiii. FAO has supported market access expansion.

### **Shortfalls of the project**

- i. Pest monitoring system is still not in place.
- ii. Pesticide use increased, also area treated.
- iii. MARD Extension Service has a different approach providing seeds and fertilizers as incentives to increase production.
- iv. Post-registration monitoring weak, 200 pesticide residue samples analysed per year in PPD-laboratory in Hanoi, a Poison-Control Center exists in Hanoi under MoH.
- v. 100% chemical are imported, labels are an issue as the imports are from China, India.
- vi. Now there are more distribution channels; there is more focus on quality of produce and therefore on quality of agri inputs.

### **Concerns**

- i. Lack of awareness about the safe use and disposal of chemicals.
- ii. Lack of awareness regarding safety requirements for chemical management.
- iii. Inspection of chemical production and formulation plants – MIMT has an annual plan for inspection but not followed since 2016. They are creating a new division for inspection.
- iv. Recycling of chemical containers which get reused – No inspection of incineration facility.
- v. Database is not exhaustive – does not have information on biopesticides. JIICA supports MIMT for PRTR.
- vi. Need to share information among ministries.

### **Role of RPPC, Mr. Tran Quyet Tam, Director, RPPC and Ms. Nya Nga Deputy Director**

- i. Three major roles; (a) Plant protection, forecasting (yield and diseases), testing pesticides, pests, including bio-agents; testing pathogens as well as useful organisms (2) Tech transfer: to Provincial Plant Protection Sub-Depts (PPSDs) and (3) Accounts and administration.
- ii. LOA is with 25 provinces under the project' PPDs sent reports and RPPC synthesizes those as it has responsibility to review progress, problems; In case of disease pest attack, PPD identifies and advice.
- iii. RPPC has limited participation in legal documents, we comment on drafts , which are made by PPD.
- iv. ToT happens at the province level.
- v. RPPC head himself was facilitators, was trained in 1994.
- vi. RPPC responsibility is surveillance of pesticide use, PPD can work with traders.
- vii. If farmer is using pesticides, RPPC explains to farmers – and reports to local authority.
- viii. Usually dosage is the problem, indiscriminate use is common.
- ix. RPPC is also responsible for biological control of diseases; these are 60 to 70% effective.
- x. Will prepare bio agents for the provinces, and replace as per demand.
- xi. Bio agents are still not available in the market, private sector does not produce.
- xii. Dry packets are available.

### **What has changed after the project – in last 5 years or so?**

- i. The project is in 7 provinces, according our assessment good impact of the project.
- ii. Decision making of local government, farmers and traders has changed in favour of less pesticides.
- iii. Local government is more aware about responsibilities of PRR.
- iv. Examples of awareness; what FFS farmers know about fertilizers, pesticides now?
- v. Farmers apply pesticides as per the guidelines.
- vi. Traders do not sale illegal pesticides.
- vii. Earlier farmers would follow what they did conventionally, or would copy what the other farmers are doing, now they observe and spray only if required and only what is recommended; After FFS farmers know about Fertilizers, pesticides, now they apply as per guidelines.
- viii. 50 to 80 Kgs less nitrogen used per ha; they adjust potash doses.
- ix. Now on an average the farmers apply 1 – 2 doses less per cropping cycle.
- x. Empty container disposal has changed, collected.
- xi. Yield has increased by 5 to 10 %; Income increased by 8 to 10%.
- xii. The demand is increasing, it is necessary.
- xiii. In the past Vietnam has used a lot of chemicals – soils are degraded- so need organic fertilizer; Government is also encouraging organic production as a policy; 30 to 40% fertilizers have to be organic.

- xiv. In 2017 winter the area was hit by an epidemic of SbV. It was serious – it transmitted to plants; Farmers sprayed pesticides in panic, but otherwise they are cautious using chemical pesticides, this is due to continuous education ; PPD checked samples, found virus – and advised to spray only when affected, this controlled use of pesticide; since then till now no such epidemic of SBV.
- xv. In the project framework conducted seminars for neighbouring provinces.
- xvi. The district provincial leaders have applied for getting the project support; some even did demonstrations to get the project extended.

### **What changed due to FFS?**

- i. Combine learning by doing.
- ii. Farmers attend to pests and identify, now they are becoming expert at observing.
- iii. Treat pests in different stages differently, and know when to stop spraying.
- iv. Mainly Women in IPM, they take calculated risk, they decide, they have ecosystem perspective.
- v. Women involved in market related decisions too; earlier women dependent on men.
- vi. During FFS we keep questioning, level of knowledge varies.
- vii. For vegetable production reduced 2 to 3 times of spraying (from 5-6).
- viii. For rice usually 1-2 sprays only.
- ix. Non FFS buy – buy any pesticide that is available, but FFS graduates choose particular pesticides, which they often don't know if and why they are banned.

### **Why Metarhizium started as late as 2019?**

- i. In 2013-14 it was popular in south; only after 2015 it became known and available in the north; FAO supported its production in the north – but it is not popular or commonly used.
- ii. This is part of future plan.
- iii. RPPC collaborated with local traders, farmer associations and women associations, have field days; created awareness by showing posters, films, brochures.
- iv. Has invited health and environment experts to field days, but there is no formal collaboration with these departments.
- v. RPPC plans technology transfer for Metarhizium production; Will set up market chain give production protocol.

### **What are the main issues affecting farmers?**

- i. Labour shortage; only elderly population in the villages.
- ii. Low income from agriculture.
- iii. Plant protection is one of the biggest concerns; farmers can not spray by themselves, they need guidance.
- iv. From 2014 to 2018, each province organized 1 to 2 FFS per annum; Each FFS 30 farmers.
- v. Selection farmers for FFS is done by Local leaders/unions; but Season long training is not easy for a farmers.
- vi. Outstanding alumni of FFS become guide to other farmers, they share what they know.
- vii. Not income but food security is encouraged.
- viii. New varieties new technologies – are challenges.
- ix. In the past – until 2012, there were cooperatives, which had government subsidies.
- x. The newer coops are more spontaneous, participatory, they are united not because of government but in solving their own problems, marketing, input procurement etc.
- xi. 400 to 500 sqmt land per person.

- xii. From legal perspective “leasing” land is possible.
- xiii. Will select and work with farmers who have leased land not only those who own.

#### **What is farmers Mindset?**

- i. Interested only in traditional practices, IPM found difficult.
- ii. Availability of bio-pesticide is an issue; home preparation of bio-fertilizers and bio-pesticides is time consuming.
- iii. In order to promote IPM, need regulation and mechanism to separate products with and without harmful residues, GAP certification is an issue.

#### **Why many farmers still do not practice IPM**

- i. Habit of conventional farming.
- ii. Opinion that conventional farming is easy as can follow others.
- iii. System of helping neighboring farmers who only know traditional ways.
- iv. Health consequences of chemical use - not aware.
- v. Commune farm union had input supply which is standard for all farmers which includes chemical pesticides.
- vi. Get only 500 VND per kg more for organically grown produce.
- vii. All leaders are women, they are elected as men have no time and young men move to cities.

#### **Gender integration in the project**

- i. Women unions help in increasing participation of women farmers.
- ii. FFS are on priority working with women, generally 80:20 women: men ration in FFS- they are in majority.
- iii. Increased FFS from 1994 to 2000, and then maintained.
- iv. Followed basic IPM.
- v. In 2016 – government got a project to grow IPM from 2016 to 2020.

#### **Role of Ministry of Industry and Trade: Interactions with Ms Le Phuong Phuy**

- i. Since legislation on chemical pesticides in 2016 KEMI has been involved in training KEMI organised regional fora in Lao People’s Democratic Republic, Vietnam, Cambodia and Myanmar and Thailand.
- ii. 2018 KEMI did risk assessment study – main concern mercury management, new Minamata Convention.
- iii. Vietnam is helping Lao People’s Democratic Republic in helping legislation for controlling chemicals, particularly mercury, arsenic.
- iv. Has focus on GHS-implementation and classification of chemicals, GHS was adopted in 2002.
- v. No discussion with FAO yet on pesticide management.
- vi. Rise in cost of production of pesticides.
- vii. 80% farmers are using imported pesticides.
- viii. No cooperation for classification from PPD.
- ix. Ministry of Industry and Trade responsible for GHS.
- x. Under Rotterdam Convention MARD is DNA for pesticides and Chemicals Agency of MIMT is DNA for industrial chemicals.
- xi. MARD and MoH responsible for 16 industrial chemicals (water dam).
- xii. MIMT represented on scientific committee.
- xiii. 40 staff in MIMT located only in Hanoi.

- xiv. M&IT manages industrial chemical database.
- xv. Comparable with European Chemical Agency.
- xvi. JICA supports design and maintenance of chemical database.
- xvii. Approximately 32000 chemical formulations are used, Committee governing formulation includes PPD, MARD, MOH, MOE. Now Vietnam has a draft decree to manage OPS pesticides. Office of Customs may have a list of import and export of chemicals but it is not separate for pesticides.

### **Role of NGOs in the project**

- i. ICERD: Established in 2012 by KEMI funded project with TFA.
- ii. Implements eco-agri projects.
- iii. Also worked with military for community development.
- iv. KEMI important not only for farmers but for markets, safe production and quality rice in particular.
- v. Collective marketing through private sector.
- vi. Supply seed, fertilizer and other equipment for harvesting at subsidized rates.
- vii. Developed trademark "Safe Rice"; in village market 10% price increase for 'safe rice'.
- viii. FSS made a difference in women's role.
- ix. Women form clubs and take up program for poverty reduction life rice-fish, rice-prawn, rice-ducks.
- x. Women are spending more money and speak out.
- xi. They have strong voice with local authorities.
- xii. PSA: Urban Development and Agricultural project.
- xiii. Good payment for alternative to industrial jobs.
- xiv. SRI for landless.
- xv. There are hardly any landless – more land is uncultivated.

### **Role of FAO according to FAOR**

- i. CPF for 2016 to 2022 – did not reopen because MARD accepts all the major areas; Included 5 new priority areas; The areas – organic food, biopesticides, plastic disposal, small plot farming, agro tourism, accessing global markets.
- ii. FAO got 3 TCPs to address these 5 areas; A new GEF project is under formulation which includes pesticide risk reduction.
- iii. No budget for FFS.

### **Role of PPSD; Vu Cong Chinh (Director PPSD) Hung Yen**

- i. Large province intensive rice cultivation.
- ii. Significant out migration.
- iii. 10 contract farming companies are taking over land; Contract farming companies pay higher salaries to technical officers, as a result, Govt offices not able to retain quality.
- iv. In general Interest in agriculture is reducing.
- v. Companies are promoting safe produce not organic necessarily.
- vi. PPSD does management role but is seldom approached by the companies, they do not support PPSD farmer trainings; Scope to improve cooperation between companies and PPSD.
- vii. There is conflict between staff – as company staff gets paid more, has more facilities and more authority which govt staff depends on others.

- viii. Role of Plant Production Div; Interview of Nguyen Van Viet, Head and Nguyen Thi Ngoc Ha, Deputy Head of Plant Protection Division.
- ix. Focus on sticky rice variety.
- x. Japanese rice cultivation techniques.
- xi. Make local govt pay attention.
- xii. Agro-tourism considering but not yet started.
- xiii. ITMS changed over the years.
- xiv. 600.000 kg of pesticides used in 2 seasons.
- xv. Bureau of Industry Export has intentions of exporting niche varieties but low produce (40-30% less than new varieties).
- xvi. Demand is there but low production.
- xvii. Some cases of poisoning, 2 cases in the last three years in the district Hungyen.
- xviii. Pesticide residue is not tested for.
- xix. There are some private labs for testing but the costs are very high (23 million Vietnamese Dong per test).
- xx. In project area 1-2 sprays only less than the standard 3-5 sprays per season.
- xxi. Increasing yield 10-15%.
- xxii. Decreasing density of plants by 30%.
- xxiii. Less pesticide use – in last 2 years pesticide reduction.
- xxiv. Wants to do IPM training but changes are required in season long training content (now 16-17 weeks).
- xxv. Labour force is scarce, leading to Increase in herbicides. Need appropriate technology weeding.
- xxvi. Support facility to encourage the use of EM solutions, Trichoderma and other microbial agents.
- xxvii. 17 weeks of training conducted – very effective – 70% participants follow bio-pesticides.
- xxviii. But it is too long for most people to attend, farmers not enrolling.
- xxix. Will plan a one-week intensive course, it is under design.

**Meeting with a Farmers' Cooperative; Mr Dung, Chairman of Cooperative, Nan Thang Dan Agriculture Service Cooperative in Dan Xuan, in Nan Thang district**

- i. 1443 members, covers 364 ha land, 1 member per family, 3 cooperatives in this commune.
- ii. Started during war, in 2013 reorganized under the Cooperative Law.
- iii. 70-80% IPM practitioners, 100% farmers experienced improved production quality.
- iv. Majority are home consumption.
- v. it is a model cooperative; Other cooperatives are learning from, Has won many awards.
- vi. In 2017 winter, epidemic of (Black Stripe Draught) the disease caused mortality in all the neighbourhood village but none of the members lost crop.
- vii. Considered as good example.
- viii. Run an agri service shop which is used by non-members as well.
- ix. Farmers get 5% higher price from companies.
- x. For farmers it is convenient to sale at farm gate.
- xi. Assets of the cooperative, Office building, 12 flour mills, 14 harvesting machines – 40-50 tonnes can be harvested per day, 5 tillers.
- xii. Future plans of the cooperative.
- xiii. 100 compliance with all legal requirements.
- xiv. Adopt latest / advanced technologies.
- xv. Provide services to members.



- xvi. Reduce cost of production.
- xvii. Produce more crops.
- xviii. Women farmers Va Thun Dan – who had attended FFS and Va Thun Maugyt had not attended FFS.
- xix. Joint IPM FFS due to demo seen.
- xx. Reduce expenses; Earlier sprayed randomly, now know How much to spray.
- xxi. With SRI experience change in seed and fertilizer requirement.
- xxii. SRI needs right amount of spray.
- xxiii. Visit to pesticide dealer, see appendix documentary of pesticide shops visited.
- xxiv. Whether the project targets achieved?
- xxv. Partially, as the target was reaching 80 to 90% farmers, too ambitious.
- xxvi. Trained 1735 workers, but all don't work as Master trainers.

### **Role of the Ministry of Agriculture and Rural Development, Department of Crop Production**

- i. His Department is not aware of the project, linkages to the pesticide regulatory office of PPD do not exist, this is PPD responsibility, and therefore only certain comments could be made.
- ii. Awareness of IPM in Vietnam exist but not more information.
- iii. Agricultural contribution to Vietnam's GDP has grown, over the last five years it contributes to 50 % of GDP.
- iv. 3.7 million Hectares under rice production leading 43 mio t of rice, 3.6 billion US \$ export earnings.
- v. Food hygiene and food safety are today's priorities.
- vi. 900.000 Ha used for vegetable production.
- vii. Linkages of cooperatives with enterprises encouraged.
- viii. Structural changes at provincial level taking place, merging of Crop Production Centers with PPSD, completed in 57 provinces, 6 still outstanding.
- ix. Awareness of idle land, however this comes under the management of the local government.
- x. Cooperation with WB and JICA.
- xi. CPD said "no comments" on whether pesticide use has increased.
- xii. DCP is responsible for protocols on "safe production".
- xiii. At ground level working with PPSD was cumbersome, PPSD and CPD were separate; in 2014 PPSD and CPD are merged as CPPPSD- now 57 CPPPSD and only 6 are PPSDs; it is better now.

### **Issues/challenges**

- i. Land area per household very small, limits progress.
- ii. Climate change has shown already negative impacts (flooding).
- iii. Building new cooperatives.
- iv. Regional trade agreements although there is competition with neighboring countries.
- v. MARD and MoH do not have penal clauses for varying levels of residues.
- vi. There is market demand, need to fulfil both quantity and quality and ensure food security.
- vii. Therefore policy is not to reduce area under rice.
- viii. Small holders need linkages - farmers cooperatives are expected to provide these linkages; earlier the cooperatives were more vibrant but not now.
- ix. Vietnam sometimes fails to comply with MRLs, hence export is limited.

- x. private sector cooperation is limited; private sector investment is reducing for agriculture sector within that it is lowest for crops; somewhat better for aqua-culture and livestock, for example from the World Bank and SNV.
- xi. Whatever private sector invests in agriculture, it does not do so through DCP, but directly with local authority.
- xii. Recco to FAO.
- xiii. Urgent need ToTs for the 25 provinces as the master trainers are getting old and retiring or taken up by others.
- xiv. Support to upgrade bio-laboratories, so that rearing of natural enemies and helpful natural organisms is facilitated – so that IPM increases.

## **LAO PEOPLE'S DEMOCRATIC REPUBLIC**

### **Salient Features of the Project / project design according to the National Project Coordinator**

- i. FAO country office is not the budget holder.
- ii. In long term projects, maintaining continuity with changes in FAOR is challenging.
- iii. The project has regional coverage and focus, need country specific focus; wide inter country differences.

### **Challenges to PRR**

- i. Other challenges to PRR: agro sector in Lao People's Democratic Republic is not advanced; though there is surplus production now, productivity is not increasing and is less than neighbouring countries; land holding is low; more land needs to be freed up; cost of rice production is higher than in neighbouring countries, land leasing, land degradation, pesticide abuse, at least one person died last year due to pesticide abuse, has been reported by BBC and Al Jazeera.
- ii. Pocket and stomach are the drivers of farmer's decision making.
- iii. Average farm size is about 1 ha.
- iv. Contract farming is growing, 5% of land is already leased out.
- v. Only a small % of containers are disposed properly.
- vi. Number of farmers covered by FFS is still limited.
- vii. Coordination between MoA and Land use - in fact collaboration across ministries is challenging, including health and environment, coordination and therefore attendance is poor.
- viii. Master trainers are occupied only for 20% time.
- ix. Smuggling of illegal pesticides continue, avoiding official check points, paraquat often found - it comes from Thailand, Vietnam and China borders, at least 90 tons of banned pesticides are still to be disposed of.
- x. Pesticide registration is pending of Regulatory Division of DoA.
- xi. No functional Private Sector Association or their involvement.
- xii. Only 10% labelling in Lao-language, the rest is in Thai and Vietnamese, even Chinese languages.
- xiii. Pesticide residue test only for two chemicals.
- xiv. Public health has a bureau on water quality.

### **FAO complementarity**

- i. FAO has been working with Govt for Green Agri Strategy and annual action plans; it was in line with the project.

- ii. MOA is very happy with the project, feels like one team with FAO, would like to continue.
- iii. New GEF will continue part of the project mandate; \$ 4.7 Million budget.
- iv. Complimentary projects; SAMIS, Om Soil Mapping, CAWA.
- v. FAO's delivery mode FFS has been effective.
- vi. Scope for PRR integration increased due to rice fish, different rice varieties that require low inputs, recurring droughts and floods - climate change, aquaculture.
- vii. PPC finds FAO partnership valuable, due to its long standing relationship, hand holding, technical guidance, helping develop legal frameworks - developed many legislations.
- viii. Green agro - new policy and accessing organized markets are helping.
- ix. Agricultural census is foreseen for 2020.
- x. Instant troubleshooting support, example March meeting in Bangkok on FAW attack and control.
- xi. FAO helped preparing Report of Pesticide Use.
- xii. FAO co-chairs Agro Sector Council.

### **Significant achievements**

- i. Prime Minister's Pesticide Decree - significant achievement; FAO helped in its drafting and launching in 2012, and printed 1000 copies.
- ii. FFS could reach a large number of farmers, support for ToT invaluable, awareness about chemical hazards are helping farmers decide for themselves, farmers knowledge of banned pesticides and application of IPM has increased.
- iii. Use of biopesticides , Microbial solutions has increased; almost all the FFS graduates are practicing IPM; all of them report increase in income.
- iv. ToTs include Climate change topic.
- v. About 10 staff members attended Pesticide Tool Kit training in China, Vietnam and Thailand.
- vi. MOA decided to test residues in water, soil and produce.
- vii. DOA is keeping farm registers; farmers using overdoses are given advice; farmers get Green produce certification.
- viii. Formation of a Committee on Food Law.
- ix. Quality control has improved.
- x. Empty container disposal guidelines are issued, disposal in farmland.
- xi. Many master trainers are absorbed by other initiatives Rice fish experimentation, JICA projects, they are in demand as they are good in extension work and have knowledge and skills, they use IPM sincerely and extensively; master trainers are very effective in controlling pest outbreaks; recent outbreak in Savanakheth was well managed; they alert farmers when illegal pesticides are noticed.
- xii. Herbicide was given free on drum seeders machine but farmers rejected it.
- xiii. Some villages have started their own check points to control illegal pesticides.
- xiv. Organic produce have 10 to 15% more market price ; while oranges are 5000 KIP per Kg,, the organic oranges are to 15000 Kip / Kg; Rice is 2500 to 3000 KIP and Organic rice 6000 Kip; market price is 3 times more for organic veggies,
- xv. In the two provinces were SAEDA works almost all the farmers use pesticides. In Lao People's Democratic Republic it is mostly women who are in Agriculture.
- xvi. Min of Health has more concerns about food safety, food poisoning occurring often.

### **Role of PPC**

- i. 42 staff + interns - all focus on IPM.

- ii. 200 metre trainers trained, in some provinces FFS will continue to be conducted in 2019; annual ToT / mater trainer plans are made.
- iii. Educating farmers is the best strategy.
- iv. Without support from FAO, PPC would have not come so far in Lao People's Democratic Republic as of today, it is the recognized institute for technology transfer, for connecting people etc.
- v. Thanks to support from ADB, laboratory infrastructure (equipment) for residue and quality has improved, however limited (low) trained staff and financial resources restrict the use of such infrastructure.
- vi. Guidelines on disposal have been produced, to bury in soil on farmland is the main recommendation, however some alternative approaches have been promoted, to send empty container back to Thailand.

### **Info on regulatory issues**

- i. Current situation still needs further improvement, e.g. of the Inspection Manual which has to be updated to bring it in line with new legislation.
- ii. Strong need for cooperation with other Ministries, in particular Health and the Environment, a Pesticide Board has to be established which depends on the Policy Department of MoA.
- iii. New legislation under way for plant quarantine and pesticides in order to have a sound basic legislation, not only decree.
- iv. Regulations have to be further developed, i.e. how to implement, regulation of pesticide registration underway.
- v. Task force established for problem solving under inspection manual.
- vi. Toolkit training highly appreciated, checklist adopted for local registration, however follow-up training required, in particular to use toolkit under local conditions, to understand GHS better and to look for a question/answer service, registration elsewhere found to be very helpful.
- vii. No reporting on pesticide sale/use.
- viii. No pesticide association, only 3 companies in Lao People's Democratic Republic, shop sellers import directly, contract farmers (Chinese banana production) bring in their own pesticides.
- ix. Licenses of shops is primary responsibility of Min of Industry and Commerce, pesticide license from DoA is in addition.
- x. Training of inspectors has started for Vientiane District, training of local staff is under PAFO responsibility, not DoA.
- xi. Under Rotterdam Convention survey planned in 3 provinces at PAFO level, together with MoH and Environment.
- xii. Veterinary products under Department of Livestock, acts independently.
- xiii. MoH covers all public health pesticides, operates with import permits, chemicals for disinfection are under DoA, Livestock and MoH.
- xiv. Further work is done on inspection manual, e.g. design of uniform of inspector.
- xv. Future issues: 1. implementation of current legislation with a focus on training, in particular inspectors, 2. intensify work with private sector, associations and cooperatives, 3. disposal of empty containers and 4. Strengthen cooperation with PPC on pesticide quality and residue analysis, alternatives to paraquat and IPM packages.
- xvi. Visit to two shops in Vientiane which were selected by DoA staff, female shop owner in the first shop had just received training and certificate under PAFO, a 1 day training free-of-charge in March 2019, PPE quite expensive, only very simple gloves, masks and boots

available, impression was that more than 50% of pesticides were expired; in the second shop all pesticides expired, only old stocks were being sold, no further imports. Biocontrol-agents could not be found.

### **Role of Agri Extension**

- i. 220 staff including 63 trainers.
- ii. Earlier farmers used Pesticides due to ignorance and market demands, now use is minimized.
- iii. Agri extension strategy is to compete with other countries in quality not quantity, in any case cannot match Thai and China in quantity.
- iv. Promote unique products of Lao People's Democratic Republic rice, tea and coffee.
- v. Top message is reduce use of chemicals; do composting - process bio-mass, make bio pesticides.
- vi. Mixed cropping and farming systems approach - add piggery, poultry, duck, cows / buffaloes to rice fields.
- vii. NAFRI is under Agro Extension.
- viii. For seed production - a separate dept. under FAO funding.
- ix. FFS approach of participatory training is used for extension' 19 agri extension staff are trained in participatory extension techniques.
- x. Farmers Participatory Action Research is helping – experimentation.
- xi. Impact - cost is reduced, production has increased, quality is better, get better market price,
- xii. Government is finding markets for farmers.

### **SRI success**

- i. LAO PEOPLE'S DEMOCRATIC REPUBLIC has been more efficient than Cambodia and Vietnam - in the same climate.
- ii. Use of participatory training has been useful.
- iii. FFS graduates are ahead in experimentation.
- iv. Higher yields and less labour requirements are farmers' attraction; 40 to 70% higher yields, 10 to 25% less cost; labour is at least 30% less.
- v. In the SRI pilot areas farmers new IPM very well.
- vi. SRI continues beyond and without project support.
- vii. Rice fish and rice + veggies are catching up - use of chemicals reduced automatically.

### **Issues to be addressed**

- i. Safe disposal of pesticide containers is an issue.
- ii. Asian guidelines on biopesticides.
- iii. Pesticide registration: registered not on content but trademarks, pesticide use of mosquitoes, cockroaches, rats - but these are not registered.
- iv. Certification of Organic productions - currently farm register has to be kept - but it is not full proof.
- v. Inspections cover only illegal shops and illegal pesticides and banned pesticides, still paraquat is commonly found.

- vi. Chinese contract farming companies; they recommend higher doses of pesticides; govt. is under pressure for controlling this, these farms are found to have higher MRLs; Govt. has asked MoA to ensure GAPs - but more work is needed.
- vii. Illicit sale of pesticides; eg. Wife of Head of AgriExt owns a shop that sales illegal pesticides.

### **Role of NGO: SAEDA**

- i. Established in 2007, registered with Min of Home Affairs as CSO.
- ii. It is still a temporary NGO, not permanent; has staff of 4 men and 4 women.
- iii. Four programs, Sustainable Agriculture, environment and Farmers Organization; formed Farmers Association, as Govt doesn't allow Cooperatives.
- iv. PAN AP Partnership with SAEDA; until 2018 received small grant of \$ 1000 USD only.
- v. Celebrate No Pesticide week.
- vi. Then got involved in IPM Master Trainers' Training.
- vii. Introduced testing kit for awareness, to show pesticide residue; but it is an expensive analysis.
- viii. Had found pesticides levels above expected norms in apples and oranges imported from China.
- ix. Training of shopkeepers, the shops had trade licences but no permission to sale pesticides; they were selling banned items like paraquat.
- x. Recently CCF a French organization has showed interest in supporting pesticide observatory, but achieved that provincial levels.
- xi. Chinese contract farming for Bananas and long beans use pesticide sprays; these contract farmers are actually illegal as they do contract with PAFO for brokerage.
- xii. Container disposal is not done properly ; MoA does not have guidelines on disposal, only on collection; so no clarity on whether to bury or burn ; so made a poster and sent MoE for approval, but no response on it yet, FAO has clear guidelines to follow.

### **Views of bilateral donors; Swiss, Germans and French**

- i. About the project - silo design , different partners doing different things; PAN AP, FAO and TIF when it comes to contract farming all work together, Agri extension, health - but not on PRR.
- ii. Hanoi workshop was useful.
- iii. The World Bank has precedence, sector working groups are influenced by their stance; group meetings get postponed for their convenience.
- iv. ADB smacks climate summit, asking what they were doing in the past.
- v. Green Ext Note being drafted has FAO contribution - a positive development.
- vi. Storage of pesticides is the next agenda, currently 20% is getting lost.
- vii. Looking at the losses rather than increase in production.
- viii. Laws in Lao People's Democratic Republic are more 'aspirational' - indicate what they wish - not what they do.
- ix. PRR in Lao People's Democratic Republic is affected by regulations in neighbouring countries; these countries dump banned stuff in Lao People's Democratic Republic. So for some time Lao People's Democratic Republic will be affected, but when production stops Lao People's Democratic Republic will improve. What happens in Thailand and Vietnam has reflections on Lao People's Democratic Republic.
- x. For influencing policy makers in Lao People's Democratic Republic, have to work with politicians not bureaucrats.
- xi. Lao People's Democratic Republic goes slowly, patience required for transformation, FAO has been working since long on IPM - now it is picking up.

## **Gender Integration**

- i. Women form the majority of the farm workers; their role increasing as young men are migrating to Vientien, Thailand and Vietnam.
- ii. Rice fish helped women accessing food; they grow various vegetables.
- iii. Gender ratio given specific attention both in FFS participants and master trainers.
- iv. Time and venue of trainings are decided only after consulting women participants.
- v. It is seen that all the tribal communities are given due representation in the FFS and ToTs.
- vi. Use of language, training material, pictures are designed considering the interests and abilities of women and tribal.
- vii. Having a woman project coordinator was helpful in continuing relationship with women farmers.
- viii. Award given to a woman as the best farmers of the year - in Bangkok and related publicity material, helped promoting women's role in farming.
- ix. Women continue to attend meetings after FFS.
- x. A new rice variety, literally translated means, "beautiful wife", advised direct sowing, grasses are cut with machines so that the rice grows faster than weeds.

## **Expectation from FAO**

- i. A training module on Climate change is needed.
- ii. More training centers and trainings, particularly ToTs.
- iii. An App for identification of pests and advice on how to use it, as many farmers are now using internet and new content development.
- iv. Need a pesticide manual, and a pesticide inspection tool.
- v. Organic production certification that is acceptable internationally.

## **Myanmar**

### **Salient Features of the project / project design**

- i. Backdrop according to the National Project Coordinator, San San Win and Kwin Kwin Win.
- ii. FAO was requested to give technical and legal assistance for pesticide Law.
- iii. On 20th January 2016 new Law was approved.
- iv. FAO helped in writing procedures and translations.
- v. Now seeking FAO support for Rotterdam Convention ratification.
- vi. At the same time WUR from the Netherlands was also helping Myanmar in capacity building for pesticide management.
- vii. Training of shopkeepers as a prerequisite to licence; validity of licence is three years, retail formulation, and fumigation, up to now 5000 shops certified.
- viii. Formal request for an introductory workshop for the Rotterdam Convention has been made.
- ix. 41 active ingredients (a.i.) have been banned in Myanmar in 2018.
- x. Jan Katelar was the only resource person, there were no others after Harry Van der Wulp.

### **FAO role and complementarity**

- i. AFAO-R finds it a satisfactory project.
- ii. Parliament is giving attention to pesticide, for various reasons, e.g. high prices for products, pesticide residues, use issues, high transport costs in country and disposal (waste), UNDP is coordinating.

- iii. Agriculture Development Strategy includes a number of results areas, including one on IPM, CPF includes output indicator on IPM.
- iv. FAO supported introduction of CODEX MRLs as national mrls.
- v. For technical guidance Myanmar depends on RAP.
- vi. FAO has supported a National Quality Control Lab.
- vii. FAO co-chairs Agri Sector Council.
- viii. Pesticide company would like to collaborate with FAO.
- ix. FAO tool training kit was very useful, use the document checklist; gives information about all the pesticides, have info on other countries, information about international conventions, GHS colour coding bands still unclear,
- x. UN organizations mainly work with Govts but FAO works with all industry, Govt as well with farmers.
- xi. FAO was absent for 6 years from Myanmar, now will have to compensate.
- xii. GEF proposal on climate smart agriculture.

### **Role of PPD: how it changed with the project**

- i. Licencing work improved, it does it for the whole country; has 300 staff in Myanmar.
- ii. PPD does training of regional level PPD staff training as Certified Pesticide Applicator (CPA).
- iii. CPA also required for pesticide shop keepers, retailers, formulators, inspectors.
- iv. PPD issues licences for imports.
- v. DG has assigned inspection team for every district; District Managers do inspections, they issue licences.
- vi. Police takes action for illegal pesticides.
- vii. Quality Control Labs, checks, random sampling, imported pesticide samples are checked; >10% get rejected, in which case licence is cancelled; check 500 to 600 samples per year; but need to do more, ADB is supporting infrastructure with equipment.
- viii. PPD does not have facility of analytical chemistry, have only general chemist in labs; and there are few other labs available.
- ix. PPD convenes meetings of pesticide network, last meeting was in 2018, PPD shares new registration list with hem.
- x. Worked on design of mask, they are not comfortable.

### **Role of Industrial Chemical Association: Win Thien**

- i. MIA has 115 members, involved in industrial chemicals, in particular POPs as Myanmar has ratified the Stockholm Convention.
- ii. Has a project from UNIDO and MoE on POPs; has a National POP Steering Committee, convened by the Ministry of Environment and Forests, it manages the dangerous goods transportation also.
- iii. Did a survey of pollution - found no stocks of DDT, it is banned several years ago; no evidence of DDT use.
- iv. PCB residues as POPs have not been addressed.
- v. Pesticide overdose is likely, need to manage pesticide use.
- vi. Very little awareness of public, to engage Pesticide Importers Association.
- vii. Myanmar Industrial Association formed " Responsible Council" - it carries out awareness generation programs, and companies follow.
- viii. GHS is used since 2011.
- ix. MSDS is developed for over a 1000 chemicals - still many are left.
- x. Golden DAW - a SEZ. Japanese company takes responsibility of disposal of containers and chemicals, hazardous chemicals.



- xi. Incinerators not available yet.
- xii. ISO 18000 certification is coming, it implies life cycle analysis.
- xiii. So far only one company in Myanmar has received ISO 18000 certification.
- xiv. Next year based on consumer law all products will have to be translated in local languages.
- xv. Imports and exports data base maintained but there is no export.
- xvi. Joined ASCSG - Asian Guidelines.
- xvii. Carry out University students training.

### **Significant achievements**

- i. Pesticide Law, FAO writing procedures and English translations.
- ii. Significant changes in Mango - IPM and resulted in export increase.
- iii. Tool Kit has had a very big impact on PPD operations.
- iv. IPM, FFS and GAP training s have taken place; approx. 80 FFS conducted.
- v. FFS could reach a large number of farmers, FFS has changed farmers ; now they decide for themselves, farmers knowledge of banned pesticides and application of IPM has increased ; almost all the FFS graduates are practicing IPM; all of them report increase in income.
- vi. Use of bio pesticides and Microbial solutions is increasing.
- vii. Bio agent imports are increasing.
- viii. Trichoderma is produced by the Agriculture Research Stations.
- ix. Farmers' mind-set is changing, many are going for Organic Production Certification, GAP certification, and farmers are well educated on the hazards of excessive use of chemicals.
- x. Markets are gradually offering premium prices, particularly on fruit and vegetable exports.
- xi. Educated farmers see - pesticide as expensive input, biological control is not only cheap but has long term impact according to them.
- xii. Asian GAP guidelines are followed by some , certification obtained; Asean has 15-20 crops for certification Mangoes are being imported by EU regulation - and getting passed.
- xiii. Myanmar govt does not charge any fees for GAP certification, making it accessible for all.
- xiv. Technical standards of GIZ are also introduced.
- xv. ISO 172005 certification for fish.
- xvi. Production standards are developed for 7 crops.
- xvii. Customers demand for organic produce in increasing, farmers can get upto three times more market rate.
- xviii. GIZ is using IPM / PRR approach; supported visits to China and Thailand.
- xix. Organic mango and Soybean fetching good price and therefore interest.
- xx. For 30 years government used to give chemical pesticides and fertilizers at subsidized; now only neem is given free as pesticide; private sector has taken over neem cake production.
- xxi. Some farmers reported that they dispose of pesticide 1 meter below ground on their own farms; land filling.
- xxii. Labour shortage is increasing use of herbicides.
- xxiii. Increasing import of biological control agents, about 3 % of pesticides, mainly Trichogramma.

### **Yatsot Township**

#### **GIZ project for Tea plantation**

- i. Mango fruit fly problem, use Beta traps.
- ii. EU supports Maize IPM facility, to promote new farmers take up commercial Maize plantation.
- iii. PPD sends Trichoderma for control of FAW.

- iv. Army worm has returned recently - mechanical management is advised, just uproot plants.

### **What has changed in 5 years?**

- i. Majority Farmers are using GAP standards- at least 50% farmers, and all who have attended IPM orientations, FFSs.
- ii. Pesticide use has reduced by 20%.
- iii. Produce is exported to China and Singapore, which has lowered residue levels.
- iv. workshops conducted on 2016 law, farmers are aware about the Law
- v. Inspector training is regular; twice a year.
- vi. There are 25 shops around Tasot, approx. 17 staff - oversee it regularly.
- vii. >10,000 farmers attended IPM training, IPM training includes all crops.
- viii. 6 FFS in the area focus on rice, soybeans, maize and mangos.
- ix. FFS vs IPM training.
- x. FFS is season long - IPM is shorter duration, depending on the participant size from 1 to 3 days. FFS is based on participant observations, problem solving approach, IPM is more about information sharing.
- xi. Farmer's problems / Challenges to PRR.
- xii. Top soil is getting damaged, soil erosion is the real problem.
- xiii. Availability of seeds of good cereals, vegetables needs to increase; the diversity is shrinking.
- xiv. Tree cutting for fuel - has reduced biomass availability - more erosion in mountain erosion.
- xv. Land Use Dept of DoA is handling fertilizers and PPD pesticides, need collaboration.
- xvi. Private certification agencies are expensive, govt ones are slow.
- xvii. High cost of biopesticides.
- xviii. Government has no budget for awareness.
- xix. All families have at least one acre, so there are hardly any landless; but some have 100 - 200 acres, if they use chemicals, it affects the neighboring farmers. And most big farmers do commercial farming, involving chemical use.
- xx. Private agencies are coming for GAP certification at high cost, they need uniformity.

### **Role of Farmers Associations; Mango farmers Association**

- i. Purpose is maintaining quality and quantity of production, giving technical inputs and land development.
- ii. Spreading knowledge of GAPs, laws, residue levels, banned pesticides , markets etc.
- iii. Got inputs from GIZ on seed varieties and how to deal with varieties.
- iv. IPM training is now given by farmers, and it is effective; mealybugs are found and destroyed efficiently; pesticide use has reduced by 20 to 40%, one reason is high cost of pesticides.
- v. And still pesticide shops are increasing, that is because the users are now more specific in spraying and not random.
- vi. Plastic sheets are used for mulching.
- vii. Disposal of containers is done on farms, 1 meter below ground.
- viii. Farm profitability is the real problem today, expenses are increasing not sale price.

### **Info from Myanmar Pesticide Association**

- i. National association has about 100 members, AWBA is biggest company and covers nearly 90% of the market, mainly importers and retailers are member.
- ii. Pesticide market is growing, currently around 300 mio US \$ per year, mostly herbicides.

- iii. Nearly 40 % is illegal business.
- iv. Strong collaboration with government, certified pesticide applicator manage shops, guidance provide how to display and how to manage stocks.
- v. After registration the company still has to apply for an import permit.
- vi. Company provides training on IPM and crop management.
- vii. Majority of products come from China and Thailand, but also India and Malaysia.
- viii. AWBA has a formulation laboratory as it also formulates pesticides.
- ix. Often pesticides label maintain foreign language, together with Burmese letters as it "works better".
- x. Disposal of empty container remain an issue, would be prepared to change, if incineration/recycling facilities exist, currently burial is recommended.
- xi. Hidden a.i.s in products mainly from China create problems as such products have a better effect due to the non-declared a.i.
- xii. Biopesticides are mainly B.t. and Trichogramma.

### **Summary of pesticide shops visited**

- i. Two shops were visited, one in Yangon, belonging to a company which is a member of the national Pesticide Association, the other shop was in the vicinity of Yasut, randomly selected.
- ii. Both shops were certified, the one in Yangon huge and impressively organised offering everything, see also App. 5, , including Neem and other biological agents, all products had Burmese language, PPE was given normally for free, information booklets on shelves and well displayed, staff was very knowledgeable, sanitary installations available as well.
- iii. The shop near Yasot was small, also managed under license, with organised display and info-material, clean and well managed,, shop keeper could respond to technical questions and understood IPM concept.

### **Issues to be addressed**

- i. Increase in pesticide use.
- ii. Investment is increasing.
- iii. Companies are providing opportunities.
- iv. Empty containers are disposed in nearby water sources, rivers and lakes; need collaboration for container disposal; no incineration available; guidelines on manufacturer responsibility, take back containers these companies have to support.
- v. Controlling import and use of banned pesticides is challenging; one banned pesticide is found it has no owner. How to fine / punish perpetrators? It becomes the responsibility of the government to dispose of' the chemical.
- vi. High cost of pesticide compared to other countries, it is a concern of farmers.
- vii. Dangerous Good Transport protocol (MSDS).
- viii. Commercial and cash crops are GAP certified not others, particularly the ones for home consumption.
- ix. Cheap imports of pesticides from the neighbouring countries.
- x. How to compete with China and Thailand and India?
- xi. Soil erosion, land degradation, low Ph.

### **Gender Integration**

- i. Womens' mobility is limited, they don't go to banks, do not operate bank accounts; too much documentation required; literacy is their but not confident of completing

- documentation independently. Need someone to accompany; men are mobile with motorbikes etc. and tend to attend the banking and money matters.
- ii. Land titles are in the name of men, unless women receive through succession or gift.
  - iii. Women often handle finance though - we could observe this in many settings, hotels, farms and shops.
  - iv. Children and household chores take a lot of time, so most families stay on the farm; which gives women better handle over farm operation; while men go to cities in search of jobs.
  - v. Impact of chemicals on women's health - are discussed in the FFS and union meetings.

### **Expectation from FAO**

- i. Country needs a lot of capacity building support; extension messages required for farmers on use and disposal of pesticides, govt staff also needs capacity building support.
- ii. A training in labelling- urgently required.
- iii. Certified Pesticide Applicator (CPA) required for pesticide shop keepers, retailers, formulators, inspectors.
- iv. How to use support under Stockholm Convention for proper disposal.
- v. Order of priority for support: GHS implementation, waste disposal protocol, FAW control.
- vi. New technologies for farming, farm implements.
- vii. Directors Priorities for support.
- viii. IPM.
- ix. Disposal management.
- x. Food safety testing.
- xi. Expert PAL.
- xii. FAW control.
- xiii. FAO promise in Bangkok meeting in March 2019.
- xiv. Phenomene traps for FAW.
- xv. Tablets or smartphones for vigilance.
- xvi. Training on work and knowledge sharing.
- xvii. Biocontrol for out-brake and prevention.

## Appendix 4. Pesticide shops visited during the evaluation

1. General lay out of a pesticide shop in Nam Dinh, Viet-nam, all products are staggered in boxes; no system according to toxicity or uses, e.g. herbicides separate from insecticides, all were stocked together. Only simple protective gears are available such as gloves and masks for which the farmer has to pay for. The shop owner could not explain different toxicity grades, warfarin and a bio-pesticide have the same GHS toxic-city colour bend. The shop owner has been trained last year. A good PRR measure is the small package size, i.e. one sachet per knapsack sprayer. This avoids mixing/diluting and the storage of used pesticide containers.



Source: Evaluation team

2. The active ingredient fipronil has been banned in Vietnam beginning of 2019. The shop owner was aware of the ban, however he could not explain the reason why. Fiprogen is offered together with other insecticides in a similar box, it is not marked specifically. Certain GHS symbols like "exploding heart" could not be found on any pesticide in the shop. Advice of the shop owner regarding disposal of empty containers was to bury them into the soil. The shop had been selected by the staff of the Plant Protection Sub-Division in Nam Dinh.



Source: Evaluation team

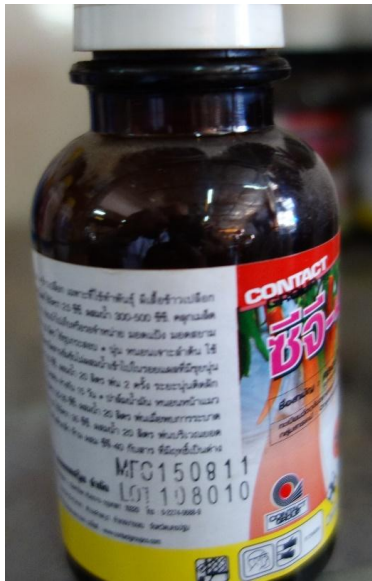
3. A photo of the general lay out of a licensed pesticide dealer in Vientiane, Lao People's Democratic Republic, the pesticides offered are staggered around in the shop. Staff of the Regulatory Division of the DoA selected the shop.



*Photo: Pesticide shop in Vientiane, Lao People's Democratic Republic.*

*Source: Evaluation team*

4. An expired insecticide with Thai language in a glass bottle, the "so-called" worst case scenario, was found. Date of manufacture is 15-08-11, i.e. it is nearly 8 years old. A maximum of two years is normally permitted. Glass bottles should be avoided as glass poses an additional risk, it breaks easily e.g. during transport. No Lao-language could be found on the label nor a registration number of the Lao People's Democratic Republic authority. The majority of pesticides offered for sale were in Thai language and a substantial number of them were expired. Also Paraquat, a banned herbicide in Lao People's Democratic Republic, was offered. Only simple PPE was offered for sale, such as gloves, boots and simple masks. Disposal recommendation for an empty container was to be buried. The license of the local authority for the shop owner was on display, training on pesticides had been received in 2019.



Source: Evaluation team

5. General lay out of a licensed pesticide shop in Yangon, Myanmar, products are systematically stored according to their grouping herbicides, fungicides and insecticides. Also biological products were on sale such as neem. The shop was very clean and well organized. The license obtained from PPD was on display. It was selected by staff from PPD Yangon.



Source: Evaluation team

6. Below, all pesticides were labelled in Burmese language. Toxicity classification followed WHO system with a comprehensive use of pictograms. The label states manufacturing date and expiry date. It can be seen as an example of good labelling practice.



Photo: Example of good labelling practice in Myanmar  
Source: Evaluation team



Photo: PPE offered at the same pesticide shop in Yangon, Myanmar  
Source: Evaluation team

7. The shop offered a wide range of PPE which is sold together with the pesticide. The staff at the shop were quite knowledgeable, a trained pesticide applicator was employed, see below.





Photo: Identity of trained applicator in Yangon, Myanmar  
Source: Evaluation team

## Appendix 5: Newspaper article from Vientiane, Lao People's Democratic Republic, about rural waste in Vietnam

Vientiane Times

Saturday March 30, 2019 | 5

# Rural waste is a growing problem in Vietnam

Environment & Development



Discarded waste along a coastal road on Hon Son Island, Lai Son Commune, Kien Hai District in the southern province of Kien Giang. --Photo Vietnam News

urban areas, environmental service firms receive funding from the State budget.

"Most of the waste from rural areas is dumped or burnt," Ngoan said.

Ngoan said waste from rural areas would increase in quantity and variety, and that items that cannot decompose like plastic waste "would create bigger pressure on the environment"

Vietnam has developed a legal framework and improved policies to tackle rural waste. However, even the government's management bodies are still confused over their roles and responsibilities in handling the issues.

Five ministries - Construction, Industry and Trade, Health, Agriculture and Rural Development and Natural Resources and Environment - and their branches in localities are responsible for managing solid waste.

The Ministry of Natural Resources and Environment is in charge of every environmental issue. The Ministry of Construction is in charge of solid waste issues, but the solid waste that is generated by agricultural activities is overseen by the Ministry of Agriculture and Rural Development.

Hazardous solid waste, including any generated through agricultural activities or in trade villages, is overseen by the environment ministry.

The agriculture ministry manages the use, collection and storage of chemical pesticides but the environment ministry handles violations related to pesticides because they are classified as hazardous waste. The departments of agriculture in cities and provinces are assigned to handle environmental protection activities in agriculture and rural areas, but almost none of the departments nationwide have staff specialising in environmental management.

Source: Vientiane Times (Lao People's Democratic Republic), dated 30 March 2019,

Article describes the complicated administration in Vietnam to address rural waste, including empty pesticide containers with the consequence that "Rural waste is a growing problem in Vietnam".

## Appendix 6: Evaluation team's observations of management response to MTR: GCP/RAS/229/SWE

Conclusions by MTR team	Comments from programme partners	ET observation regarding FAO
<b>5.1.1 Results</b>		
The conclusion is that the Programme has produced more, and better outputs compared to the targets set in the results framework in the Programme document.	All partners agree.	Same conclusion.
The budget cuts that were feared from changes in exchange rates and lower budget for Swedish development aid did not materialise.	All partners agree.	We did not look at this aspect.
The present LFA and monitoring system have deficiencies in that there is not an underlying agreed theory of change. The monitoring and reporting are biased towards activity and output reporting rather than towards outcomes and impact.	Partners partially agree. An analysis of change was made and provided in the Phase II project document and reporting is based on the LFA in order to quantify outcomes to support our analysis. Partners agree that it would be good to discuss and formulate a clear and agreed theory of change and to put more emphasis on reporting of outcomes and impact. This should be part of the development of a future project proposal.	We agree with MTR conclusion; also the reporting and workplan (LFA) provides more quantitative figures the reporting is primarily based on activities and outputs.
A change in the results framework is warranted. The SIDA helpdesk has provided a number of suggestions to improve the results framework, and in this MTR ideas about a new theory of change and a more outcome-oriented results framework are also offered.	All partners agree. No big changes will be made during the present programme phase. Review of the results framework will be an important part of the development of a future project proposal.	Joint work-plan 2017 provides some answers, relevant for new phase.
However, the MTR Team considers it unwise to make a major overhaul of the present joint LFA for the Programme at this time. The reason is that the remaining time for the present Programme phase is only about 1.5 years. In its assessment of the proposal for the present phase, SIDA already indicated that it is likely that there will be a continuation of the programme. SIDA generally requires about six months for its decision process. This leaves only a year for preparation of a new proposal, if there is to be no gap in the Programme.	All partners agree.	Agreed, however currently the new proposal does not include pesticides.
Therefore, instead of reworking the present LFA, and including new and emerging issues, the conclusion is that it would be better that the Programme and specifically, Keml focus on a thorough preparation of a new proposal. This proposal could include the		Agreed. We can emphasize this for the issues we observed and suggest keeping some scope for

Conclusions by MTR team	Comments from programme partners	ET observation regarding FAO
changes recommended in this MTR report, and ideas from the helpdesk report.		accommodating newer issues for the future.
5.1.2 Awareness and capacity building on IPM and PRR		
<p>The economic situation for farmers has on average not changed much by replacing pesticides with manual labour and biological agents. It is important to stress that replacing pesticides does not necessarily mean more use of labour. Labour is quickly moving out of contemporary agriculture and there is therefore a need to work on labour-saving alternatives. Partner activity in all countries addresses the economic issue to a limited extent, but they recognise its importance. More could be designed into country strategies in a future Programme to help farmers increase their income by linking them to markets for safe food.</p>	<p>Partners partially agree.            FAO: There is in fact, within context of the IPM supported work, good field-based evidence that project supported capacity building interventions have resulted into cost-savings and higher net return for farmers. Some case studies are available –and in fact shared with the MTR team-but agreed that more visibility through case study development could be a useful endeavour during the remaining years of this Programme phase.            TFA: Linking to markets has been done in Vietnam but more could be done.            PAN AP: Various studies and cases have documented increase in income among organic farmers. Perspective of long-term sustainability should include first and foremost food security, well-being and not just linking farmers to markets (see documentation: “Replacing Chemicals with Biology. Replacing Highly Hazardous Pesticides with Agroecology Conclusions by MTR team Comments from programme partners <a href="http://www.panap.net/sites/default/files/PhasingOut-HHPs-with-Agroecology.pdf">http://www.panap.net/sites/default/files/PhasingOut-HHPs-with-Agroecology.pdf</a> ).</p>	<p>FAO paid more attention to the issues of marketing in the last phase and not so much on observing labour saving and would be relevant in a future phase.</p>
5.1.3 Regulatory framework and chemical management institutions		
<p>The Programme's work with agriculture chemical management legislation, regulatory frameworks and inspection systems has moderately been successful. The fact that large-scale farmers who use significant quantities of pesticides, are becoming a larger component of the agricultural sector in countries in the region, warrants that the Programme focus more attention to the use of pesticides by this group.</p>	<p>Partners partially agree. This is something that could be explored and possibly included in a future project. Not easy to implement with governments having limited access to and control over private sector operations, often negotiated without transparency and influence from the public. It is still relevant to engage with small-scale farmers to create sustainable communities and contribute to poverty reduction and improved livelihoods of farmers.</p>	<p>In Myanmar we saw larger farmers; in other countries we visited the average national land holding which is very low. We agree that including large farmers is important.</p>
<p>More support is needed to continue the process of institution building for a spectrum of government institutions having</p>	<p>All partners agree.</p>	<p>Agreed.</p>

Conclusions by MTR team	Comments from programme partners	ET observation regarding FAO
responsibilities pertaining to the management of non-agricultural chemicals, such as implementation of regulations, registration, border inspection and import control, worker safety, food safety control, waste and data management. Also the government services for IPM need further support.		
A major conclusion from this MTR is that there is no coherent country and institution building focus in the Programme, for example in the form of country-specific strategic and annual plans for institution building in the CLM countries, including measures for communication to and engagement with policymakers.	Partners partially agree. The FAO work support institution building at various levels, including at national and local community levels, and engages at regular intervals with senior policy makers, as part of direct project supported interventions through workshops, conferences, farmer field days and/or through regular contact between the FAO Representative and respective Ministers and Department Directors in each and every FAO member state. Partners agree that the collaboration between all local partners within a country could be improved. The 2017 annual workplan will mentioned concrete action to facilitate this process.	More collaboration is required and possible, a broad stakeholder analysis is necessary.
<b>5.1.4 Efficiency</b>		
Better coordination and joint planning of country activities could probably further improve gains in cost efficiency.	All partners agree.	Very much required, however no changes made to the project design after MTR, would require a change of project design.
The general impression from interviewing a number of involved people in the regional workshop is that the partner organisations make efforts to save costs for the Programme budget to allow for the implementation of all envisaged programme activities, and more.	All partners agree.	This is always a tendency of FAO programs and it has certain merits.
<b>5.1.5 Relevance, flexibility and project design, risks</b>		
The Programme is deemed by the MTR to be relevant both in relation to the needs and priorities in the region and the participating countries and from the donor perspective.	All partners agree.	We did not look at this aspect
The design allows for important work in relevant areas, and the Programme has shown flexibility in adapting to changed circumstances and gives continued attention to risk management. But the present design, with four independent partners with specific agendas and fixed budgets, has not been wholly suitable for coordination at the national and local levels.	All partners agree. Better coordination among partners at national level is required for better synergies of partner interventions. Regional partners can/should also be more pro-active in facilitating this process of better national coordination and joint planning. This responsibility should be assigned to one or more partners.	We agree with MTR conclusion', we did not observe any specific co-ordination efforts after the MTR.

Conclusions by MTR team	Comments from programme partners	ET observation regarding FAO
<p>The major focus of the Programme has been on pesticide risk reduction in smallholder agriculture and on agro-ecology. There are still many important pesticide problems to solve in this domain in the region.</p>	<p>All partners agree. And not surprising given substantial private sector investments and action in marketing pesticides among smallholder.</p>	<p>Agreed.</p>
<p>The issue of pesticide use by large-scale farmers is not specifically addressed by the Programme, even though they are in theory subject to the same regulatory control. In practice they may have certain immunities not available to smaller players. And the development of new areas such as private sector collaboration, consumer and industrial chemicals and other emerging issues, even though envisaged by the Programme, have not received the attention they require to make significant advances in reducing the level of toxic chemical exposure.</p>	<p>Partners partially agree. See related comment above (5.1.3). All partners agree that consumer and industrial chemicals should receive more attention in the future.</p>	<p>Exclusion of large-scale farmers did not seem "by design" – just that in SEA, majority are small holders. The limited inclusion of large-scale farms reduces the potential of quantitative reduction of the use of pesticides.</p>
<p><b>5.1.6 Relations with external institutions and regional collaboration</b></p>		
<p>The Programme has made contacts with other major programmes managed by ADB, OXFAM, IFAD and UNEP. There has been close collaboration with IFAD projects on IPM and some with other donor-financed projects.</p>	<p>All partners agree. WB, UNDP could be added to the list.</p>	<p>Agreed.</p>
<p>ASEAN has a working group on chemicals and wastes and Keml has good contacts with this group, which can be the basis for substantial collaboration in the possible new phase.</p>	<p>All partners agree.</p>	<p>Agreed.</p>
<p>The Asia and Pacific Plant Protection Commission (APPPC) has its secretariat in Bangkok provided by FAO, and there has been some concrete collaboration with Keml and the Programme on legislative and regulatory issues. Such cooperation is expected to continue.</p>	<p>Not just on the pesticide regulatory aspects but also in support of IPM capacity building as part of the planning, implementation and reporting of the bi-annual workplans of the APPPC-Standing Committee on IPM.</p>	<p>There are two relevant Standing Committees within the APPPC, one on IPM and the other one on Pesticides. There is a need for follow-up of the APPPC decisions.</p>
<p>The regional collaboration within the Programme has been appreciated by the participants in the six countries. There are large Regional Forums every year, and workshops and partner meetings in-between. Topics have varied according to needs and circumstances in a flexible way. This regional collaboration is mostly at the level of information sharing. There have been a few instances of direct bilateral activities as a result, but more would be useful as part of a strategic plan in a new phase of the Programme.</p>	<p>All partners agree.</p>	<p>Agreed – there is more scope for additional work, e.g. info exchange on regulatory decisions.</p>

Conclusions by MTR team	Comments from programme partners	ET observation regarding FAO
5.1.7 Sustainability		
<p>The progress reports and interviews indicate that communities and farmers are supported in gaining awareness of pesticide related issues and to change their use of pesticides, and that many do it. These may be lasting changes, given the understanding that farmers have gained concerning health issues, even if the economic benefits are not there, but there was no data available to the evaluation team to prove this.</p>	<p>Partners partially agree.            FAO: The FAO 2013/2016 impact assessment reports contain some evidence on the positive impact on applicators health following adherence to good practices for pesticide risk reduction, including a Conclusions by MTR team Comments from programme partners substantial shift to use of less toxic pesticides following participation in IPM and pesticide risk reduction training and regulatory action to ban WHO Class I products.            PAN AP: Case studies were shared with the MTR. More specific documentation is needed.            TFA: Always show example of data where farmers had changed their pesticides handling behaviours such as mixing, spraying, storage and disposal including the reduction of pesticides uses.</p>	<p>ET underlines the importance of a broad study of the economic benefits.</p>
<p>Savings groups and local government funds are used to further sustainability as observed in the MTR country studies.</p>	<p>All partners agree.</p>	<p>Agreed, however outreach is not known.</p>
<p>Curricula in schools are changed to include PRR.</p>	<p>All partners agree.</p>	<p>Yes, in some countries.</p>
<p>More work could be done on value chains, linking farmers to better paying markets, to give profit incentives to farmers to produce safe foods.</p>	<p>All partners agree.</p>	<p>Agreed.</p>
<p>Funding for IPM-type programmes have been forthcoming from provincial and central governments, most in China, Thailand, Vietnam and for IPM in Cambodia.</p>	<p>All partners agree. Some good progress made also in Lao People's Democratic Republic as per investment data in MTR report</p>	<p>We did not look into this subject.</p>
<p>Private companies are a hitherto relatively untapped source of funding.</p>	<p>Partners partially agree. There are of course potential conflicts of interests to be considered before engaging with private sector on joint ventures. Private companies may have vested interests.</p>	<p>We agree with MTR and not with the project partners, the limited inclusion of the pesticide Industry reduced the impact of the project, e.g. on pesticide dealers.</p>
<p>NGOs need continued fundraising for their work.</p>	<p>All partners agree.</p>	<p>Agreed.</p>
<p>At the national level, the Programme support to new laws, regulation and control has contributed to sustainable results.</p>	<p>All partners agree.</p>	<p>Agreed.</p>
<p>The regional collaboration in the Programme has given synergy effects. Sustainable continuation of regional exchanges after the Programme funding ends is uncertain.</p>	<p>Partners partially agree. Regional bodies, like APPPC, can take over part of the regional exchange functions now supported by the Programme.</p>	<p>Focus should be linking up with existing regional bodies such as APPPC and ASEAN.</p>

<b>Conclusions by MTR team</b>	<b>Comments from programme partners</b>	<b>ET observation regarding FAO</b>
<b>5.1.8 Communication of results</b>		
The communication of the good results of the Programme are very important as a means for influencing policymakers and the general public on the need for action against hazardous chemicals.	All partners agree.	Work continued.
The lack of coordination at country level in the Programme impedes the flow of information to policymakers. The websites of the four partners do not provide enough evidence from the Programme, and the monitoring and data collection is not geared to give substantial validated experience to be used to influence policymakers.	All partners agree. Better communication strategies and implementation thereof could potentially address this shortcoming. Work to provide monitoring data through PAN AP's CPAM app is on-going and could support this need.	Agreed.
The partners plan to increase the information of Programme results available on their websites, but generally policy makers do not make decisions based on such material. Well-developed and targeted policy briefs are required.	All partners agree. PAN AP and FAO have produced policy briefs but this area needs to be further strengthened.	Agreed, status reports were prepared for 5 countries (except Thailand) which include an executive summary.
<b>5.1.9 Cross-cutting issues</b>		
There are few indicators related to human rights but increased attention is being paid by the partners in their work and reporting.	All partners agree.	Agreed, labour and tribal livelihood was mentioned and attention paid to e.g. in Lao People's Democratic Republic.
Gender equality is the cross-cutting issue that was most developed in the original Programme document, and this has been further developed. The Programme has complemented the original LFA indicators on a number of points, such as including more gender-disaggregated indicators, number of women-led activities, and reduced pesticide risks for women.	All partners agree.	Agreed.
The poverty perspective is implicit in the whole programme but not an explicit objective. The health effects can be induced by the indicator "Decreased use by farmers of hazardous pesticides". The information in reports on farmer incomes (less costs for pesticides, more manual work) is not conclusive and not gender-disaggregated.	Partners partially agree. See comment above (5.1.2).	Need more evidence of both poverty reduction and environmental benefits; e.g. impact on soils, ground water quality could have been monitored.
The Programme has awareness about the danger of corruption and the different ways to prevent corruption such as regular financial reporting, audits, regulatory frameworks, inspections and a participatory approach. It is difficult to report on results of anti-corruption activities but some more reporting could be expected. A	Partners partially agree. Partners have a good understanding of what corruption is, how it manifests itself, what best practice risk mitigation strategies are and these are widely promoted within the context of Programme supported interventions to the extent possible and within the scope of partner influence.	This could be a relevant aspect to study – but often these are entrenched in cultures – hard to separate for pesticide trade alone. We heard about cross-boundary trade, nexus with high government



<b>Conclusions by MTR team</b>	<b>Comments from programme partners</b>	<b>ET observation regarding FAO</b>
clear analysis is lacking of what are the corrupt activities, and by whom, which should be of direct concern to the Programme.		officials..., however a difficult subject to work on.
In conclusion, the work of the Programme on gender equality and human rights is progressing, while focused work related to poverty, corruption, environment and climate resilience is not being actively monitored.	Partners partially agree. Case studies are available – and made available to the MTR- that document impact on most of these cross-cutting issues. Much more can/should be done though to present evidence and communicate results to a wider audience.	Work has progressed well according to our observations in Lao People’s Democratic Republic and Myanmar.
<b>5.1.10 Private sector</b>		
Collaboration with the private sector is a way to increase better management of pesticides, often without using government or donor funds and with good sustainability. There are several cases of such collaboration in the Programme, but more could be done both in the agricultural sector and concerning production of industrial chemicals and their use in consumer products such as food, clothes and toys. At the same time, the large producers of hazardous pesticides are very much a disturbing factor that needs to be constrained by work on laws, regulations and control.	Partners partially agree. See relevant comments above (5.1.3 & 5.1.7). All partners agree that collaboration and dialogue with the private sector should be explored, when relevant and beneficial.	We reiterate the MTR comment.
<b>5.1.11 Risk management</b>		
The risk matrix for the Programme with mitigation measures is updated every year and discussed at each follow up meeting with Sida. The MTR considers the risk management satisfactory.	All partners agree.	Agreed.

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