Food and Agriculture Organization of the United Nations

Terminal evaluation of the project "Pesticide Risk Reduction in Malawi"

Project Evaluation Series
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Abstract

This is the final evaluation of the project "Pesticide Risk Reduction in Malawi" GCP/MLW/052/GFF, and covers the entire project implementation period, from November 2015 to August 2023. It also assesses all project activities under the four components: i) safe disposal of persistent organic pollutants (POPs) and other obsolete pesticides and remediation of heavily contaminated sites; ii) management of empty containers; iii) strengthening of legal and institutional frameworks for pesticide risk management and life cycle management; and iv) promotion of alternatives to POPs and other hazardous chemical pesticides. The evaluation followed a theory of change (TOC) approach and a mixed-methods approach comprising quantitative and qualitative data collection techniques. Both in its design and implementation, the project has demonstrated that pesticide management in Malawi remains a major and priority national issue presenting a crucial need to protect the environment and human health and improve food security. Although technical and organizational solutions exist to ensure the rational management of pesticides and pests, and to prevent the risks and dangers they carry, their implementation remains jeopardized by several factors, including the important one of the insufficiency of capacities at the individual, organizational and supporting enabling environment levels. Implementation of project components has been somewhat challenging as it involved a lot of innovation, required specialized expertise, a conductive policy environment and stakeholder participation and commitment. There was satisfactory progress in achieving the outcomes of Component 3, whereas Components 1 and 4 were moderately unsatisfactory and Component 2 performed the least showing unsatisfactory progress. Consequently, the satisfactory project results achieved on some project components and activities were mitigated by the absence of results or gaps and weaknesses in others, such that achievement of the overall objective and progress towards the impact are moderately unsatisfactory. The FAO Country Office in Malawi must continue to consult and advocate with the government for the establishment of an environment conducive to the rational and sustainable management of pests and pesticides and sustainable intensification of farming systems.

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Box, figures and tables

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Abbreviations

CMS	container management scheme
ESMP	environmental and social management plan
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer Field School
GEF	Global Environment Facility
HHP	highly hazardous pesticide
IPM	integrated pest management
M&E	monitoring and evaluation
NGO	non-governmental organization
PCB	Pesticides Control Board
PMU	Project Management Unit
POP	persistent organic pollutant
PSMS	Pesticides Stock Management System
SDG	Sustainable Development Goal
TOC	theory of change

Map of Malawi

Source: UN Geospatial. 2012. *Map of Malawi*. New York, United States of America. https://www.un.org/geospatial/content/malawi

Executive summary

Introduction

1. This is the final evaluation of the project "Pesticide Risk Reduction in Malawi" GCP/MLW/052/GFF, hereafter referred to as "the project". The evaluation is meant to provide accountability to the donors and partners by assessing the contribution of the Food and Agriculture Organization of the United Nations (FAO) to the project and draw lessons from the implementation processes that could inform decisions by the Global Environment Facility (GEF) and FAO on the formulation and implementation of future or follow-up interventions.

2. The main audience and intended users of this evaluation are the donors (GEF and co-financing partners), FAO, implementers, key project beneficiaries and other parties interested in supporting and/or implementing similar projects.

3. The evaluation covers the entire implementation period of the project, from November 2015 to 31 March 2023. It also assesses all project activities under the four components: i) safe disposal of persistent organic pollutants (POPs) and other obsolete pesticides and remediation of heavily contaminated sites; ii) management of empty containers; iii) strengthening legal and institutional frameworks for pesticide risk management and life cycle management; iv) promotion of alternatives to POPs and other hazardous chemical pesticides implemented at national, district and community levels across the country.

4. The evaluation followed a theory of change (TOC) approach and adhered to the United Nations Evaluation Group (UNEG) Norms and Standards, the Office of Evaluation Manual and methodological guidelines and practices and integrated the GEF criteria and requirements. A mixed-methods approach comprising quantitative and qualitative data collection techniques was used. A gender lens was systematically applied to all evaluation data collection tools and questions.

Main findings

Relevance

Finding 1. The project remains well aligned with government priorities on environmental protection and health. Its relevance continues to increase with the emergence of new crop pests and diseases. However, the design and focus on risks of pesticides to human health could have been broadened beyond occupational health.

Finding 2. The project fully aligns with GEF and FAO strategic priorities as well as the Sustainable Development Goals (SDGs) and international conventions.

Finding 3. The project's relevance is undermined by limited integration of efforts among partners leading to uncoordinated activities especially at local community levels.

Finding 4. The project complements/builds on past interventions on pesticide risk reduction that have been implemented in the country.

Effectiveness

Finding 5. There was satisfactory progress in achieving the outcomes of Component 3, whereas Components 1 and 4 were moderately unsatisfactory and Component 2 performed the least-well – showing unsatisfactory progress.

Finding 6. The safe disposal of obsolete POPs was successfully done but the process is considered very costly and not sustainable in the long run.

Finding 7. Processes of remediating a contaminated site following national and international best practice were initiated but results have not been fully achieved.

Finding 8. Piloting of the container management system was innovative but had mixed results due to institutional, legal and implementation challenges.

Finding 9. The container management scheme (CMS) pilot partly demonstrated good practice in empty container management but fell short of the basic requirements of a sound CMS as it lacked reliable data to guide implementation, a sustainable route for disposal, and excluded smallholder farmers.

Finding 10. The project's capacity building efforts led to increased skills and improvement in reporting under the Rotterdam Convention, updating of pesticide registrar and increasing pesticide registrations. However, the capacity to enforce and monitor the implementation of pesticides regulation is still lacking (partly because capacity building was not continuous and there are skills gaps on interpretation of the law).

Finding 11. The project successfully facilitated the enactment of the Pesticides Act of 2018 and comprehensive pesticides regulations that provide for sound pesticide risk management in Malawi. A notable missed opportunity is the lack of clarity on recycling of triple rinsed empty pesticide containers.

Finding 12. The Pesticides Control Board (PCB) institutional framework has been enhanced by the development of an organizational strategic plan and strong capacity building of staff but enforcing post-registration has been constrained by various resource constraints (e.g. lack of testing equipment, limited staff numbers, lack of a formalized multisectoral information sharing platform).

Finding 13. Integrated pest management (IPM) alternatives have been promoted through the various training implemented by the project but there is no evidence to show that this led to reduction in the use of chemical pesticides and highly hazardous pesticides (HHPs).

Finding 14. The integration of Farmer Field School (FFS) into FAO projects was generally useful in integrating human, technical and financial capacities within FAO but did not necessarily include most stakeholders working in IPM alternatives at farmer levels.

Finding 15. There was significant achievement in terms of building capacity of Extension Officers and farmers in IPM through FFS. There are notable gender differences in capacity strengthening efforts at both trainer and farmer levels and the project had no clear strategy for gender mainstreaming.

Finding 16. A comprehensive National Integrated Pest Management Strategy was developed to guide IPM in Malawi, but it is yet to be endorsed at a policy level.

Finding 17. There have been several awareness raising activities on pesticide risk reduction across the project components, but these have been unsystematic and ad hoc.

Finding 18. The project's contribution to development of capacity in pesticide risk reduction is strong and varied. Capacity building has enhanced knowledge, functional and technical skills at individual and institutional levels. It is unclear whether this translated to a reduction in the use of chemical pesticides and levels of awareness of pesticides risks remain low for the broader stakeholders.

Efficiency

Finding 19. The project has been cost-efficient in terms of resource use but suffered serious delays due to FAO systems and procedures and challenges with mobilizing stakeholders for timely decision-making.

Sustainability

Finding 20. The likelihood of project sustainability among the project components is variable with Component 3 having the highest likelihood of sustainability followed by Component 4. Component 2 has a reasonable likelihood of sustainability while Component 1 remains the most unlikely to be sustained.

Finding 21. The highest risk to project sustainability was considered to be financial since all key components of the project cannot run without adequate funding. Components 1 and 2 were considered to have the highest risk due to the need to use facilitates outside Malawi for the disposal of obsolete pesticides and remediation of excavated materials both of which are high-cost activities.

Finding 22. While the project made efforts to engage key stakeholders at most stages of project implementation, stakeholder engagement remained low with mainly those having vested interests remaining committed to the project.

Finding 23. The project design is technically sound, comprehensive and builds on lessons learned from previous similar projects in Malawi. The design did not provide a clear analysis of the health risks associated with the use of pesticides to allow for active participation of the Ministry of Health.

Finding 24. The results logic (output and outcome statements) is clear and congruent with the overall project objective but the indicators have gaps in their formulation and reporting, which undermines the extent to which results of the project can be assessed.

Finding 25. The monitoring and evaluation (M&E) design was satisfactory in defining overall M&E activities, although an M&E plan with refined indicators, clearly defined roles and responsibilities of partners, tools to guide data collection, reporting and dissemination was not developed.

Finding 26. There were efforts in refining project indicators, sourcing data from partners to guide project implementation, but with serious constraints. The project lacked a solid methodological approach that specifies practical organization and logistics of the M&E activities. Data collection across all indicators was inconsistent and unsystematic and, in some cases, incomplete and could not feed into timely decisions and foster learning during project implementation.

Finding 27. FAO operated within a challenging institutional context where stakeholder participation and commitment was low. Despite this, FAO supervision missions and consistent follow-ups were found to have provided appropriate recommendations that ultimately improved delivery of outputs. With more integration between missions, some implementation challenges around CMS and poor M&E system could have been addressed.

Finding 28. PCB, as lead partner, had varying levels of success in chairing the Project Steering Committee, hosting the Project Management Unit (PMU) and leading in Component 1, and suffered from understaffing challenges. The performance of other partners (government departments, the private sector and non-governmental organizations [NGOs]) was mixed with varying level of achievement in project implementation.

Finding 29. Despite the co-financing agreements signed during project design in 2014, the co-financers did not honour their full commitments. Several attempts by the project to follow-up with co-financers on challenges around poor annual in-kind co-finance contribution reporting did not yield any results.

Finding 30. The design emphasized strong partnerships and stakeholder engagement as key to IPM but this proved to be difficult to achieve during implementation.

Finding 31. The project design placed emphasis on value of knowledge products and information exchange, but lacked a knowledge management approach and a learning agenda.

Finding 32. The project had a gender lens in its design but lacked clear strategies and activities that relate to gender.

Finding 33. The project was deficient in the involvement of minority, disadvantaged, vulnerable groups, people with disabilities and the youth both in its design and implementation.

Conclusions

Conclusion 1. The project – both in its design and implementation – has demonstrated that pesticide management in Malawi remains a major and priority national issue presenting a crucial need to protect the environment, human health, and to improve food security. Although technical and organizational solutions exist to ensure the rational management of pesticides and pests – and to prevent the risks and dangers they carry – their implementation remains jeopardized by several factors, including the important one of insufficient capacities at the individual, organizational and enabling environment levels.

Conclusion 2. Implementation of project components has been somewhat challenging as it involved a lot of innovation, required specialized expertise, and assumptions underestimated the policy environment influence and stakeholder participation and commitment (e.g. smallholder farmers in particular). Consequently, the satisfactory project results achieved on some project components and activities were mitigated by the absence of results or gaps and weaknesses in others, such that achievement of the overall objective and progress towards the impact are moderately unsatisfactory.

Conclusion 3. The project generally managed the resources well under a series of cost-extensions and challenges with delays in implementation of activities; the challenges related to weak commitment (with the risk of non-ownership of results and achievements) and insufficient capacity, etc. However, ensuring sustainability of results has been difficult across all four components.

Conclusion 4. Quality of project implementation and execution was mixed. The project lacked a robust M&E system and failed to adequately contribute to achieving cross-cutting aims with regards to gender and minority groups.

Recommendations

Recommendation 1. The FAO Country Office in Malawi must continue to consult and advocate with the government for the establishment of an environment conducive to the rational and sustainable management of pests and pesticides and sustainable intensification of farming systems.

Recommendation 2. FAO to continue providing technical support towards strengthening the legal frameworks for pesticide risk management and life cycle management.

Recommendation 3. FAO Country Office and other Malawian development partners must support the PCB to develop a long-term vision and strategy for strengthening national capacity in the individual, institutional and policy domains that will function as a roadmap for enforcement of pesticide legislation.

Recommendation 4. For sustainable pesticide management in Malawi, FAO Country Office and other Malawian development partners must support the PCB and partners to establish a data and knowledge management system to enable the monitoring of pesticide use and its effects.

Executive Summary Table 1. GEF evaluation criteria rating table

GEF criteria/sub-criteria	Rating[1]	Summary comments
A. Strategic relevance		
A1. Overall strategic relevance	S	Section 3.1
A1.1. Alignment with GEF and FAO strategic priorities	S	Section 3.1, Finding 2
A1.2. Relevance to national, regional, and global priorities and beneficiary needs	S	Section 3.1, Finding 1
A1.3. Complementarity with existing interventions	S	Section 3.5.1, Finding 4
B. Effectiveness		
B1. Overall assessment of project results	MU	Section 3.2, Finding 5
B1.1 Delivery of project outputs	S	Section 3.2
B1.2 Progress towards outcomes[2] and project objectives	MU	Section 3.2
B1.3 Likelihood of impact	MU	Section 3.2.6
C. Efficiency		
C1. Efficiency[3]	MS	Section 3.3, Finding 19
D. Sustainability of project outcomes		
D1. Overall likelihood of risks to sustainability	ML	Section 3.4
D1.1. Financial risks	MU	Section 3.4
D1.2. Socio-political risks	L	Section 3.4
D1.3. Institutional and governance risks	ML	Section 3.4
D1.4. Environmental risks	ML	Section 3.4
D2. Catalysis and replication	MU	Section 3.4
E. Factors affecting performance		
E1. Project design and readiness[4]	S	Section 3.5.1
E2. Quality of project implementation	MS	Section 3.5.3
E2.1 Quality of project implementation by FAO (Budget Holder [BH], Lead Technical Officer [LTO], Project Task Force [PTF], etc.)	MS	Section 3.5.3
E2.1 Project oversight (Project Steering Committee, project working group, etc.)	MU	Section 3.5.4
E3. Quality of project execution For decentralized projects: Project Management Unit [PMU]/BH For Operational Partners Implementation Modality [OPIM] projects: Executing agency	MU	Section 3.5.4
E5. Project partnerships and stakeholder engagement	U	Section 3.5.6
E6. Communication, knowledge management and knowledge products	U	Section 3.5.7
E7. Overall quality of monitoring and evaluation [M&E]	MU	Section 3.5.2
E7.1 M&E design	S	Section 3.5.2
E7.2 M&E implementation plan (including financial and human resources)	MU	Section 3.5.3
E8. Overall assessment of factors affecting performance	MU	Section 3.5

GEF criteria/sub-criteria	Rating[1]	Summary comments
F. Cross-cutting concerns		
F1. Gender and other equity dimensions	MU	Section 3.6.1
F2. Human rights issues		N/A
F3. Indigenous Peoples	U	Section 3.6.3
F4. Environmental and social safeguards	S	Section 3.6.4
Overall project rating	MU	

Notes:
[1] See rating scheme in Appendix 3.
[2] Assessment and ratings by individual outcomes may be undertaken if there is added value.
[3] Includes cost efficiency and timeliness.
[4] This refers to factors affecting the project's ability to start as expected, such as the presence of sufficient capacity among executing partners at project launch.

Source: Elaborated by the Evaluation Team.

1. Introduction

1.1 Purpose of the evaluation

1. This is the final evaluation of the project "Pesticide Risk Reduction in Malawi" GCP/MLW/052/GFF, hereafter referred to as “the project”.

2. The purpose of the final evaluation is twofold: i) to provide accountability to the donors and partners by assessing the contribution of the Food and Agriculture Organization of the United Nations (FAO) to the Pesticide Risk Reduction project; and ii) to draw lessons from the implementation processes that could inform decisions by the Global Environment Facility (GEF) and FAO on the formulation and implementation of future or follow-up interventions.

3. In relation to accountability to donor partners, the final evaluation seeks to assess the overall performance and the results of the project to inform decision-making. Regarding learning, the evaluation seeks to identify and highlight the successes and shortcomings of the project, to clearly determine what worked and what did not, why, and what needs to be adjusted. In addition, lessons generated will be useful for project stakeholders in terms of future project improvement and implementation of similar interventions. The evaluation also seeks to identify specific gender issues in the design and implementation of the project.

1.2 Intended users

4. The main audience and intended users of this evaluation are the donors (GEF and co-financing partners), FAO Representation in Malawi, Malawian government institutions, Project Task Force and Management Team, project developers and implementers, key project beneficiaries and other parties interested in supporting and/or implementing similar projects.

5. The key stakeholders and beneficiaries of the project include the Ministry of Agriculture, the Ministry of Health, Ministry of Natural Resources and Climate Change, Ministry of Justice (regulatory authorities), Ministry of Finance and Economic Affairs, Information, government soils technicians, farmer organizations, farmers and farm households, the private sector and non-governmental organizations (NGOs). A detailed stakeholder mapping conducted at inception establishes well their interests, specific roles in the project, their involvement in the evaluation, and how they are expected to use the findings of the evaluation (see Appendix 5).

1.3 Scope and objectives of the evaluation

6. The evaluation covers the entire project implementation period, from November 2015 to August 2023. It also assesses all project activities described in the project design document (FAO, 2020a) and elaborated in the project logical framework found in Appendix 6. The activities fall under the four components: i) safe disposal of persistent organic pollutants (POPs) and other obsolete pesticides and remediation of heavily contaminated sites; ii) management of empty containers; iii) strengthening of legal and institutional frameworks for pesticide risk management and life cycle management; and iv) promotion of alternatives to POPs and other hazardous chemical pesticides. These components were implemented at national, district and community levels across the country.

7. The evaluation takes into consideration findings and conclusions of the mid-term review (MTR) (FAO, 2019a) conducted in 2019 by assessing the extent to which the recommendations were implemented. The evaluation also looks at factors related to the project's enabling environment

that were likely to influence project implementation, the achievement of results and transformational changes, as well as their sustainability.

8. The evaluation assesses the overall project performance in terms of the evaluation questions and GEF criteria reflected in Table 1. Appendix 7 contains the evaluation matrix that details the evaluation questions and subquestions.

Table 1. Evaluation questions by GEF criteria

Criteria	Evaluation questions
Relevance (rating required)	• To what extent was the project aligned to FAO and national policies and strategies, and international protocols and the priorities to reduce economic, environmental and social risks associated with the use of pesticides in agriculture and to promote sustainable intensification of agriculture?
Effectiveness (rating required) includes capacity development questions from OED framework	• To what extent have project objectives been achieved, and were there any unintended results? • To what extent has the project contributed to the development of the capacities of Malawi and the beneficiaries regarding the reduction of economic, environmental and social risks associated with the use of pesticides in agriculture and the promotion of sustainable intensification of agriculture?
Efficiency (rating required)	• To what extent has the project been implemented in an efficient, cost-effective, and timely manner, and management been able to adapt to any changing conditions to improve the effectiveness of project implementation?
Sustainability (rating required)	• What is the likelihood that the project results will continue to be useful or will remain even after the end of the project? • What mechanisms are in place to ensure replication and continuity of results What are the key risks which may affect the sustainability of the project benefits? • How sustainable are the results achieved on capacity development?
Factors affecting performance: (rating required)	
Quality of implementation	• To what extent did FAO deliver on project identification, concept preparation, appraisal, preparation, approval and start-up, oversight and supervision? To what extent have the implementing risks been identified and managed? To what extent did the COVID-19 pandemic and other emerging emergencies in the country like fall armyworm, cholera outbreak, etc. affect project implementation and achievement of results?
Quality of execution	• To what extent did the execution agency effectively discharge its role and responsibilities related to the management and administration of the project?
M&E (design & implementation)	• Was the M&E design practical and sufficient and did it work as intended? Did it specify clear targets and appropriate indicators to track environmental, gender and socioeconomic results; a proper methodological approach; specify practical organization and logistics of the M&E activities including schedule and responsibilities for data collection; and budget adequate funds for M&E activities?
Financial management and co-financing (no rating required)	• To what extent has the expected co-financing materialized and how has its decrease or increase affected project results?
Project partnerships and stakeholder engagement	• How were other actors, such as civil society, Indigenous population or private sector involved in project design or implementation, and what was the effect on the project results? To what extent has the project built on existing agreements and protocols, initiatives, data sources and synergies, complementarities with other projects and partnerships, etc. and avoided duplication of similar activities of other groups?
Knowledge management, communication, and knowledge products	• How is the project assessing, documenting and sharing its results, lessons learned and experiences? • To what extent are communication products and activities likely to support the sustainability and scaling-up of project results?
Environmental and social safeguards	• To what extent where environmental and social concerns taken into consideration in the design and implementation of the project?

Criteria	Evaluation questions
Gender, human rights issues, indigenous peoples	• To what extent were gender and human rights considerations considered in designing and implementing the project? • Was the project implemented in a manner that ensures gender and vulnerable groups' equitable participation benefits and empowerment?
Progress to impact	• To what extent may the progress towards long-term impact be attributed to the project? • Are there any evidence of behaviours and practices changes of the actors along the pesticides value chains, as well as any evidence of reduction of economic, environmental, and social risks associated to the use of pesticides? • Are there any barriers or other risks that may prevent future progress towards long-term impact?
Lessons learned	• What knowledge has been generated from project results and experiences that has wider value and potential for wider application, replication, and use?

Source: Elaborated by the Evaluation Team.

1.4 Methodology

1.4.1 Approach

9. The evaluation followed a theory-based approach with an emphasis on the results chain – as developed by the evaluation team during the evaluation's inception phase. The theory-based approach allowed the evaluation team to test the causal linkages of the Pesticide Risk Reduction project theory of change (TOC). The evaluation adhered to the United Nations Evaluation Group (UNEG) Norms and Standards (UNEG, 2023) and was in line with the Office of Evaluation Manual and methodological guidelines and practices (FAO, 2019c). In addition, the evaluation integrated the GEF criteria and requirements to adhere to GEF evaluation standards. The evaluation criteria shown in Table 1 were utilized to assess project performance.

10. To assess capacity development, the Kirkpatrick model (illustrated below) and its four levels was utilized to evaluate and analyse the results of educational training and learning within the pesticide risk reduction project. Evaluation began at Level 1 and proceeded sequentially through the remaining levels by examining the following:

i. **Level 1: Reaction** – How did participants feel about the training programme? Did they like it? Dislike it? Why?

ii. **Level 2: Learning** – What knowledge, skills and attitudes were actually learned from the training programme?

iii. **Level 3: Behaviour or Transfer** – Are participants applying their learned behaviours in the real world?

iv. **Level 4: Results** – What are the resulting benefits that the Organization is experiencing?

11. Capacity building at an individual level assessed whether participants i) were satisfied with the trainings received; ii) were confident with the acquired skills; and iii) the types/forms of knowledge, skills and attitudes gained because of these trainings. At an organizational level, participants were asked to identify manuals, standard operating procedures (SOPs) and guidance materials produced with support from the project. The enabling environment was assessed by asking participants' perceptions on the levels of awareness and multistakeholder participation in

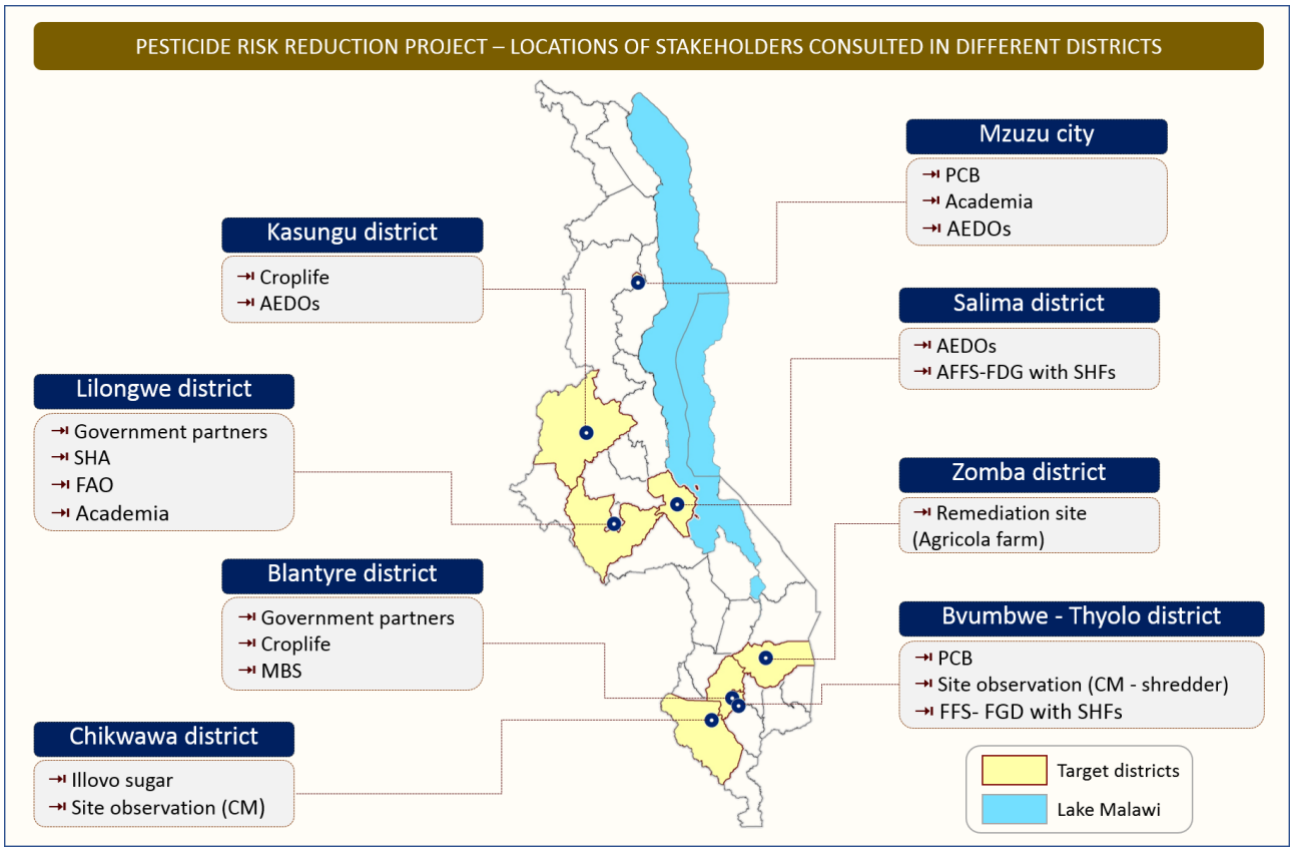
pesticide risk reduction. The levels of capacity building across the three levels were measured using an online survey tool presented in section 1.4.2.

12. A mixed-methods approach comprising quantitative and qualitative data collection techniques was used. A gender lens was systematically applied to all evaluation data collection tools and questions. Appendix 7 contains the evaluation matrix; it details the evaluation approach and methodology – including methods for data collection, analysis for subquestions and related indicators, and key sources of information. Using the evaluation matrix allowed for systematic triangulation and obtaining the most reliable information possible.

13. The evaluation adopted a consultative and transparent approach with core project personnel from FAO, the Pesticides Control Board (PCB), relevant government ministries and departments, private sector actors and relevant NGOs. Triangulation of evidence and information gathered was used in the analysis and supported the conclusions and recommendations. The evaluation relied on purposive sampling strategies for the selection of beneficiaries. The sites visited by the evaluation team are shown in Figure 1. Site mapping. With guidance from FAO project personnel, the following factors guided the site selection:

i. representativeness of project components;
ii. geographic dispersion so that regional representation would be ensured; and
iii. logistical and other qualitative factors, such as easy access within the time constraints.

Figure 1. Site mapping



Notes: AEDOs: Agricultural Extension Development Officers; FFS: Farmer Field School, CM: Container Management; PCB: Pesticides Control Board; MBA: Malawi Bureau of Standards; SHA: Self Help Africa; SHF: Smallholder Farmer

Source: Elaborated by the FAO Malawi Country Office, Monitoring, Evaluation and Information Management Section. Map conforms with UN Geospatial. 2012. *Map of Malawi*. New York, United States of America. https://www.un.org/geospatial/content/malawi

1.4.2 Data collection methods

14. The methods of data collection are described below. Each question and subquestion asked addressed a specific evaluation criterion as indicated in the data collection tools (Appendix 8).

15. *Document review:* as an entry point, the evaluation team conducted an in-depth review of project documents sourced from the project personnel and partners. The documents that were reviewed included the project design documents, Project Implementation Reports, mid-term review, project technical reports, TOC and national key policy documents on pesticides risk reduction.

16. *Key informant interviews (KII):* KIIs using semi-structured questions formed a core component of data collection for this evaluation and were the main tool that informed the analysis at every stage. They offered a critical vantage point in exploring the institutional perspectives on the quality and effectiveness of programming in reducing the economic, environmental and social risks associated with the use of pesticides in agriculture in Malawi. The KII list was compiled in consultation with FAO project personnel, also taking into consideration major directions and findings from the mid-term review as well as document review. A total of 27 KIIs were carried out with key project stakeholders. These included separate discussions with relevant government officials, project and implementing partners, academia and private sector – as shown in the evaluation schedule (see Appendix 1).

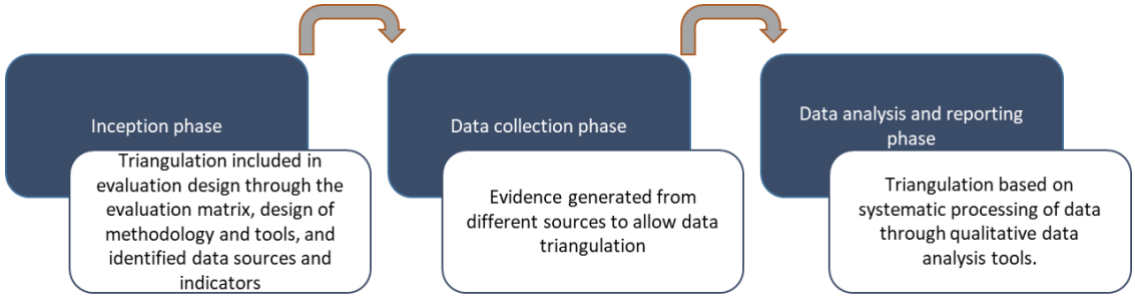
17. *Focus group discussions (FGDs):* FGDs were conducted with two groups of farmers in Farmer Field Schools (FFS) that benefited indirectly through the training received under the Kulima and Afikepo projects in the districts of Salima and Kasungu. Integrated pest management (IPM) was part of the training content delivered during FFS and the purpose was to gather data on their perspectives regarding the capacity building efforts of the project.

18. *Online survey:* Capacity building efforts were also investigated using an online survey administered to participants of short and long-term training courses. The online survey tool was sent via email and administered using face-to-face interviews with some participants during the field visits. The online tool assessed capacity development at individual, organizational and enabling environment levels that were relevant to the training types delivered by the project. A total of eight responses (32 percent) were received out of the 25 questionnaires administered. Three people declined to respond. The online survey is found in Appendix 8.

1.4.3 Data analysis

19. The evaluation triangulated different sources of information to verify and substantiate judgements and assessments (Figure 2. Data analysis process). Triangulation was also integrated in the interview questions throughout the evaluation phases.

Figure 2. Data analysis process



Source: Elaborated by the Evaluation Team.

20. During the data collection phase, evidence generated from different sources was systematically recorded against the questions and subquestions of the evaluation matrix. This ensured that all evidence was duly considered when synthesizing the responses to evaluation questions and subquestions. Validation was integrated during the evaluation process through dialogue with key stakeholders, with findings tested, nuanced and discussed with them. The debriefing and the remote presentation of findings further allowed for triangulation and validation of findings.

21. Quantitative data analysis comprised descriptive analysis (calculation of averages), trend analysis of training conducted over time and calculation of variances and trends in total expenditure per component. This was done to gain insights that allow for responses to the evaluation questions on effectiveness and efficiency. Where possible, quantitative data analysis was broken down by gender. Quantitative data analysis was triangulated against evidence collected through semi-structured interviews to ensure a correct interpretation of the results. Information generated was presented using tables and graphs.

22. Following the data collection phase, an evidence matrix was compiled to provide a cross-referenced analysis for the different subquestions and indicators, drawing on the evaluation matrix. A summary for each evaluation question formed the basis for the drafting of the evaluation results section of the final report.

1.5 Limitations

23. The limitations encountered during this evaluation are summarized below:

i. Challenges in accessing project data due to the lack of a data management system. The project data is fragmented and stored in laptops of various Project Management Unit (PMU) personnel and some key stakeholders. For example, important statistics on imports and use of pesticides from the PCB was not obtained and the results referred to in this report may not reflect the status of the situation. To mitigate this limitation, follow-ups were done through email and phone calls to stakeholders; this enabled the evaluation team to access most of the data.

ii. Inability to engage some stakeholders due to their unwillingness to participate in the consultations for the data collection. Some stakeholders who were active in the early years, dropped over time and hence felt they had nothing to contribute to the evaluation. This was the case with Self Help Africa (SHA) and the Ministry of Health. After a series of follow-ups with phone calls and email reminders, SHA was able to participate. However, the Ministry of Health kept their resolve and refused to participate, stating that they had nothing to say on the project. The evaluation team relied on the project document and the PCB and FAO project personnel to understand the role of the ministry in the project.

iii. Other individuals – especially recipients of the risk assessment training – did not participate because they had switched jobs or relocated to other countries. Some individuals had transferred to other departments or organizations and others were unreachable due to changes in their contact details. Where possible, the evaluation team organized meetings over Zoom or Teams to speak to some who had relocated. However, the evaluation team was not able to get contact details for some of them. Data collected from other beneficiaries of the trainings is adequate to understand the project's capacity building results.

iv. Low response rates on the online survey tool were due to competing priorities of informants. Data collected using face-to-face meetings with the respondents offered an

effective adaptive measure which provides a general picture on the capacity strengthening activities but is not fully representative of all beneficiaries of the trainings.

v. Inability to reach most of the extension workers trained during the project period was due to their sparse distribution in the country and their remote location. A small sample of those visited and those who participated in the online survey provided data that could satisfactorily explain the various aspects of the evaluation.

1.6 Structure of the report

24. Following this introduction, section 2 presents the background and context of the project. Section 3 presents the main findings for each evaluation question. Conclusions and recommendations are in section 4, followed by lessons learned in section 5. The report is accompanied by nine appendices and one annex.

2. Background and context of the project

2.1 Background of the project

25. The subject of this evaluation is the "Pesticide Risk Reduction in Malawi" (GCP /MLW/052/GFF), which was approved by the GEF in September 2015 for an initial duration of 36 months. The project started in November 2015 and benefited from several no-cost extensions that prolonged its duration until August 2023 (current not-to-exceed [NTE] date). The basic project information is summarized in Box 1.

Box 1. Basic project information

- GEF Project ID number: 5109
- GEF replenishment and focal area: GEF-5 Chemicals Strategy
- Recipient country: Malawi
- Implementing agency: FAO
- Executing agency: Ministry of Agriculture Irrigation and Water Development
- Date of project start and expected end: (EOD): 25 November 2015 (NTE): 31 August 2023
- Date of mid-term evaluation: July 2019

2.2 Project context

26. Malawi is a landlocked country in south-eastern Africa. It is bordered by Zambia to the northwest, the United Republic of Tanzania to the northeast, and Mozambique to the west, south and east. Malawi has a population of approximately 19 million people (2021) (World Bank, 2023) and is known for its diverse culture and stunning landscapes, including Lake Malawi, which is home to many endemic fish species.

27. Malawi remains one of the poorest countries in the world despite making significant economic and structural reforms to sustain economic growth. While economic growth increased to 2.8 percent in 2021, it has remained below pre-pandemic levels (World Bank, 2023). Dry spells at the beginning of the growing season, decreased crop yields and multiple tropical storms have damaged farmland and key infrastructure. In combination with macroeconomic imbalances, the outlook for 2022 remains subdued, with growth projected to decelerate to 2.1 percent (World Bank, 2023).

28. Agriculture is the mainstay of Malawi's economy, accounting for over 80 percent of the country's employment and contributing over one-third of its gross domestic product (GDP) (USAID and Manage, n.d.). Malawi's agriculture is characterized by low levels of productivity, poor infrastructure and limited access to markets, credit and other resources. The country also faces challenges such as soil degradation, irregular rainfall patterns due to climate change, and a lack of investment in research and development.

29. The use of pesticides in agriculture has widely increased over the years. In Malawi, at least 2 000 metric tonnes of pesticides are used annually, 70 percent of which are used for agriculture (Lakudzala, 2013). Most of the pesticides are used in food and cash crops, with the usage ranking as follows: tobacco > tea > sugarcane > coffee > cotton > maize (Kosamu, Kaonga and Utembe, 2020). Most pesticides were used for tobacco because it is a sensitive plant to grow and requires multiple pesticides, fungicides and herbicides throughout its growing season (Kosamu, Kaonga and Utembe, 2020). In addition, tobacco is often grown without rotation with other crops, leaving the tobacco plants and soil vulnerable to a variety of pests and diseases and dependent on pesticides for survival (Soko, 2018). Prior to the infestation of the fall armyworm, most farmers grew maize with minimal spraying of pesticides. Following an invasion by the larger grain borer

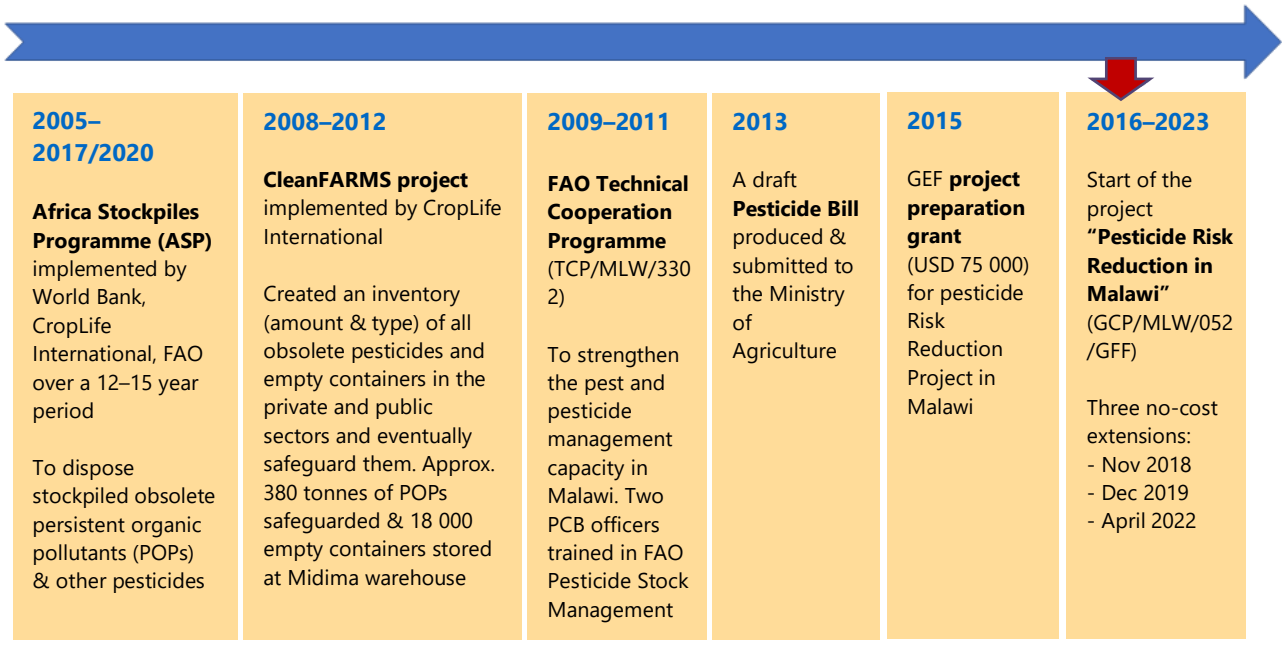
(*Prostephanus trancatus*), the fall armyworm (*Spodoptera frugiperda*) on cereals, and the tomato leafminer (*Tuta absoluta*), there has been an upsurge in use of various pesticides in Malawi (FAO, 2019a).

30. While the largest percentage of pesticide use is in the agriculture sector, the health sector is also a user of pesticides in Malawi. Outbreaks of insect pests and diseases are currently on the increase due to climate change and pesticide resistance. Pesticides are mainly used in the control of many vector-borne diseases in Malawi. For example, insecticide-treated nets, indoor residual spraying and other modes of pesticide applications are the most effective methods for the control of vector-borne diseases such as malaria (Mathanga *et al.*, 2012; Chanda, *et al.*, 2015).

31. Pesticide management in Malawi is marred with challenges at various stages of the pesticide life cycle (from importation to disposal). There is limited regulation of pesticide use and many farmers are not fully aware of the potential hazards associated with these chemicals. This has the potential of causing overuse, misapplication and exposure to harmful pesticides for both farmers and consumers. In addition, there are limited resources for the proper disposal of unused pesticides (obsolete stocks). Obsolete stocks are to be disposed of in a safe and environmentally sound manner and in most cases using high temperature incineration (FAO, n.d.). However, developing countries do not generally have appropriate high-temperature incineration facilities for hazardous waste.

32. Over the years, several efforts have been made by the Government of Malawi and its partners to reduce the risks posed by pesticides to both the local and wider environment and human health. Figure 3. Timeline of the project "Pesticides Risk Reduction in Malawi (below) is a summary of the efforts made in Malawi since 2005 to reduce the risks posed by pesticides. The figure further highlights the processes leading to the birth of the pesticide risk reduction project.

Figure 3. Timeline of the project "Pesticides Risk Reduction in Malawi"



Source: Elaborated by the Evaluation Team.

33. The overall goal of the project was to reduce economic, environmental and social risks associated with the use of pesticides in agriculture and to promote sustainable intensification of agriculture.

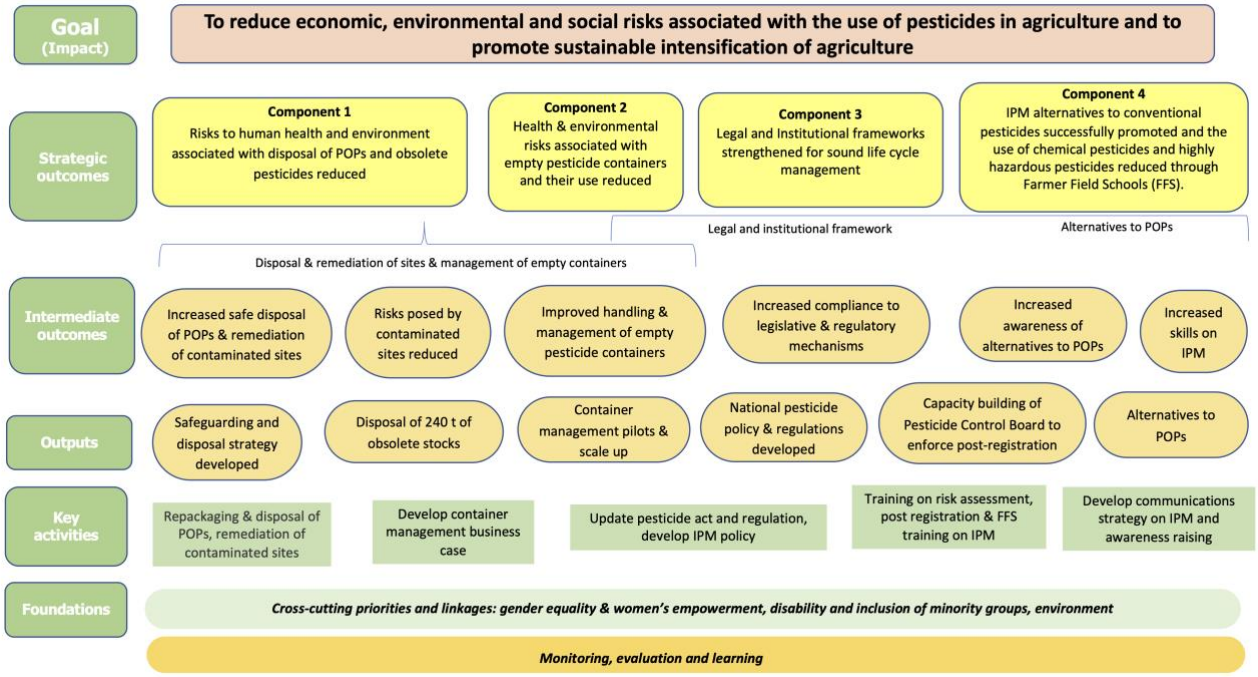
34. The specific objectives of the project were to: safely dispose of POPs and obsolete pesticides and remediate pesticide-contaminated sites (Component 1); develop and implement a pilot management system for empty pesticide containers (Component 2); strengthen the national capacity for sound pesticide management in line with the International Code of Conduct on Pesticide Management and the international Conventions (Component 3); and increase the successful uptake of alternatives to the most hazardous chemical pesticides on key crops and raise awareness on pesticide risks (Component 4). Monitoring and evaluation (M&E) (Component 5) and project management (Component 6) support the four technical components.

35. Project stakeholders and beneficiaries were government ministries, namely the Ministry of Agriculture, Ministry of Health, the Ministry of Natural Resources and Climate change and the Ministry of Justice; Malawi's pesticides regulatory authority (PCB); the Malawi Bureau of Standards; NGOs; the private sector; academia; farmer organizations; and farmers and farm households – specifically, women farmers.

2.3 Theory of change

36. A TOC for the Pesticide Risk Reduction in Malawi project was first constructed during the mid-term review. The evaluation team further refined the TOC emphasizing on the main impact pathways to serve as a basis for this evaluation as presented in Figure 4.

Figure 4. Revised theory of change for the project "Pesticide Fisk Reduction in Malawi"



Pesticide Risk Reduction Project reconstructed theory of change level/assumptions	
From inputs to outputs	
1.	Government ministries and partners demonstrate willingness to participate in the project and are committed to multisectoral collaboration to enhance pesticide risk reduction in Malawi.
2.	GEF funding and co-financing support is timely and adequate to favour a balanced implementation of key project activities.
3.	Safeguarding and disposal prices do not exceed USD 4 500/tonne.
4.	Stockpiles of containers remain secure and have not been pilfered and sold.

Pesticide Risk Reduction Project reconstructed theory of change level/assumptions
From outputs to outcomes
5. Government ministries and in particular **Pesticides Control Board (PCB**) and partners allocate sufficient staff and co-funding resources to leverage FAO's capacity building initiatives and **staff** turnover does not negatively impact on success.
6. Timely adoption of the updated pesticide act legislation by the Parliament.
7. A flexible conducive legislative environment on integrated pesticide management will have direct effects on increased disposal of POPs, remediation of sites and management of empty containers.
8. Government ministries and partners are willing and committed to multisectoral collaboration and implementation of project activities to enhance integrated pesticide management in Malawi.
9. Beneficiaries are willing to participate in training seminars and apply the acquired knowledge in effective implementation of the revised legal framework for the management of pesticides.
10. Farmers are willing and able to carry out triple rinsing. The triple rinsing process results in non-hazardous levels of residues in line with legislation.
11. Rigorous and effective monitoring systems inform adjustments to implementation of activities in ways that enhance the relevance, effectiveness and efficiency of the project.
From outcomes to impact
12. Government demonstrates interest, commitment, leadership and budgets for the takeover of project activities.

Source: Elaborated by the Evaluation Team based on the project document and its own discussions with project stakeholders.

37. The TOC has four main impact pathways made up of the four project components (Component 1-4) which are interlinked and combined to contribute to reduced economic and social risks associated with the use of pesticides in agriculture and the sustainable intensification of agriculture. The overall statement of the TOC is the following.

> ***IF*** *FAO works with PCB and implementing partners (government ministries, NGOs, farmers, private sector) to implement the Pesticide Risk Reduction Project activities* ***AND*** *is informed by a robust monitoring and evaluation (M&E) system and the integration of cross-cutting issues* ***AND*** *has sufficient skills, GEF funding and co-financing, and conducive legislation,* ***THEN:***
>
> *i. Malawi will have increased safe disposal of POPs and remediation of contaminated sites;*
>
> *ii. the risks posed by contaminated sites will be reduced;*
>
> *iii. handling and management of empty pesticide containers will be improved; and*
>
> *iv. the skills of farmers on IPM and awareness of alternatives to POPs will be increased.*
>
> ***THEN*** *risks to human health and environmental risks associated with disposal of POPs and obsolete pesticide and empty pesticide containers and their use will be reduced, the IPM alternatives to conventional pesticide will be adopted* ***AND*** *strengthened legal and institutional frameworks will support sound pesticide life cycle management to achieve sustainable intensification of agriculture.*

3. Findings

3.1 Relevance

EQ 1. To what extent was the project aligned to FAO and national policies and strategies, and international protocols and the priorities to reduce economic, environmental and social risks associated with the use of pesticides in agriculture and to promote sustainable intensification of agriculture?

Finding 1. The project remains well aligned with government priorities on environmental protection and health. Its relevance continues to increase with the emergence of new crop pests and diseases. However, the design and focus on risks of pesticides to human health could have been broadened beyond occupational health.

Overall rating: Satisfactory

38. Malawi relies heavily on agricultural production to drive its economy. Intensifying agriculture remains high on the country's agenda. Pillar number 1 of the Malawi 2063 (Government of Malawi, 2020) is agricultural productivity and commercialization. This pillar promotes intensification of agriculture through promotion of conventional agriculture which will ultimately increase pesticide use. Close to 80 percent of the population in Malawi rely on rainfed smallholder agriculture for their livelihoods (Government of Malawi, 2020) which means the risk posed on people and the environment from the use of synthetic pesticides will only increase over time. Against this context, the project is relevant in its efforts to reduce pesticide risk and its relevance is likely to increase in the future as the government moves with implementation of the Malawi 2063. All stakeholders consulted concurred that the project was highly appropriate because it addresses the challenges the country faces. One government stakeholder said "the project was very relevant at its inception, and it is still relevant today. In fact, its relevance will only increase with time as pesticides will continue being used. Since the project has taken long, new stock is building up over time which further highlights the project's relevance."

39. As reiterated by stakeholders consulted, the emergence of new pests in Malawi has further increased the relevance of the project. In 2016–2017, Malawi experienced the emergence of the fall armyworm which affected cash crops like cotton and staple crops like sorghum, millet and maize (IFPRI, 2018). Additionally, the emergence of the South American Tomato leaf miner (*Tuta absoluta*) in the 2016–2017 growing season also led to an increase in the use of synthetic pesticides. In 2017–2018, approximately 18 000 litres of pesticides, including the organophosphate pesticide chlorpyrifos, were purchased by the Malawian government for distribution in response to the fall armyworm invasion (Feed the Future, 2019). For 2019, that number rose to 30 000 litres. An interview with one of the private sector project stakeholders revealed that they only started using pesticides at their farm post-2013, after experiencing yellow sugarcane aphid and the red spider mite. This increase in the use of pesticides across the country further highlights the need for scaling up the country's pesticide risk reduction efforts.

40. The Environmental Management Act (2017) (Government of Malawi, 2017) contains provisions for pollution control and regulation of waste, including hazardous waste. It regulates the handling, storage, transportation, classification of wastes and the importation and exportation of hazardous waste. In fact, the act classifies triple rinsed pesticide containers as hazardous waste. The act subscribes to the "polluter pays" principle and places the responsibility of preventing discharge or emission of any pollutant into the environment, including the removal or disposal of any pollutant, on the polluter. Efforts made by the project to manage the disposal of waste following the provisions of the act highlight the relevance of the project to the stipulations of the act.

41. The project is also relevant to the National Environmental Policy of 2004 (Government of Malawi, 2004). The policy has several provisions which provide policy directions for practicing sustainable agriculture. For example, one of its objectives is to promote environmentally sustainable agricultural development by ensuring sustainable crop and livestock production through ecologically appropriate production and management systems, and appropriate legal and institutional framework for sustainable environmental management. The policy strategies support the review and implementation of the Pesticides Act, which the project has managed to contribute to – further increasing its relevance.

42. Furthermore, the project is in line with the Malawi Waste Management and Sanitation Regulations of 2008. Treatment and disposal of hazardous waste and infectious wastes are dealt with under part VI of the regulations. Part VII of the regulations deal with transporting and storage of waste and require any person intending to engage in the business of transportation, handling, or storage of wastes to apply for a license to do so. All these management practices are promoted by the project.

43. The Malawi National Agriculture Policy (2016) (Government of Malawi, 2016) identifies agricultural risk management as one of its priority areas. The policy noted that fluctuations in agricultural production can stem from various factors including climate change, weather variability, and pests and diseases. It promotes a resilience perspective that enables the country to prudently manage risk in the agriculture sector by promoting integrated management and control of pests and diseases. The pesticide risk reduction project aligns to this government agenda through Component 4 on increasing the successful uptake of alternatives to POPs and other hazardous chemical pesticides by promoting IPM as one of its activities.

44. The project also aligns well with the Malawi National Agriculture Investment Plan (NAIP) (2018–2023) (Government of Malawi, 2018a) which is a medium-term investment framework for the agriculture sector. The Malawi National Agriculture Investment Plan recognizes that the outbreak of crop pests and diseases is a recurrent issue in Malawi. Hence, preventing and/or controlling major pests and diseases and managing their impacts is a core public function. The main approach promoted is the integrated pest and disease management (IPDM), the adoption of drought and flood-tolerant varieties, and crop selection based on agroecological zone. IPDM contributes to increased productivity and decreased use of pesticides. In order to minimize the risk of exotic pests and disease incursions from outside Malawi, border protection facilities and procedures must be maintained to a high standard.

45. The project also aligns well with the Malawi Pesticides Amendment Act (2018) (Government of Malawi, 2018b). The main purpose of the act is to minimize the potential adverse effects from pesticides to people or non-target species and the environment in general. It provides a comprehensive legal and administrative framework for the control and management of the importation, exportation, manufacture, distribution, storage, disposal, sales, repackaging, and use of all pesticides in Malawi. The act prohibits the disposal of any pesticide's container or packaging in a manner that is hazardous to human or animal health or the environment or that is contrary to any written law.

46. In addition, the project emphasized the protection against occupational exposure to pesticides, environmental protection against pesticide contamination through the development of health, safety and environmental plans. However, the design and implementation paid less attention to assessing the risks to humans from pesticides, whether through direct exposure or residues in

food. This could have been enhanced by the involvement of the World Health Organization (WHO) in project design and during project implementation.[1]

Finding 2. The project fully aligns with GEF and FAO strategic priorities as well as the Sustainable Development Goals (SDGs) and international conventions.

47. The project contributes to the implementation of the GEF-5 Chemicals Strategy. It focuses on CHEM-1, specifically on prevention, management and disposal of POPs. Through Component 1 on the safe disposal of POPs and other obsolete pesticides and remediation of contaminated sites, approximately 390 tonnes of obsolete pesticides were disposed in an environmentally sound manner. The project further piloted a maiden empty container management scheme (CMS) and raised a lot of awareness on pesticides and the risks associated with their use.

48. The project contributes to the implementation of activities under the Stockholm Convention National Implementation Plan (Environmental Affairs Department, 2005). The plan outlines Malawi's obligations under the Convention about elimination of POPs and remediation of contaminated sites. The Pesticide Risk Reduction project supported implementation of the following priorities identified in the plan: i) review of pollution control related policies and legislation for effective implementation of the Stockholm Convention; ii) strengthening institutional capacity of government departments and other institutions involved in the implementation of the Rotterdam and Stockholm Conventions; iii) strengthening and enhancing enforcement of relevant legislations; iv) developing regulations on monitoring of POPs; v) strengthening institutional capacity of government departments and other institutions involved in monitoring of POPs releases; vi) developing and implementing clean up and remediation schemes for POPs contaminated sites; and vii) developing programmes for raising awareness on POPs releases and their effects on human health and the environment.

49. The project is in line with the reviewed FAO Strategic Framework (2010–2019). It is aligned to the implementation of strategic objectives 1. Eradication of hunger, food insecurity and malnutrition; 2. Increase and improve provision of goods and services from agriculture, forestry and fisheries in a sustainable manner; and 4. Enable more inclusive and efficient agricultural and food systems at local, national and international levels. In addition, the project was in line with the subsequent implementation of the 2014–2017 FAO Malawi Country Programming Framework (CPF). It mainly aligned to priority area 3 which focused on support to policy and programmatic action on sustainable natural resources management and climate change in the context of national food security. Under priority area 3, the project mostly aligns with Output 3.4: capacity to reduce pesticide risks in Malawi developed.

50. The project remains in line with the FAO Strategic Framework 2022–2031 on three of its "four betters" (better production, better nutrition, a better environment, a better life). So, the project objectives fall under the three following Programme Priority Areas (PPAs) of this new FAO Strategic Framework: i) BP3 (One Health): Strengthened and better performing national and international integrated One Health systems for human, animal, plant and environmental health achieved through improved pest and disease prevention, early warning and management of national and global health risks, including antimicrobial resistance; ii) BN3 (Safe food for everyone): Integrated, multisectoral food safety policies and legislation across national agrifood systems adopted and implemented by governments, and capacities and awareness of value chain operators and consumers enhanced; and iii) BE2 (Bioeconomy for sustainable food and agriculture): A bioeconomy that balances economic value and social welfare with environmental

[1] Risk assessments for pesticide residues in food are conducted by an independent, international expert scientific group, the Joint FAO/WHO Meeting on Pesticide Residues (JMPR).

sustainability promoted through formulation and implementation of integrated evidence-based policies and practices in micro and macro environments, using technological, organizational and social innovations.

51. The project is aligned to the FAO Malawi Country Programming Framework 2020–2023, particularly Outcome 3: Malawi has more productive, sustainable and diversified agriculture value chains and market access. The project is strongly aligned to the CPF Output 3.4 indicators: i) proportion of farming households adopting IPM; ii) volume of obsolete pesticides and empty containers disposed of in an environmentally friendly manner; and iii) number of new pieces of legislation formulated and implemented for sound pesticide life cycle.

52. In terms of SDGs, it is aligned to: SDG 12 "Ensure sustainable consumption and production patterns" and specifically contributes to target 12.4 "to achieve environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release into air, water and soil to minimize their adverse impacts on human health and the environment"; and SDG 2 "End hunger, achieve food security and improved nutrition and promote sustainable agriculture", target 2.3 "By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment". The project promotes sustainable intensification in agriculture by promoting alternatives to the use of synthetic pesticides (which can be potential non-point source pollutants to other environments such as soil and water) while increasing the sustainability of crop production and farming system resilience to environmental stresses such as pest attacks and climate change. The management of POPs, remediation of contaminated sites and management of empty pesticide containers all contribute to ensuring human and ecosystem health and safety due to the safe disposal of the POPs and empty containers.

Finding 3. The project's relevance is undermined by limited integration of efforts among partners leading to uncoordinated activities especially at local community levels.

53. The project complements ongoing efforts by the Malawian government and other partners in promoting the adoption of alternatives to synthetic pesticides mainly through promotion of IPM. Since the country has been experiencing a surge in the emergence of pests and diseases in agriculture and public health, there has been an increase in the use of synthetic pesticides which has further increased pesticide risks. Several organizations including Self Help Africa Malawi, World Agroforestry Centre (ICRAF), Feed the Future, and academia have been working on the promotion of IPM as an alternative to the use of synthetic pesticides (Feed the Future, 2019). While the projects have some degree of complementarity there is still limited learning and sharing of knowledge and experience among each other. This is more evident at community levels due to limited coordination among partners who are promoting IPM interventions in the country.

Finding 4. The project complements/builds on past interventions on pesticide risk reduction that have been implemented in the country.

54. The Government of Malawi and partners have made efforts to reduce the risks posed by pesticides to both the local and wider environment and human health. As presented in Figure 3. Timeline of the project "Pesticides Risk Reduction in Malawi, several projects were implemented which provided a basis upon which the pesticide risk reduction was built. Section 3.5.1 further provides information on past projects which were implemented and were complimentary to the Pesticide Risk Reduction project.

3.2 Effectiveness

EQ 2. To what extent have project objectives been achieved, and were there any unintended results?

Overall rating: Moderately unsatisfactory

Finding 5. There was satisfactory progress in achieving the outcomes of Component 3, whereas Components 1 and 4 were moderately unsatisfactory and Component 2 performed the least-well – showing unsatisfactory progress.

3.2.1 Component 1: Safe disposal of POPs and other obsolete pesticides and remediation of heavily contaminated sites

55. This component focuses on the safe disposal of 390 tonnes of POPs and other obsolete pesticides, and the remediation of at least one prioritized pesticide-contaminated site. It was planned to dispose of the stockpile in an environmentally sound high temperature incineration facility with proven capacity to incinerate POPs. For the remediation of contaminated sites, it was planned that six contaminated sites would be identified, assessed and conceptual site models (CSM) would be developed - leading to the development of environmental management plans (EMPs). Of the six sites, two contaminated sites would be selected where remediation efforts would be implemented based on the recommendations from the EMP.

Finding 6. The safe disposal of obsolete POPs was successfully done but the process is considered very costly and not sustainable in the long run.

Finding 7. Processes of remediating a contaminated site following national and international best practice were initiated but results have not been fully achieved.

Outcome 1. Risks to human health and the environment are reduced through safe disposal of POPs and other obsolete pesticides and remediation of contaminated sites.

56. POPs are toxic chemicals that can persist in the environment for a long time and can have harmful effects on human health and the environment. Safe disposal of POPs is crucial to prevent their accumulation in the environment and to minimize their adverse effects. The project intended to dispose of POPs and other obsolete pesticides using two main methods: local disposal at Namitondo farm in Lilongwe and high temperature incineration at a facility to be identified. At baseline, 240 tonnes of POPs and other obsolete pesticides were inventoried for high temperature incineration and 150 tonnes of low hazard degraded grain storage pesticides were inventoried for local disposal (FAO, 2020a). A total of 390 tonnes of POPs and other organic pollutants (Ops) were identified by the project for safeguarding at baseline.

57. At the time of evaluation, 216 tonnes of the inventoried 240 tonnes of POPs and obsolete pesticides were repackaged and shipped to Fortum (former Ekokem) in Sweden for high temperature incineration; 40 tonnes of ash mixed with pesticide products (from a burned warehouse where a fire incident occurred) were sent for landfilling at an Enviroserve facility in Uganda. In total, 256 tonnes were safely disposed of.[2]

58. At baseline, six contaminated sites were identified for the remediation exercise and assessed. According to the consultations made, there were three sites with contamination levels that were significant enough to warrant remediation. Conceptual site models were developed for the three sites as evidenced by the reports of the site investigations and conceptual site models documentation. The actual remediation focused on one prioritized site. Since the actual excavation of the soil had not yet been done at the time of evaluation, the percentage decline in

[2] Tonnages cited here are rounded to the nearest whole number.

soil contamination level had not been documented. Further, weaknesses in the formulation of outcome indicators also means that the project could not measure the full results achieved. For example, the percentage decline in soil contaminants indicator – although appropriate – was not collected at baseline. These weaknesses in indicators are further elaborated in Table 8.

Output 1.1. Safeguarding and disposal strategy is developed in line with national and international best practice.

59. Pesticides pose a threat to people and the environment where they exist. Pesticide poisoning is one of the biggest risks associated with pesticide use. A United Nations (UN) report of the Special Rapporteur on the right to food reported that pesticides are responsible for an estimated 200 000 acute poisoning deaths each year, 99 percent of which occur in developing countries where health, safety and environmental regulations are weaker and less strictly applied (UN Human Rights Council, 2017) – Malawi is not an exception.

60. The process of developing a safeguarding and disposal strategy for the obsolete pesticides that have accumulated in Malawi over time followed the guidance and templates contained in FAO's Environmental Management Tool Kit (EMTK) and other FAO guidelines – which offer a standardized approach to the principles for the managing and implementing of safeguarding and disposal activities. These principles are based on accepted best practices from the waste management and other industries. According to the EMTK volume 4, experience has demonstrated that, by following these principles, impact to public health, worker health and the general environment can be eliminated. These methods have successfully been utilized in pesticide disposal projects for other countries such as Ethiopia (2000–2003 and 2004–2008), Mozambique (2005–2008), the United Republic of Tanzania (2005), the Syrian Arab Republic (2005), Mali (Gao 2006), Tunisia (Menzel Bourghiba Hospital 2007) and Eritrea (2009) (FAO, 2011).

61. A consultant hired in 2016 developed a disposal strategy which outlined the processes that were to be followed for the disposal of OPs. The disposal strategy was in line with the Scientific and Advisory Panel to the GEF's publication on the selection of POP disposal technology (GEF, 2011a). The steps outlined in the strategy include i) identification-development of an inventory; ii) capture and containment; iii) pre-treatment, if applicable; and iv) disposal – including verification, residual management, and post-disposal monitoring. The consultant further conducted environmental assessments (EAs) and developed a health, safety and environment plan (HSE) and environmental management plan for the disposal of the OPs. The HSE plan and EMP analysed by the evaluation team contained detailed information of the potential negative impacts of the disposal operations and their mitigation measures. It further provided a transport plan for the international disposal of the identified pesticide stocks. Table 2 shows a summary of the environmental and social management plans (ESMPs) developed under Component 1.

Table 2. Summary of environmental and social management plans developed under component 1

ESMP title	Name of contractor	Year
HSE and ESMP for safeguarding, stowage and disposal of obsolete pesticides in Malawi	Poly Eco	2017
ESMP for the disposal of obsolete grain protectants at Namitondo farm in Lilongwe	Ministry of Agriculture through PCB	2020
HSE and ESMP for the safeguarding, stowage, export and disposal of obsolete pesticide stocks and pesticide contaminated soils	Veolia ES field services limited	2022

Source: Elaborated by the Evaluation Team.

62. On identification, a detailed inspection of the pesticide stockpiles was conducted by CropLife. At the same time, CropLife produced an updated pesticide inventory which detailed the volumes and types of OPs that were available. The types of pesticides inventories included: Beta-Cyfluthrin, Fenitrothion, Carbaryl, Trichlorfon, Dazomet, Benomyl, Triadimenol, and Ethylene Dibromide. Capture and containment involve securely packaging or containerizing the identified materials as required at their current locations, and protection against release during handling and storage. The project contracted Polyeco SA to repackage obsolete pesticides stocks that were at the Smallholder Farmers Fertilizer Revolving Fund of Malawi (SFFRFM) warehouses in Kanengo, a warehouse in Chirimba, and Midima in Blantyre. At the time of repackaging, Polyeco SA collaborated with a local subcontractor who provided labour (local waste handlers) for the repackaging. These local waste handlers were reported to have been trained by the local subcontractor. The detailed data for the training including the numbers could not be accessed by the evaluation team because FAO only dealt directly with the main contractor and not the local subcontractor. These trainees were not part of the sample interviewed by the evaluation team.

63. A disposal strategy for the local disposal of 150 tonnes of degraded grain protectants was developed through a participatory approach involving key stakeholders; namely, the Environmental Affairs Department (EAD), CropLife, PCB and FAO (FAO, 2021). The disposal strategy outlined the processes that should be followed to safely dispose of the degraded grain protectants. It clearly prescribes how the grain protectants should be collected, transported and incorporated in the soil at Namitondo farm. One key issue emphasized in the strategy is the need for adequate community engagement and monitoring to reduce the risk of local communities being exposed.

64. The grain protectants were warehoused in Mzuzu, Lilongwe and Blantyre and were to be land farmed at Namitondo Farm. Furthermore, a field assessment which informed the development of an environmental management plan had been done. Although the environmental management plan was approved by the Environmental Affairs Department, the local disposal for the grain protectants did not materialize. At the time of the planned local disposal activities, there was revision of the United States Environmental Protection Agency regulations on open disposal of contaminants permissible for landfarming. The regulations eliminated landfarming as one of the disposal options of contaminants including OPs. This implied that landfarming was no longer an internationally accepted disposal method. As such, future projects should opt for other disposal options such as incineration which was used in this project. However, due to the lack of capacity to incinerate such type of waste in Malawi, building local capacity for incineration may be a long-term solution. In the short-term, prevention where possible should be enforced by regulating bulk importation of pesticides which can easily become obsolete.

Output 1.2. Obsolete stocks and associated wastes are disposed of in an environmentally sound manner.

65. At project baseline, 390 tonnes of obsolete stocks and other associated wastes were inventoried. This included 240 tonnes of POPs and 150 tonnes of degraded pesticides. The 240 tonnes were to be disposed of internationally while the 150 tonnes were to be disposed of locally. The project managed to successfully dispose of 215 717 tonnes of obsolete POPs and other pesticides through high temperature incineration at Fortum waste solutions plant in Sweden and 40.24 tonnes of chemical ash were landfilled at Holma Uganda (a total of 255 975 tonnes) (FAO, 2022). At the time of the evaluation, there were still some leftover stocks waiting to be disposed. These include the 150 tonnes of degraded grain protectants which could not be disposed locally as per project design (FAO, 2021). Unfortunately, the international disposal of the grain protectants will not be possible under the project due to escalation of costs associated with high temperature incineration (FAO, 2021). All stakeholders consulted expressed doubt on the prospects of the international disposal method, due to the Government of Malawi's funding constraints. Nonetheless, stakeholders acknowledged that the Pesticide Risk Reduction project had successfully demonstrated how POPs could be disposed of in an environmentally sound manner – creating a platform for discussions on how to eventually dispose of the remaining stock.

66. Following a successful public bidding process, Polyeco SA of Greece was awarded the tender for safeguarding, stowage and disposal of OPs and other wastes. A review of a health, safety and environment plan and ESMP that was developed and utilized by Polyeco SA details the disposal safeguarding and disposal processes including the travel plan for the international disposal. The disposal process was consistent with the ESMP. Although there were local delays in approving the transportation of the materials, the quality/plan of the destruction did not change; it remained consistent with the ESMP.

Output 1.3. Risks posed by one contaminated site are significantly reduced.

67. Pesticides constitute a health risk to humans, domestic animals, wildlife and other non-target organisms in the environment (Langley and Mort, 2012). Exposure to pesticides is increasingly linked to immune suppression, hormone disruption, diminished intelligence, reproductive abnormalities and cancer (Abhilash and Singh, 2009). Similarly, there is increasing evidence suggesting that pesticides have intrinsic public health and environmental risks during their production, import, use, storage and disposal (Stadlinger, Mmochi and Kumblad, 2013). This calls for concerted efforts in reducing the potential health and environmental risks that may result from pesticides.

68. One contaminated site at Agricola farms in Zomba had been identified for remediation. An environmental assessment, development of a conceptual site model), and an ESMP were successfully conducted for Agricola farms. In the absence of suitable facilities in Malawi, a site assessment report recommended that the contaminated soils at Agricola Farm be excavated and transported to a landfill situated in a regional facility (Lang and Cobban, 2019). A contract was awarded to Veolia for the safeguarding, stowing, disposal and remediation of the contaminated site at Agricola farms in Zomba.

69. The soil excavation and exportation to South Africa for containment are yet to be conducted. The evaluation team visited Agricola farms during the evaluation mission and the farm manager confirmed that soil assessments were done but the actual soil excavation would be done after the 2022–2023 rainy season.

70. A local team comprising key stakeholders (four males and nine females) from the Environmental Affairs Department, PCB, Ministry of Agriculture and District Councils was trained in risk

assessment of contaminated sites. Of those consulted, they expressed high satisfaction and indicated that the training was relevant to their line of work and had enhanced their skills in risk assessment.

3.2.2 Component 2: Management of empty containers

71. This component aimed at reducing health and environmental risks associated with empty pesticide containers and their use; it had a target set as "at least 90 percent of all containers triple rinsed and collected/stored/recycled by end of the project". It consisted of the development of a CMS including triple rinsing, collection, storage and recycling of all types of containers. The CMS was planned to be implemented through a pilot around Blantyre where the PMU is located and is also the centre of key agriculturally intensive areas for tea, tobacco and sugar production (Thyolo, Mulanje, Zomba, and Chikwawa districts). CropLife led this component and was expected to work in collaboration with the association of pesticide importers, for the sustainability of the national CMS beyond the project. Simultaneously, an awareness campaign would be developed for pesticide users on the principles of triple rinsing and their responsibilities for returning containers to the scheme.

72. A major gap under Component 2 is a lack of quantitative monitoring data to assess performance at output and outcome levels. The evaluation team was unable to obtain monitoring data during data collection; assessment of this component is based mainly on document review, qualitative interviews with stakeholders and site observations. There was varying overall performance on Component 2 output delivery and outcome achievements.

Finding 8. Piloting of the container management system was innovative but had mixed results due to institutional, legal and implementation challenges.

Finding 9. The CMS pilot partly demonstrated good practice in empty container management but fell short of the basic requirements of a sound CMS as it lacked reliable data to guide implementation, a sustainable route for disposal, and excluded smallholder farmers.

Outcome 2. Health and environmental risks associated with empty pesticide containers and their use are reduced.

73. This outcome was measured by: i) number of empty containers triple rinsed, collected and stored awaiting recycling; and ii) number of national policy/action plan based on pilot adopted by Government of Malawi. The weakness of these indicators is that they are framed at an output level and are not sufficient for measuring changes in health and environmental risks. At a basic level, indicators such as i) percentage of commercial/smallholder farmers participating in the CMS; and ii) quantity (kg) of containers delivered to the disposal site would have allowed the project to track progress at the outcome level.

74. While there is evidence of satisfactory progress at output level, there is insufficient evidence to show the extent to which this led to changes in health and environmental risks. Qualitative interviews with stakeholders point to a significant positive shift in private sector/commercial farmers' understanding of the environmental and health risks associated with empty pesticide containers and their desire to adopt safe container management. For example, Illovo is beginning to think differently through a pesticide lifecycle approach and IPM. Through their own initiative, the company is now having conversations with entomologists to find alternatives such as biological control of pests instead of chemicals.

75. However, with the proof of concept having never been implemented fully, there is insufficient evidence to conclude that this component sufficiently contributed to project outcomes.

Output 2.1. Container management pilot sites implemented in the Southern Region of Malawi.

76. A significant achievement was a feasibility study for sustainable management of pesticide containers that was successfully conducted in 2017 and used to inform the design of the CMS business case. The business case proposed two models for commercial farmers and smallholder farmers respectively (Khonje, 2019). The commercial farmer model was based on using contractors to pick up empty containers at collection sites, while the smallholder farmer model entailed them to bring empty containers to the collection sites. A proposed tax levy (eco tax) on primary packaging would cover the cost of CMS – including disposal and contingencies. In terms of institutional arrangements, the scheme would be managed by a Pesticide Container Management Advisory Council (PCMAC) from the Ministry of Agriculture. At terminal evaluation, the commercial model was operational – albeit with some limitations – and the smallholder farmer model had failed to take off.

77. Analysis of project documents, progress reports and key informant perspectives shows that the CMS pilots faced challenges because of a combination of factors. The design of the business case underestimated the challenges emanating around: i) institutional arrangements for managing the CMS; ii) legal requirements; and iii) incentives for container management which cumulatively affected the design of pilots and led to serious delays in implementation of activities. There were delays experienced in recruiting an empty container management expert, mobilization of stakeholders and negotiations with the Environmental Affairs Department for exemptions from specific legal requirements on waste management. Further, delays by CropLife Malawi in leading the implementation of container management system had been raised as early as 2019 (FAO, 2019b) – and were aggravated by continued wrangles between government and the industry regarding the ban on thin plastic papers.

78. *Institutional arrangements:* the institutional set-up envisioned at design never materialized but was instead adapted to suit the needs of the participants. There were challenges in mobilizing key stakeholders (commercial farmers, government ministries, private sector) with different interests to understand and participate in the CMS. According to informants, the CMS was initially viewed with suspicion with different interest groups looking at how to benefit from the scheme without much attention to the end goal of reducing health and environmental risks.

79. Led by CropLife and FAO as a broker, a series of negotiations/consultations and awareness of CMS among the actors were conducted to address these challenges. Major decisions during these consultations were the establishment of a task force (FAO, 2018) to lead in the implementation of a workplan for establishment of CMS and proposing ways of getting exemptions from the Environmental Affairs Department to transport wastes in Malawi. This led to the development of a flexible hybrid pilot model with commercial farmers. In the case of Illovo, the responsibility of delivering empty containers to the PCB was shifted to the suppliers of their pesticides. The suppliers collect the empty containers on their behalf at a cost that is factored in the price of pesticides, and this seems to be functioning well. Some key informants have raised concerns that this model – while it has succeeded in raising the level of awareness on the risks posed by empty pesticide contained – seems to absolve Illovo from the "polluter pays" principle and may not be sustainable in the long run.

80. *Legal requirements:* all stakeholders consulted concurred that the legal requirements towards recycling of triple rinsed containers were the greatest set-back. The Malawian regulations (the Waste Management and Sanitation Regulations of 2008) consider triple rinsed containers as hazardous material that should not be recycled. The anticipation at design, that waste management regulations would be declassified to cater for non-hazardous waste was overly-expectant without a written commitment from the Environmental Affairs Department that allowed

for the piloting of the business case. A big gap is that the CMS did not have strong links with the amendment of the pesticide legislation (Component 3) as envisaged at design. There seems to have been little or no linkages to Component 3 – which could have allowed for the integration of regulations formalizing the CMS (including definitions, roles and responsibilities of the stakeholders). The project's tireless efforts to get a waiver from the Environmental Affairs Department to consider triple rinsing of containers as non-hazardous are commendable but these came late during implementation of the project and were not successful. The mid-term review found that amendment to the regulations could, however, be obtained if stakeholders and partners would initiate a well-elaborated process of high-level lobbying. However, this was not followed-through, and the issue is still not resolved.

81. *Incentives for container management:* Most informants concurred that the smallholder farmer model was not implemented due to the lack of incentives to motivate them to deliver empty containers to the collection sites. Many government informants believed the business model for smallholder farmers was impractical and inappropriate for smallholder farmers – considering their disadvantaged socioeconomic and agriculture development context. To the contrary, the international demands around product certification are the greatest incentive for participation of commercial farmers in the CMS.

82. As part of the commercial farmer pilot, the project purchased a shredder from a company in Europe. The shredder is stationed in PCB PMU in Bvumbwe. Illovo participated in demonstrating the use of the shredder by delivering their empty pesticide containers during its launch (FAO, 2021). Three staff (two from CropLife Malawi and one from PCB) were trained on the operation of the shredder. Since then, commercial farmers either deliver their empty containers to Bvumbwe or use contractors to do so. The farmers' organization also have their own facility in Lilongwe-Kanengo for crushing and decontamination of empty containers, which their members use.

83. While the shredder has been useful in crushing triple rinsed and punctured containers into small plastic flecks, the shredded material is just piling because of challenges with securing appropriate offtakers who are able to function within the Malawi regulatory environment already explained. It is difficult to assess progress in this area due to a lack of data on the number of empty metallic and plastic containers triple rinsed and collected (indicator 2.1.3).

84. The evaluation team observed a big pile of bags containing shredded material (pellets). Two options for disposal of shredded material (co-processing and recycling) (FAO, 2021) were explored by the project but these efforts have not yielded concrete results within the prevailing regulatory environment. Although the CMS was designed with clear endline options regarding processing/recycling, the implementation has been a challenge due to legislative constraints.

85. Awareness/sensitization on container management (triple rinsing) was more successful since this had been started during the CleanFarms project. A poster developed by CropLife gives the commercial farmers guidance on how to do triple rinsing and puncture the containers. To a lesser extent, smallholder farmers received training on triple rinsing indirectly through FFS trainings. Consultations with one FFS group of farmers demonstrated little knowledge of container management as they spoke of disposing empty containers in their pit latrines and using them for applying fertilizers. The level of awareness is still very low nationally. While it is a multisectoral issue, pesticide risk management has not been fully integrated in most institutions of learning and at policy level – particularly within the agriculture and health sectors.

86. The project did not have a systematic awareness campaign strategy and there is no data on numbers of farmers that were trained in triple rinsing.

87. Overall, the container management pilots were not fully implemented and fell short of the basic requirements of a sound CMS (Döhnert, 2018) in terms of the following:

    i. apart from the import data provided by PCB that guided development of business case, the project did not generate subsequent reliable data on quantities of packaging and portfolio in the life of the project;

    ii. although a business case was developed, it did not fully consider the context of smallholder farmers in Malawi,

    iii. a sustainable route of disposal has not been found; and

    iv. container management pilots to meet the needs (dual scheme).

Output 2.2. Assessment and scaling up of the Blantyre pilot scheme to a permanent operator completed.

88. Due to the limited success in the Blantyre pilot scheme, no scale up activities were implemented.

3.2.3 Component 3: Strengthening legal and institutional framework for pesticide risk management and lifecycle management

89. Component 3 aimed at strengthening the legal and institutional frameworks for sound pesticide risk management and life cycle management. The legal aspects comprised amendment of the Pesticide Act to fully reflect the International Code of Conduct. The component also focused on strengthening the institutional capacities of the PCB – being the national pesticides regulatory authority – to achieve better post-registration enforcement capacity (e.g. inspections, training, quality control), improving coordination, establishing a formal information exchange between the various actors involved in pesticide management, and deploying the Pesticides Stock Management System (PSMS) for pesticide registration and stock management. Further, a long-term strategy for PCB operations would be developed.

Finding 10. The project's capacity building efforts led to increased skills and improvement in reporting under the Rotterdam Convention, updating of pesticide registrar and increasing pesticide registrations. However, the capacity to enforce and monitor the implementation of pesticides regulation is still lacking (partly because capacity building was not continuous and there are skills gaps on interpretation of the law).

Finding 11. The project successfully facilitated the enactment of the Pesticides Act of 2018 and comprehensive pesticides regulations that provide for sound pesticide risk management in Malawi. A notable missed opportunity is the lack of clarity on recycling of triple rinsed empty pesticide containers.

Outcome 3. Legal and institutional frameworks strengthened for sound life cycle management.

90. At outcome level, the project successfully managed to facilitate the enactment of the Pesticides Act of 2018 as well as the regulations that enable the implementation of the law. There is strong evidence indicating that capacity building efforts at institutional and individual levels has led to increased skills and improvement in the performance of the PCB. What remains are the challenges around PCB capacities in terms of human resource levels, equipment and testing facilities for implementing the Pesticides law.

91. The transitioning of PCB is ongoing. At the time of the evaluation, PCB was in the process of recruiting staff – although there were huge uncertainties around retainment of staff who had received training through the project. Besides this uncertainty, the resources were limited to employ a full complement of staff to meet the provisions of the Pesticides Law. The evaluation team did not get substantial data to show the levels of compliance due to the PCB conducting monitoring activities. Limited data gathered from Mzuzu show that most arrests are currently

targeted at street vendors; these fines are small (see Box 2). The objective of the exercise was to identify non-compliance and arrest all those in contravention to the regulations stipulated in the Pesticides Act. However, the targeted offenders and the levels of arrests does not include private sector, agrodealers and other commercial entities.

Box 2. PCB confiscation activity report for January 2022

Monitoring and Enforcement Officers conducted confiscation of unregistered, counterfeit, unlabelled and decanted pesticides from open market vendors in the districts of Mzimba, Rumphi, Mzuzu, Karonga and Chitipa from 30 January to 3 February 2022. Overall, eight arrests were made in Mzimba Boma for various offences including open market vending and possession of unregistered pesticides. Additionally, two more arrests were made at Chitipa Boma for similar offences.

Source: Key informant interview with the Regional Pesticide Inspector, Mzuzu District.

92. The weakness in enforcement is due to various factors, including (but not limited to) the insufficient number of inspectors, their limited logistical capability, the lack of access to a pesticide quality control laboratory, and the single-window policy of the government which limits the presence of PCB inspectors at border posts (FAO, 2020a). The lack of a formal information exchange platform hindered intergovernmental coordination and corporation on hazardous chemical management. Consultations with some stakeholders such as academia and NGO (Self Help) point to the need for such a platform to ensure broader participation and sharing of resources to implement the provisions of the law which currently rest on the PCB.

Output 3.1. National regulations developed and updated in conformity to international guidelines and submitted to government for approvals.

93. Output 3.1 was designed to address the gaps in regulations for sound pesticide cycle management caused by ineffective and weak legislation. At endline, the project had successfully contributed to the revision and enactment of the Pesticides Act, amendment 8 of 2018. The revision of the pesticide legislation was done through multistakeholder consultative processes that started in 2012. All informants consulted spoke highly of the amended Act and described it as being good and comprehensive in covering most aspects of the pesticide management. The Act gives the PCB additional mandate on the control and management, including: i) issuing of certificates, licenses and permits; ii) monitoring and control of imports, exports, manufacture, distribution, sale, storage, use and disposal of pesticides (section 11[a] and [b]); iii) issuing guidelines and conducting public educational campaigns on handling and use of pesticides (section 11[c]); and iv) monitoring disposal of empty or used pesticide containers and decontamination of sites (section 11[h]) – among others. A notable missed opportunity is the lack of clarity on recycling of triple rinsed empty pesticide containers.

94. Following the enactment of the Pesticides Act, the project also facilitated the revision of the 2021 pesticides regulations. At the time of this evaluation, the pesticides regulations had been successfully amended and are being published. Among other things, the 2023 pesticides regulations elaborate control of stockpiling, pollution, smuggling of pesticides, process for declaration of contaminated sites, registration of pesticides, importation and exportation permits and associated fees, etc. While the pesticide law has been enacted, what remains as a gap is the capacity of PCB staff in terms of interpretation of the laws to effectively implement the provisions of the pesticides regulations.

95. The development of the IPM policy did not happen since it depended on the lessons learned from the IPM FFS and collaboration with other stakeholders (SHA, CABI). As was noted in the mid-term review, due to low stakeholder involvement in the project, initiation of policy dialogue was a challenge.

Finding 12. PCB's institutional framework has been enhanced by the development of an organizational strategic plan and strong capacity building of staff but enforcing post-registration has been constrained by various resource constraints (e.g. lack of testing equipment, limited staff numbers, lack of a formalized multisectoral information sharing platform).

Output 3.2. Measures to strengthen the capacity of the PCB to enforce post-registration regulation developed.

96. There was high achievement in areas of strengthening the institutional framework and developing skills and functional capacities of PCB staff. The development of the PCB five-year strategic plan (2020–2025) was significant and facilitated PCB's transition from a department in the Ministry of Agriculture, Irrigation and Water Development to a statutory status. The PCB plan has five strategic outcomes: i) increased efficacious and inherently low risk pesticides; ii) improved compliance; iii) increased access to efficacious pesticides; iv) increased awareness and publicity on pesticides; and v) enhanced organizational efficiency and effectiveness. As a regulator of pesticides in the country, PCB is also a co-Designated National Authority (DNA) of the Rotterdam Convention on the free, prior and informed consent (FPIC) Procedure for certain hazardous chemicals and pesticides in international trade. With support from FAO, PCB has improved its reporting to the Rotterdam Convention.

97. Perhaps, the greatest achievement under this output is the strong capacity building of PCB staff delivered through both short-term and long-term training in pesticide risk management issues. The project funded tuition fees for two PCB staff in enrolling and attaining Postgraduate Diplomas in Pesticide Risk Management (DPRM) offered by the Environmental Health Division in the School of Public Health and Family Medicine at the University of Cape Town. This is a two-year flexible distance-learning programme using internet-based education technology.

98. One of the PCB staff graduates we spoke to praised the content of the DPRM course in terms of its interdisciplinary approach to pesticide risk management, risk reduction and risk prevention. In addition, the course was relevant to PCB staff daily tasks and was effective in building skills to manage pesticide risks through a life-cycle approach. Following the DPRM course, both students enrolled for a master's course which was partly funded by the project and one of the students has since completed.

99. Short-term training under this component was implemented as planned, focusing on diverse topics, and largely targeted PCB staff and other stakeholders as illustrated in Table 3.

Table 3. Summary of project capacity strengthening initiatives

Dates	Focus	Number trained			Organization
		Female	Male	Total	
August 2018	FAO pesticide Registration Toolkit	4	9	13	PCB FAO EAD Malawi Bureau of Standards
Feb. 2017–Dec. 2018	Postgraduate Diploma in Pesticide Risk Reduction	0	2	2	PCB (1) NPC (1)
April 2018	Training of enumerators for the national HHP survey	15	10	25	PCB (4) EAD (4) Department of Agricultural Extension Services (5) Agriculture & Nursing colleges (12)
2018	HHPs identification, risk assessment	-	-	4	National Task Team members and pesticides regulators
2018	Risk Assessment Tools and Post registration regulations	-	-	7	PCB (7)
2018–2020	FFS training of trainers	-	-	639	National facilitators (Department of Agricultural Extension Services) & NGOs Directly by project (16) Other FAO projects (623)

Source: Mid-term reviews and key informant interviews with project staff.

100. As seen in Table 3, most of the training was successfully delivered in the first two years of the project (2017–2018). With the subsequent project extensions that happened, stakeholders expressed the need for refresher courses and training of more staff because the capacity building was not continuous, the latter being necessitated by staff turnover, which has left a gap in knowledge and skills especially among members of the task force which consist largely of district councils.

101. A national workshop on the FAO Pesticide Registration Toolkit[3] was organized from 27 to 31 March 2017 in Blantyre (FAO, 2023). The training workshop was conducted to strengthen the PCB regulatory capacity to ensure sound management of pesticides. The trainees comprised eight staff members from the PCB Board (registration office and inspection team), two members of the PCB technical team, and the national FAO Project Coordinator. During the workshop, the participants were presented with the contents of the Toolkit and practical exercises that allowed them to make use of the Toolkit in their day-to-day work. According to informants, the training was relevant and has led to the updating of the Malawi pesticide register. According to data from PCB, there has been a noticeable increase in pesticide registrations from 2017 to 2021 which could be attributed to the skills gained in pesticides registrations gained. Going forward, informants expressed the need for better harmonization of the pesticide toolkit to meet the available resources and capacities within PCB.

102. A survey of highly hazardous pesticides (HHPs) was successfully conducted in 2019 targeting 1 498 farmers and other pesticide users in 23 districts covering eight agroecological zones across the country (FAO, 2019b). The HHP survey conducted aimed at raising general awareness on the dangers of HHPs, strengthen national capacity in implementing key chemical conventions such

[3] The Toolkit is a web-based registration handbook intended for day-to-day use by pesticide registrars. It helps registrars make informed decisions through the optimal use of existing data, methods, and evaluations.

as the Rotterdam Convention, and reducing human health and environmental effects. Following the survey, a total of 18 active ingredients (in 16 products) were identified as HHPs and presented to stakeholders for awareness raising and validation. On implementation of the HHP management plan, the PCB disseminated messages on banned and restricted products through print and electronic media, intensified monitoring and inspection, preparation of final regulatory action notifications to the Rotterdam Convention Secretariat and holding HHP management workshops with key stakeholders (FAO, 2020b).

Output 3.3. National capacity for pesticide inspections and post registration enforcement strengthened.

103. The training of 20 customs and plant health staff on enforcement of post registration of pesticides and PSMS did not take place as a standalone activity but was integrated into other trainings targeting PCB staff.

104. Despite the training under the project, the PCB has many challenges including lack of analytical facilities for testing samples of candidate pesticides submitted for registration and inadequate human resources. Consequently, the PCB is not able to make sufficient inspections, offer sufficient training to key stakeholders and make sufficient tests to determine product quality (Ministry of Agriculture, Irrigation and Water Development, 2017). There is currently limited or no inspectors in the borders due to freezing of posts. At times, PCB has recruited interns to conduct border inspections or worked with custom officials, but this has not been consistent and they are currently unable to reach most parts of the country.

105. An information exchange platform which was to be hosted by PCB to strengthen intergovernmental coordination and cooperation on hazardous chemical management was never established. Information exchange in the project remained ad hoc mainly between project steering committee members and PCB board. It failed to include multisector stakeholders such as customs, health officials, Agriculture and Environmental Officers, laboratory services, academia and other government, and private sector players active in sound life cycle pesticide management as envisaged at project design.

3.2.4 Component 4: Promotion of alternatives to persistent organic pollutants and other hazardous chemical pesticides

106. The component aims at increasing the sustainability of crop production by reducing reliance on chemical management and increasing farming system resilience to environmental stresses such as pest attacks and climate change. In FFSs, farmers learn to conserve natural biological control processes which suppress pest problems and to respond to a changing environment and climate through an "adaptive management". The component was meant to respond to limited local knowledge on pest ecology and biological control.

107. As in the other components, there is a mix up in the results chain as reflected in the way the output and outcome indicators are stated. Only one of the four is expressed as an outcome indicator while the rest are reported at an output level. For example, "IPM FFS implementation strategy validated in PY1" and "a national cadre of national facilitators and 40 FFS building farmers' capacity on agroecological management of farming systems. 800 farmers trained through FFS" are output indicators. For this reason, results can only be assessed adequately at an output level. Another evidence gap is in the missing data as well as baseline and targets in some or all the years across the output and outcome indicators. Nonetheless, using data collected through key informant interviews and secondary data, the evaluation team was able to determine to a large extent the results under this outcome.

Finding 13. IPM alternatives have been promoted through the various training implemented by the project but there is no evidence to show that this led to reduction in the use of chemical pesticides and HHPs.

Outcome 4. IPM alternatives to conventional pesticides successfully promoted and the use of chemical pesticides and HHPs reduced through FFS.

108. The outcome was to be measured using four indicators : i) number of IPM FFS implementation strategy validated in PY1; ii) number of national cadres of national facilitators and FFS trained on agroecological management of farming systems; iii) number of FFSs established and farmers trained through FFS; and iv) percentage reduction in pesticide use on vegetables, cotton and maize among trained farmers. Only the fourth indicator is phrased at an outcome level but there was no data collected on the indicator. The Evaluation Team relied on secondary data and data collected from focus group discussions with farmers and key informant interviews with key stakeholders.

109. The IPM alternatives to conventional pesticides were successfully promoted using the FFS IPM training curriculum. The farmers confirmed having received training on IPM alternatives and highly rated the usefulness of the training. Research in Malawi also shows that pesticidal plants provide an effective and established approach to pest management in smallholder farming. To optimize the use of botanical extracts for fall armyworm control, a study by Lilongwe University of Agriculture and Natural Resources screened ten commonly used plant species and was able to establish the best performing botanical extracts (Phambala *et al*., 2020). Similar research done by the Lilongwe University of Agriculture and Natural Resources on beans concluded that pesticidal plant extracts can help overcome multiple limitations in crop provisioning services, enhancing plant nutrition in addition to their established uses for crop pest management (Mkindi *et al.,* 2020). The outcomes of these research suggest that using extracts of pesticidal plants to control pests can be as effective as synthetic insecticides in terms of crop yields.

110. While IPM alternatives have been promoted through the various training implemented by the project, assessment of whether this has led to behavioural changes at farmer levels was not undertaken. Data from the work by Mzuzu University in the Northern Region promoting maize and common beans biopesticides indicates a low level of adoption due to limited skills and technical know-how in terms of timing of harvesting of the plant materials and lack of small equipment such as driers for handling plant extracts.

111. The promotion of alternatives cannot be entirely attributed to the pesticide risk reduction project alone as several similar interventions are being implemented by other partners such as government, NGOs and academia. The project has also ended without a full understanding of whether their efforts led to a reduction in the use of chemical pesticides and HHPs. As noted by some informants, a limited involvement of other partners working in similar initiatives like academia was also a significant oversight that limited achievements under this outcome.

Finding 14. The integration of FFS into FAO projects was generally useful in integrating human, technical and financial capacities within FAO but did not necessarily include most stakeholders working in IPM alternatives at farmer levels.

Output 4.1. IPM FFS implementation strategy validated with key stakeholders.

112. A workplan for implementing FFS was developed and validated with key stakeholders within the first year of project implementation as per design document. The workplan was used to guide development of the training curriculum and implementation of FFS in the first two years of the project. In 2019, the design of Component 4 was changed with the FFS component being

integrated into FAO projects, particularly the Kulima and Afikepo projects. Perceptions about the integration of FFS into FAO projects were mixed. Some informants were positive and said it was necessary to achieve optimization, harmonization and sustainability of FFS in the country. On the contrary, others were not happy about the process leading to integration as they felt it was less consultative and came across as a directive from FAO.

113. Despite full achievement under this output, a notable design gap was an oversight of the multisectoral nature of IPM. The project did not map out and identify organizations working on IPM at farmer levels so as to create synergies and partnerships. Of particular interest is the participatory/experiential research on IPM alternatives being undertaken by academia, NGOs and other partners. Such initiatives could have been integrated in the implementation plan, thus allowing a broad participation of stakeholders as well as optimizing resources beyond the FAO projects. Another limiting factor was the disengagement of Self Help which was supposed to lead this component. At the time of project design, Self Help was working with Agriculture Extension Officers through a project on plant clinics that supported farmers to identify pests and diseases.

114. Another relevant network of international and local partners such as the Lilongwe University of Agriculture and Natural Resources are part of the Malawi Digital Plant Health Service (MaDiPHS) (NIBIO, 2022). The main goal of MaDiPHS is to provide a tool for targeted and efficient pest and disease management of selected crops in Malawi. However, the project missed the opportunity of engaging with such local partner initiatives for sustainable IPM.

Finding 15. There was significant achievement in terms of building capacity of Extension Officers and farmers in IPM through FFS. There are notable gender differences in capacity strengthening efforts at both trainer and farmer levels and the project had no clear strategy for gender mainstreaming.

Output 4.2. Capacity building on IPM FFS on cotton and vegetables, and post-harvest training on maize in three Agricultural Development Divisions (Salima, Shire Valley and Machinga).

115. As already discussed under Component 3, an HHPs survey was successfully conducted in 2019, targeting 1 498 farmers and other pesticide users in 23 districts covering eight agroecological zones across the country. The HHP needs and risk assessment survey also covered the IPM FFS areas. The risks and needs assessment informed the mitigation plan for the shortlisted HHPS as well as other pesticides identified to present unacceptable risks to human health and the environment under local conditions of use.

116. An integrated FFS training curriculum on IPM, climate-smart agriculture (CSA) and decent work for FFS facilitators was developed and used during the IPM FFS trainings. The project overachieved in terms of capacity building efforts measured by number of trainers trained in IPM FFS and number of farmers trained in IPM FFS. Table 4 shows the number of Agriculture Extension Officers trained per year since the start of the project. There was no training in 2019 during the transitional phase when all FFS activities were being integrated into FAO projects. During this period, all FFS were not working on IPM efforts and this led to low progress in the implementation of training activities (FAO, 2019a). The number of those trained increased exponetially in 2020 and 2021, far exceeding the end of project target set at 30 trainers, thus showing the positive results of integration. The number of female trainers trained was low and could be a reflection of a lack of a gender mainstreaming strategy in the project. The Extension Officers consulted were satisfied with the content and quality of the training and this led to enhanced delivery of extension services to the targeted farmers.

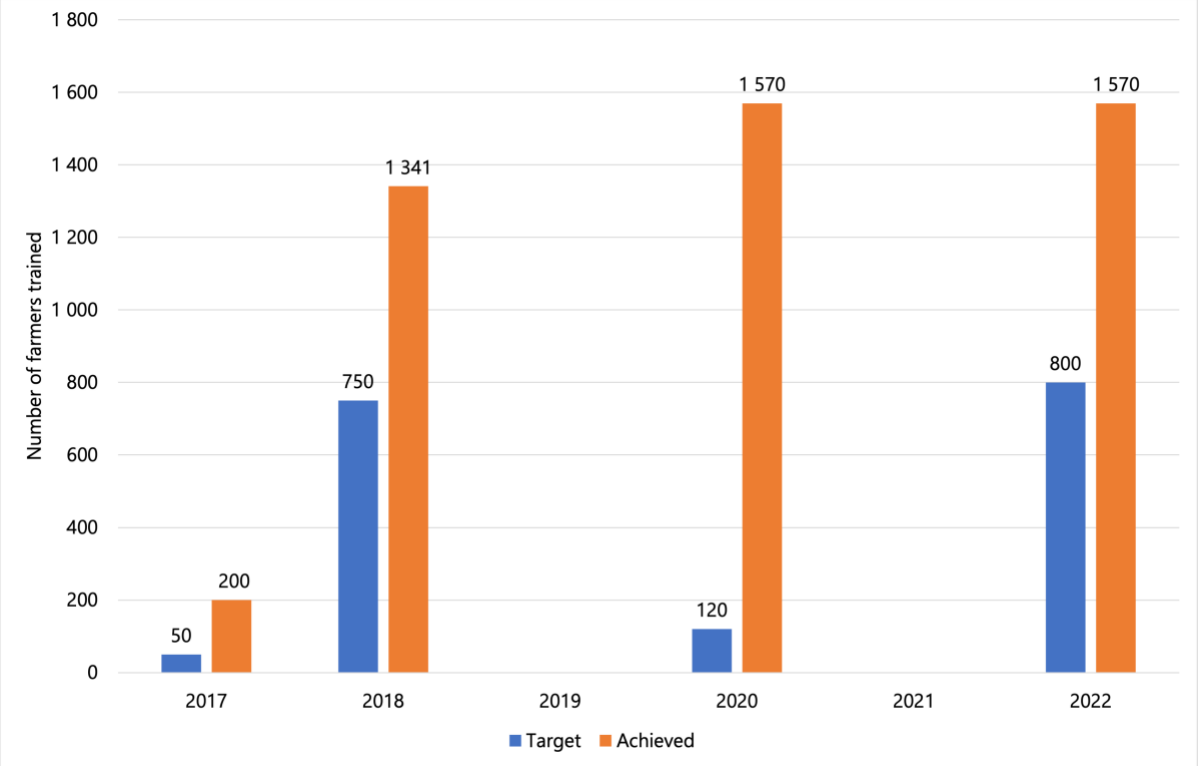
Table 4. Number of trainers trained in integrated pest management Farmer Field Schools by gender

Year	Male	Female	Total
2016	0	2	2
2017	11	3	14
2018	9	5	14
2019	-	-	-
2020	299	114	413
2021	466	234	700

Source: FAO. 2022. *FAO-GEF Project Implementation Report*. Rome.

117. Similarly, against the yearly targets set, there was overachievement in terms of number of farmers trained in IPM FFS as reflected in Figure 5. An analysis of gender-disaggregated data shows that a greater proportion of farmers trained were women. For example, of the 1 570 farmers trained in 2020, 988 were women and 582 were men. The farmers interviewed rated the quality of the training highly and could recall all the topics covered. Details of these perspectives are found in section 3.2.5.

Figure 5. Number of farmers trained in integrated pest management Farmer Field Schools



Source: FAO. 2022. *FAO-GEF Project Implementation Report*. Rome.

Finding 16. A comprehensive National Integrated Pest Management Strategy was developed to guide IPM in Malawi, but it is yet to be endorsed at a policy level.

Finding 17. There have been several awareness raising activities on pesticide risk reduction across the project components, but these have been unsystematic and ad hoc.

Output 4.3. Communication and dissemination strategy to raise awareness on pesticide risks along the pesticide life cycle and to promote IPM.

118. A notable achievement was the development of National Integrated Pest Management Strategy for Malawi with support from the project. Although it is yet to be approved, this draft strategy is Malawi's response to the increasing emerging threats from pest outbreaks. It seeks to achieve the following four interrelated objectives: i) prevent harmful introductions before they occur; ii) detect and identify invasive species before or immediately before they become established; iii) respond rapidly to invasive species before they become established or spread; and iv) implement innovative management options and take practical steps to protect against impacts of invasive species. This strategy supports strengthening of integrated production and pest management (IPPM)/IPM information dissemination, capacity development on IPPM/IPM and coordination and collaboration of stakeholders which have been central in this pesticide risk reduction project.

119. There is evidence to suggest that the project conducted several awareness raising activities on pesticide risks and promotion of IPM across all four project components. Most of the government, PCB and private sector informants gave examples of these efforts happening at various fora such as workshops, steering committee meetings, schools, among farmers, etc. However, the awareness raising activities were ad hoc and not systematic and, as a result, no data exists on number of awareness raising activities conducted nor on the number of extension providers, farmers and other pesticide users receiving information (materials and/or events).

120. The project did not develop a communication and dissemination strategy but a communication and dissemination matrix that was not disseminated but rather remained as an internal FAO document. As a result, this matrix did not guide the awareness raising activities. One of factors that affected the dissemination and sharing of experiences on IPM was the lack of integration in the sector. As already mentioned above, there was missed opportunity of bringing together various stakeholders to share experiences.

3.2.5 Capacity development

EQ 2.1. To what extent has the project contributed to the development of the capacities of Malawi and the beneficiaries regarding the reduction of economic, environmental and social risks associated with the use of pesticides in agriculture and the promotion of sustainable intensification of agriculture?

121. The "Pesticides Risk Reduction" project made significant progress in the provision of training as a means of building capacity. As presented under Component 3, the capacity building was diverse and offered at three main levels, namely individual, organizational/institutional and enabling environment level.

Finding 18. The project's contribution to development of capacity in pesticide risk reduction is strong and varied. Capacity building has enhanced knowledge, functional and technical skills at individual and institutional levels. It is unclear whether this translated to a reduction in the use of chemical pesticides and levels of awareness of pesticides risks remain low for the broader stakeholders.

3.2.5.1 Individual level

122. All survey respondents (mainly Agriculture Extension District Officers [AEDOs] and PCB staff) were satisfied with the trainings they received in one or more of the following areas: i) pesticide risk assessment; ii) risk assessment tools and post registration regulation; iii) enforcement of post registration of pesticides and PSMS; iv) advanced diploma in pesticide risk management; and v) training of trainers (FFS). This is because the training(s) offered them an opportunity to increase their knowledge in pesticide risk reduction areas. However, three out of six respondents who attended the training of trainers thought the training duration was short and this caused other topics to be rushed and provided limited opportunities for practical sessions.

123. Additionally, all respondents felt confident that they had acquired new skills (both technical and functional), knowledge, confidence and commitment. New skills acquired included pesticide handling, how to use appropriate personal protective equipment (PPE) during spraying, interpretation of pesticide codes and general information on botanical pesticides. They reported to have utilized these skills to train farmers in their respective areas of work. All six respondents indicated that there is an increasing number of farmers in their districts who have adopted the use of IPM, mainly botanicals in their fields. Discussions with farmers pointed to a general shift towards more use of botanical pesticides because it is easily available and less costly.

124. Discussions with one group of the FFS revealed some mixed level of knowledge and behaviour change around pesticide management. While most community members showed awareness of pesticide risks, there were still gaps in their knowledge on empty container management. It was difficult to assess whether they had changed their behaviour because of the knowledge gained.

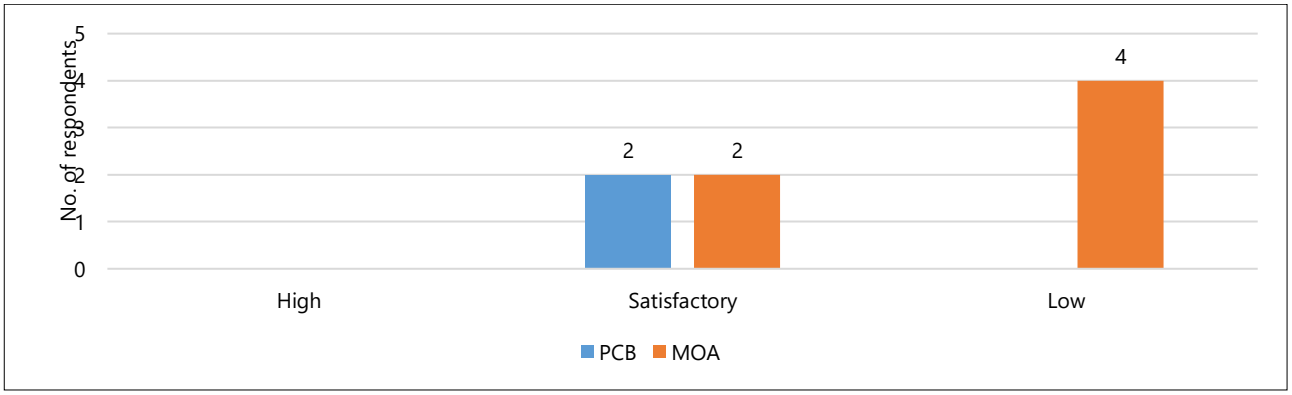
3.2.5.2 Organizational/institutional level

125. The main institutions that benefited from the project capacity development efforts were the PCB and the Ministry of Agriculture. For the PCB, the capacity development efforts improved the operations of the Organization. Apart from the trainings which PCB staff attended (short courses and a Postgraduate Diploma in Pesticide Risk Reduction), as already stated, the capacity development efforts included the development of the PCBs strategic plan which provides a roadmap for achieving the institutions long-term goals and objectives. The ministry however, mainly benefited through the training of trainers for the Agriculture Extension District Officers.

3.2.5.3 Enabling environment level

126. The project made significant efforts in raising awareness of the risks associated with pesticides. However, the awareness efforts were concentrated among the few stakeholders who were actively involved in the project. For the stakeholders whose involvement with the project was minimal, there remains a need to further raise awareness. Figure 6 below indicates the levels of awareness of pesticide risks among the PCB and Ministry of Agriculture as key stakeholders in the project. While for the PCB the level of awareness is perceived to be satisfactory, this is not the same for the ministry, where most respondents believe the level of awareness is low.

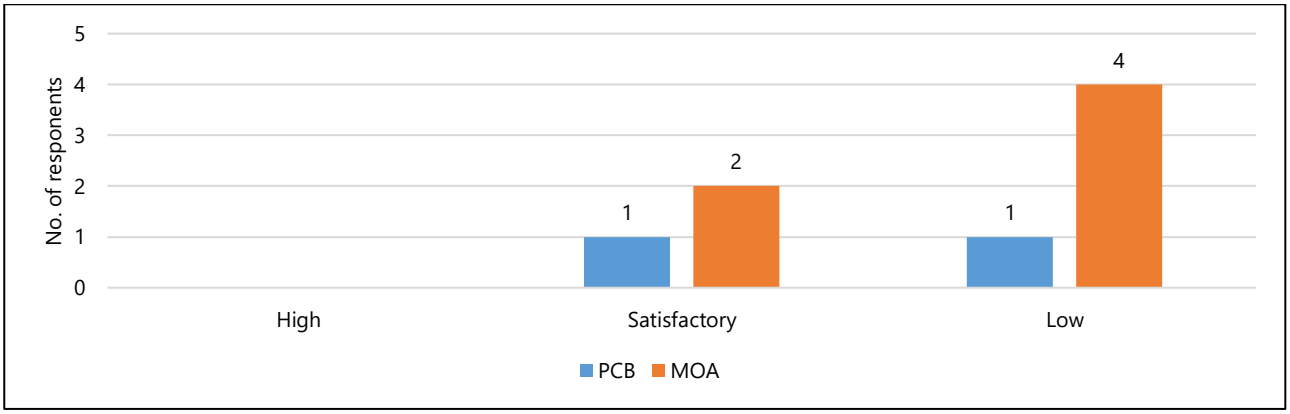
Figure 6. Perception on level of awareness of pesticide risks by Pesticides Control Board and Ministry of Agriculture staff



Source: Data from online survey.

127. The involvement of stakeholders as already alluded to in section 3.5.6 remained inadequate. Figure 7 also indicates a low level of multistakeholder engagement in decision-making regarding pesticides risk reduction across PCB and Ministry of Agriculture – the situation is worse for the ministry.

Figure 7. Level of multistakeholder participation in decision-making on pesticide risk reduction



Source: Data from online survey.

128. Informants from PCB noted that with the amended Pesticides Act, there was an improvement in the pesticides registration and deregistration of HHPs. An upward adjustment of penalties has shown to have the potential of preventing the influx of unregistered pesticides on the market as the higher penalties act as a deterrent to importation without registration. Although the improvement in registration was recorded, the PCB remains challenged in enforcement as they are severely understaffed and do not have the necessary equipment to ensure that monitoring is effectively done. An example was the PCB office in Mzuzu (the northern region of Malawi) where the PCB office only has one member of staff to oversee the entire region.

3.2.6 Progress to impact

129. The goal of the GEF through its chemicals programme is to promote the sound management of chemicals throughout their life cycle in ways that lead to the minimization of significant adverse effects on human health and the global environment (GEF, 2011b). The long-term impact of GEF interventions is a reduction in the exposure to POPs of humans and environment. The main indicator for this reduction of exposure is a decrease in the observed concentrations of specific POPs in the environment. The project, however, did not include any impact indicator, so that progress to impact can be assessed and a contribution assigned to it. It is only possible to estimate the potential reduction of stress in environmental systems, based on a projection of what has been achieved. The country, because of this project, is moving towards achieving the objective of the project. To reduce economic, environmental and social risks associated with the use of pesticides in agriculture and to promote sustainable intensification of agriculture, even though it is not possible to estimate this decrease not even in a rough approximation, without the baseline and endline estimates.

130. Based on the achievements at outcome levels and perspectives from stakeholders consulted, the project made significant progress to global environmental benefits contribution through the following.

i. The disposal of up to 255.975 tonnes of POPs and other obsolete pesticides.

ii. While the remediation of one heavily polluted site is yet to be completed, there is a high likelihood that once achieved, it will reduce the danger to human health and the existing risk of soil and water contamination.

iii. Through the container management and raising awareness among the public about the risks inherent in reusing containers for domestic purposes, specifically for storing foodstuff and drinking water, project activities contributed to the reduction in the adverse impacts to human health.

iv. The enactment of the pesticide act and regulations and associated capacity building of PCB staff is an important contribution towards preventing future accumulation of POPs and obsolete pesticides the project.

v. To a large extent, the promotion of IPM alternatives, the project contributed to the reliance of farmers on HHPs.

3.3 Efficiency

EQ 3. To what extent has the project been implemented in an efficient, cost-effective, and timely manner, and management been able to adapt to any changing conditions to improve the effectiveness of project implementation?

Overall rating: Moderately satisfactory

Finding 19. The project has been cost-efficient in terms of resource use but suffered serious delays due to FAO systems and procedures and challenges with mobilizing stakeholders for timely decision-making.

3.3.1 Timeliness

131. The project experienced delays across all four components. In the case of Component 1, delays were due to challenges of getting contractors and consultants for disposal of POPs and remediation of contaminated sites. Requests for services were initiated on time but approvals from headquarters took time. For example, responses to the bids for disposal services in Europe were low necessitating for multiple requests for bids. Under Component 2, the acquisition of the shredder was also delayed due to challenges getting suppliers who were being put off by rigid FAO systems and procedures on procurement. The diversity of partners and different interest groups under the container management system also caused serious delays. In some instances, it took time to get the right consultants to work on certain activities particularly in the review of legislation under Component 3. Delays in Component 4 were experienced during the integration of FFS into FAO projects as partners took time to understand and cooperate around this change in implementation.

132. FAO responded to these delays through requests for no-cost project extensions (see Table 5) which were accompanied by a budget revision/realignment. The project was initially approved by the GEF in November 2015 for a duration of 36 months but has benefited from six no-cost extensions that has prolonged its duration until August 2023 (current NTE date). As reflected in Table 5, the justifications are a result of administrative and implementation challenges including the impact of the COVID-19 pandemic.

Table 5. No-cost extensions and their justification

Year	Revised NTE	Justification
2018		A no-cost project extension has been proposed because Component 2, 3 and 4 activities are lagging behind significantly due to late commencement of implementation and administrative challenges.
2019	June 2020	Some activities have taken more time to implement than expected. Therefore, more time is required for implementation. Such activities include the rolling out of the empty container management system, remediating pesticide-contaminated sites, finalizing the disposal of obsolete pesticides and finalizing the strengthening of the legal and institutional capacity under PCB for better management of pesticide lifecycle.
2020	July 2021	Delayed implementation in 2020 due to the COVID-19 pandemic that led to quarantine and teleworking conditions hence reduced output. Continued delays in procurement of laboratory services for analysis of soil samples from contaminated sites, remediation of suspected pesticide-contaminated sites, disposal of obsolete grain protectants and the establishment of a sustainable empty container management.
2021	July 2022	Delays with delayed implementation due to the COVID-19 pandemic and difficulties to secure disposal of remaining obsolete pesticides.
2022	March 2023	The project still must dispose of an extra 11 tonnes of obsolete pesticides and associated wastes leftover during the initial disposal of 257 967 tonnes by high-temperature incineration and part (comprising ash and burned pesticide waste) by landfilling. This lot also includes some stocks accumulated by the Pesticides Control Board (PCB) in their registration and post-registration activities (e.g. confiscated illegal products and samples often submitted for registration).
2023	August 2023	Delays in releasing the export consent to the contractor and EAD now must reissue the Export Consent with new dates and prevailing wet conditions in Malawi do not allow for excavation of the pesticide contaminated soils at Agricola Farm.

Source: Data provided by FAO Malawi Country Office, Finance Division.

3.3.2 Resource use

133. The financial information presented in the following pages has been sourced from the FAO Malawi Country Office. As shown in Table 6, the GEF grant was USD 2 550 000, of which USD 2 462 921.59 was disbursed at an execution rate of 96.6 percent as of March 2023, which is largely satisfactory considering the multiple extensions and some hidden costs that could have accrued under this project. Hence, the overall project spending was within the total original budget received from GEF. Component 1 has the largest original/approved budget and total expenditure, followed by Component 2, then M&E, Component 4 and Component 3.

Table 6. Global Environment Facility total disbursements (USD)

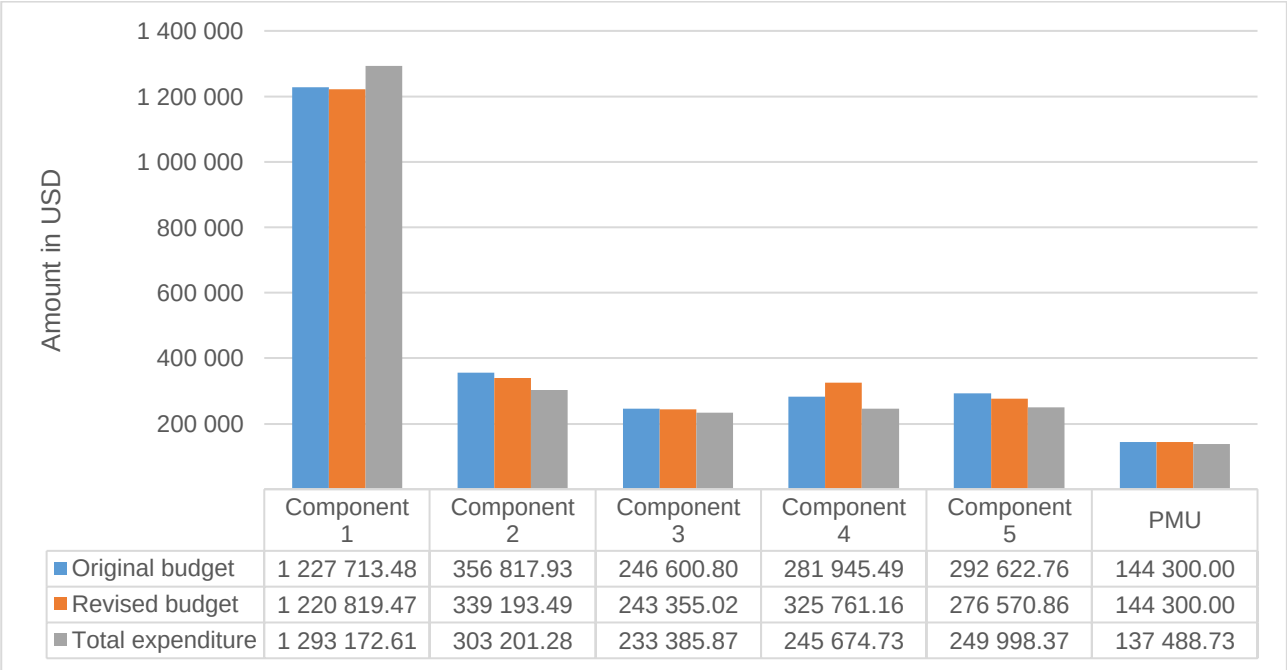
	Original budget	Revised budget	Total expenditure (2016–Jan 2023)	Variance
Component 1	1 227 713.48	1 220 819.47	1 293 172.61	(72 353.14)
Component 2	356 817.93	339 193.49	303 201.28	35 992.21
Component 3	246 600.80	243 355.02	233 385.87	9 969.15
Component 4	281 945.49	325 761.16	245 674.73	80 086.43
M&E	292 622.76	276 570.86	249 998.37	26 572.49
PMC	144 300.00	144 300.00	137 488.73	6 811.27
TOTAL	**2 550 000.46**	**2 550 000.00**	**2 462 921.59**	**87 078.41**

Source: Data provided by FAO Malawi Country Office, Finance Division.

134. An analysis of the detailed budget by project component shows that the required resources were itemized and adequately defined. The largest share of the budget under Component 1 went to disposal and remediation of sites activities, and then salaries, training and soil analysis. While in Component 2, the procurement of activities and consultants had the largest share. Component 3 and 4 budgetary items were largely that of consultants, contracts and general operating expenses. As already stated, each request for project extension came with budget reallocation to ensure spending remained within the overall approved project budget.

135. There were small budget variances across all components, particularly under Component 1 where an overspend was recorded (Figure 8). What appears as an overspend is due to weaknesses in the FAO Malawi Country Office financial mapping which is done offline and therefore prone to error. It was established that the financial mapping is not entirely accurate because as already stated, the actual expenditure is within the overall total budget. The Country Office is currently working on rectifying this by moving to a ratio-based system.

Figure 8. Project original budget vs revised budget vs total expenditure



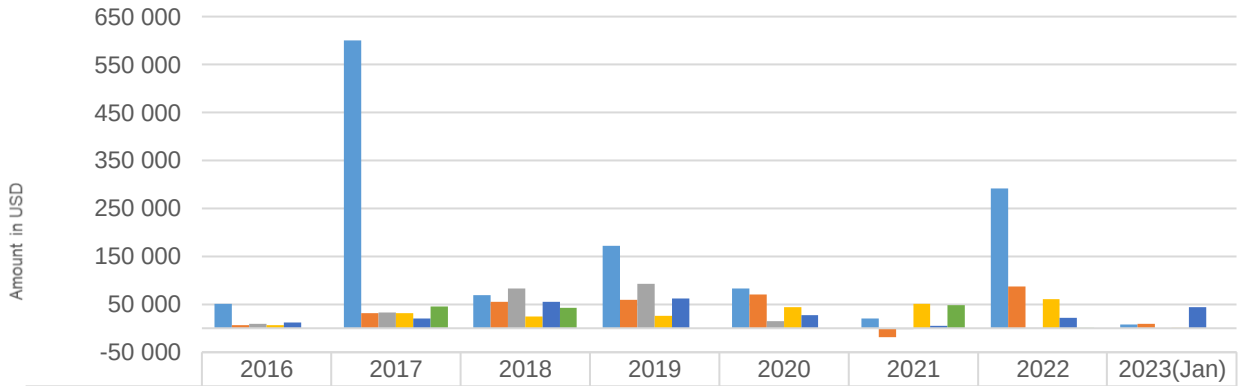
	Component 1	Component 2	Component 3	Component 4	Component 5	PMU
Original budget	1 227 713.48	356 817.93	246 600.80	281 945.49	292 622.76	144 300.00
Revised budget	1 220 819.47	339 193.49	243 355.02	325 761.16	276 570.86	144 300.00
Total expenditure	1 293 172.61	303 201.28	233 385.87	245 674.73	249 998.37	137 488.73

Source: Data provided by FAO Malawi Country Office, Finance Division.

3.3.3 Level of project implementation

136. Figure 9 shows large year on year variances in expenditure under Component 1. Fluctuations range from around USD 600 000 in 2017 then down to USD 69 000 in 2018, and up in 2019 and 2020 to USD 72 000 and USD 82 000 respectively, then a steep drop to USD 19 000 in 2021 and escalation to USD 290 000 in 2022. While in part this can be explained by the weaknesses in FAO Country Office mapping, the greater part is due to inefficiencies in implementation caused by delays (already explained under resource use) and under the effectiveness section.

Figure 9. Total expenditure per component in USD (2016–2023)



	2016	2017	2018	2019	2020	2021	2022	2023(Jan)
Component 1	50 916.42	600 105.79	69 195.87	172 016.95	82 443.02	19 738.36	291 079.05	7 677.15
Component 2	7 072.50	31 168.18	55 374.27	59 801.56	71 055.41	-18 382.38	87 354.75	9 756.99
Component 3	9 468.87	32 374.46	83 411.50	92 369.46	14 678.38	- 394.09	1 477.29	.00
Component 4	6 814.62	31 349.40	24 971.28	26 621.44	43 729.59	50 969.49	60 086.44	1 132.47
Component 5	12 580.49	20 451.95	54 996.49	61 833.12	27 831.54	5 713.33	22 156.30	44 435.15
PMU	.00	45 507.54	42 837.67	.00	.00	48 609.81	533.71	.00

Source: Data provided by FAO Malawi Country Office, Finance Division.

137. The challenges experienced within Component 1 are reflected in the variances in expenditure. Similarly, in Component 2, there was a negative spending of around USD 18 000 in 2021. This was explained to be a result of a legal contract (purchase order) for a hotel venue for a Project Sterring Committee conference that did not take place. There were budget allocations to the PMU for 2019, 2020 and 2023 due to cost sharing arrangements with other projects in FAO.

3.4 Sustainability

EQ 4. Are the results of the project contribution sustainable (continuing, or likely to continue after the interventions)?

Finding 20. The likelihood of project sustainability among the project components is variable with Component 3 having the highest likelihood of sustainability followed by Component 4. Component 2 has a reasonable likelihood of sustainability while Component 1 remains the most unlikely to be sustained.

Finding 21. The highest risk to project sustainability was considered to be financial since all key components of the project cannot run without adequate funding. Components 1 and 2 were considered to have the highest risk due to the need to use facilitates outside Malawi for the disposal of obsolete pesticides and remediation of excavated materials both of which are high-cost activities.

Finding 22. While the project made efforts to engage key stakeholders at most stages of project implementation, stakeholder engagement remained low with mainly those having vested interests remaining committed to the project.

3.4.1 Financial risks to sustainability

138. As noted in the mid-term review, Component 1 still has significant financial risks to sustainability. In the absence of an environmentally sound disposal facility for obsolete pesticides in Malawi, the only option available is exports. Unfortunately, with continued stockpiling of obsolete pesticides, there shall be continued accumulation post project life and the need to still develop long-term options for disposal remains high. The method of remediation of contaminated sites used by the project (excavation of contaminated soil for clean-up) is also a high-cost option which cannot be sustained. Furthermore, the processes of environmental assessment, development of conceptual

site model, environmental management plans and remediation strategies all require adequate financial, human and infrastructural (laboratories) capacities, all of which remain a challenge. Exploring other forms of remediation (depending on the degree of contamination) such as phytoremediation remain a more feasible option.

139. Component 2 also has a reasonably high degree of financial risk to sustainability considering that the collection, transportation and shredding of the empty containers all require finances to sustain them. Operation of the shredder in the wake of electricity challenges in Malawi further makes the shredding costly as it is done using a diesel-powered generator. Operation and maintenance of the machine further increases the costs. The final disposal of the shredded material (which is currently unknown, and the shredded materials are stockpiling at PCB premises) will also be a costly process.

140. The introduction of a levy on primary packaging and disposal of empty containers remains a possible means of reducing the financial risks. Unless the tax levy is enforced and producers of empty containers take the responsibility of paying for disposal services (implementing an extended producer responsibility), long-term financial sustainability will remain a significant risk. This method, however, is workable for big commercial farmers with whom the pilot scheme in the project was done. For smallholder farmers, there is still a need to explore a suitable model for their involvement.

141. Component 3 saw the amendment of the Pesticides Act No. 8 of 2018 and the revision of the pesticide's regulations of 2023. These revisions gave the PCB a new mandate which cannot be fully implemented without adequate financing at all levels. There will be financial requirements to support PCB staff, enforcement activities, monitoring and continued capacity building.

142. Component 4 saw the incorporation of the FFS into other existing projects. This significantly cut costs associated with this component and increased the chances of long-term sustainability if other projects exist. However, if not for the integration of the FFS into other projects, high costs of running FFS, purchasing inputs and monitoring the FFS would have been a significant risk to sustainability.

3.4.2 Sociopolitical risks to sustainability

143. The possible sociopolitical risks to sustainability are most likely related to change of government which may lead to changes in government policy and priorities as well as regulatory changes. Malawi's commercialization drive under the 2063 Agenda will likely lead to an increase in pesticide importation and use. Furthermore, the current government is promoting the Mega farms agenda. This entails large scale commercial farming which also has the potential of increasing pesticide use and the risks associated with pesticide use. There is therefore a need to develop policies and strategies that promote the use of IPM approaches to pest management with a focus on cultural and biological control measures. Additionally, it entails strengthening stakeholder participation such as researchers, local communities as well as NGOs in developing, implementing and evaluating the various IPM approaches that may be considered effective.

144. Malawi's economic instability remains another sociopolitical risk to sustainability. Economic challenges and financial instability may lead to reduced funding for agriculture and project-related activities and increased costs in all areas. The situation may be worsened by pandemics such as COVID-19 which seriously affects economies as well as natural disasters which further put a lot of pressure on countries like Malawi which already faces economic challenges.

145. Malawi remains a recipient of donations from various countries of various supplies including pesticides. This increases importation of pesticides with the potential of either stockpiling or increasing risks of their use. Informants confirmed that they had in some cases imported more than required pesticide volumes which have ended up becoming obsolete overtime due to expiry. In the absence of strong enforcement and monitoring, this trend will continue, and the risks associated with pesticide use will remain high.

3.4.3 Institutional and governance risks to sustainability

146. The Evaluation Team observed a general low level of stakeholder interest and engagement in project activities. Some stakeholders such as Self Help Africa dropped along the way. The Ministry of Agriculture through its departments such as the Department of Agricultural Extension Services, the Department of Crop Development and the Department of Agricultural Research Services had critical roles to play across the project components. The Department of Agricultural Extension Services for example was key to Component 4 on promoting safer alternatives to chemical pesticides through FFS that were focusing on studying IPM and the use of alternatives to synthetic pesticides mostly botanicals. While integration of FFS into other projects had huge benefits, it led to limited engagement of the Department of Agricultural Extension Services in the project activities.

147. As already noted, the project had several stakeholders with vested interests which is a risk to sustainability. For example, the evaluation team noted that some stakeholders who represent pesticide importers, are also sellers of pesticides, distributors of pesticides, they collect pesticides containers and play a role in the shredding of empty containers. Potential conflict of interest among stakeholders is also very likely due to the varying stakeholder interests.

148. Failure to institutionalize the project remains a major risk to sustainability. For example, although the shredder was procured under Component 2 and installed at PCB premises in Bvumbwe, there is still no clarity on who is supposed to take full responsibility over its maintenance.

149. While the project made strides in capacity building mainly through training, revision of the Pesticides Act, amendment of the pesticides regulations and developing the PCBs strategic plan, capacity gaps still exist and will remain a risk to sustainability. Some people trained in the project have transferred to other institutions. Additionally, those from the PCB who were trained are on secondment with no assurance of whether they will continue working with PCB in the long-term or not. There are capacity gaps in the areas of staffing for the PCB, continued training in various areas of pesticide risk reduction, equipment which the PCB would require for monitoring and enforcement and data management (no data management system). The PCB for example only has one staff member responsible for all its activities in the northern region.

3.4.4 Environmental risks to sustainability

150. Environmental risks will likely arise from climate change, natural disasters and pollution. Climate change is one factor driving the spread of pests and diseases, along with increasing global trade. Climate change can affect the population size, survival rate and geographical distribution of pests; and the intensity, development and geographical distribution of diseases (Doody, 2020). In Malawi, the emergence of the fall armyworm and *Tuta absoluta* in recent years are among the new pests registered in the country. Climate change has not only led to an increase in the use of pesticides, but also increased chances of pests building resistance to the readily available pesticides due to repeated use. Illovo, a sugarcane farm, only started using pesticides in 2013 since they began operating in 1966. They spoke of the challenges around pests building resistance to pesticides over time and how they are now seriously considering using biopesticides.

151. In public health, climate change has increased the incidences of climate sensitive diseases (IFRC, 2021) such as diarrhoea in Malawi. In most areas where such diseases are prevalent, indoor spraying of pesticides by the Ministry of Health also raises the risks associated with pesticide use. In the wake of climate change, such incidences will persist, leading to increased risk of sustainability due to more importation of pesticides for spraying, accumulation of empty containers and low level of awareness of the risks of pesticide use.

152. The occurrence of natural disasters in Malawi is a factor that remains a moderate risk to project sustainability. Due to natural disasters such as drought and floods, agricultural productivity is highly affected as well as loss of food crops especially those under rainfed production. To intensify agriculture and increase production, farmers use more pesticides and increase risks associated with their use. The 2022–2023 growing season for example has seen districts in the northern region of Malawi (Karonga) experiencing drought while the southern region districts such as Blantyre and Chikwawa have experienced serious floods due to cyclone Freddy, leading to loss of lives, crops, livestock, infrastructure and increased pollution.

3.4.5 Strategies to ensure replication of results

153. The capacity building efforts made by the project are considered one of the key areas that provides an opportunity for replicability. Capacity building efforts in various forms such as training offered to project stakeholders including PCB, Environmental Affairs Department and Ministry of Agriculture would help future projects to implement, manage and sustain project activities, and to adapt to changing circumstances and challenges, effectively increasing the possibility of replicating the project.

154. In its design, the project planned to have stakeholder engagement of key stakeholders and relevant government ministries and departments. This was considered one of the key strategies in enhancing ownership and commitment to the project. However, during project implementation, some stakeholders such as Self Help Africa and the Ministry of Health had withdrawn their engagement in the project which may lead to challenges in replicating the project. On the positive side, key stakeholders like the PCB, Environmental Affairs Department, CropLife remained active in the project implying that it is still likely that it may be replicable.

155. Documenting and disseminating project successes and best practice would also go a long way in ensuring replicability. During the evaluation, the evaluation team saw fliers that were developed during the project life on triple rinsing of empty containers. This was a good step in ensuring that important information is made available to interested stakeholders while also raising awareness.

3.4.6 Sustainability of results on capacity development

156. For the PCB, the capacity development efforts improved the operations of the organization. Apart from the trainings which PCB staff attended (short courses and a Postgraduate Diploma in Pesticides Risk Reduction), as already stated in section 3.2.4, the development of the PCBs strategic plan provides a roadmap for achieving the institutions long-term goals and objectives.

157. The beneficiaries of the trainings offered generally expressed satisfaction on acquisition of new skills which were useful in executing their work. For example, extension workers who were trained as master trainers indicated using the acquired information with the farmers in their various locations to promote safe use of pesticides where they are used while also encouraging farmers to explore and adopt the use of IPM mostly botanicals in pest control. Section 3.2.5 contains further details.

3.4.7 Ratings for sustainability

Risk category	Sustainability rating	Explanations
Financial risks	MU	There is significant risk to sustainability
Socio-political risks	L	There is little or no risk to sustainability
Institutional and governance risks	ML	There is moderate risk to sustainability
Environmental risks	ML	There is moderate risk to sustainability
Overall likelihood of risks to sustainability (rating from LU to HS)	ML	There is moderate risk to sustainability
Catalysis and replication (rating from HU to HS)	MU	There are significant risks to sustainability

Source: Elaborated by the Evaluation Team.

158. The detailed sustainability ranking per component is found in Appendix 9.

3.5 Factors affecting performance

3.5.1 Design and readiness

Finding 23. The project design is technically sound, comprehensive and builds on lessons learned from previous similar projects in Malawi. The design did not provide a clear analysis of the health risks associated with the use of pesticides to allow for active participation of the Ministry of Health.

Overall rating: Satisfactory

159. The project design is technically sound and comprehensive and was informed by a detailed analysis of the problems at all stages of the pesticide life cycle from importation through to disposal. Problem analysis included challenges around illegal import and vending to unlicensed dealers and untrained users, centralized government procurement, poor stock management, inaccurate assessment of needs, and weak import and regulatory controls.

160. One of the strongest aspects of the design was that it built on lessons learned from previous initiatives aimed at reducing risks associated with pesticides risk reduction in Malawi. The project builds on the Africa Stockpiles Programme (ASP) implemented through a World Bank, CropLife International and FAO partnership. The programme aimed at disposing of the stockpiled obsolete POPs and other pesticides. In 2012 and as part of the ASP and its follow-on activities, CropLife International financed and implemented the CleanFarms project which assessed the amount and type of obsolete pesticides including POPs. Another important project that fed into the design was the FAO-European Union project "Capacity Building related to Multilateral Environmental Agreements in African, Caribbean and Pacific countries – Clean-up of obsolete pesticides, pesticides management and sustainable pest management".

161. Further, the FAO Technical Cooperation Programme (TCP/MLW/3302) supported primarily a legislation review and the safeguarding operation of obsolete stocks which led to a draft Pesticides Bill 2013 being produced. Under the same TCP, two officers from the PCB were trained in the FAO PSMS and project M&E. Subsequently, GEF provided a project preparation grant (PPG) of USD 75 000 in 2015 which led to the design of the "Pesticides Risk Reduction in Malawi" project.

162. Although there was no TOC at design, it was developed at mid-term in 2019. During this terminal evaluation, the TOC was revised to clearly articulate the causal pathways and the means to the expected outcomes. The components of the project were relevant and in line with the challenges identified and came to enhance the responses to pesticide management in Malawi. In 2018, a major change in the design of the project was the integration of FFS to the FAO Country Office

projects Kulima and Afikepo.[4] The reasons provided are justified and helped to consolidate efforts and harmonize FFS initiatives within FAO but were initially not understood by implementing partners and this led to delays in implementation of FFS activities in 2019. In addition, due to project design changes, a baseline survey in the Machinga, Salima and Shire Valley Agricultural Development Divisions to guide the work on alternatives and further activities to reduce pesticide risks was never implemented. There was a missed opportunity for this baseline to inform other components, particularly the container management pilot and as a monitoring mechanism to track project progress and reduce pesticide risks at all stages.

163. Another apparent gap already highlighted under relevance was the less focus on pesticides risks to human health. As a result, there were no specific indicators developed to measure this element.

164. In general, the design had detailed and clear implementation arrangements for key participating partners. However, the role of the Ministry of Health was not clearly defined and their participation in the implementation was very weak and almost non-existent. Despite numerous attempts, they failed to participate in the terminal evaluation citing their limited involvement in the project. Although the Pesticide Act requires notification to the registrar of pesticides of any such pesticide-related injury, this information appears not to be routinely, sufficiently and systematically collected in Malawi. There is also a paucity of data in Malawi on human and environmental exposure to pesticides as well as levels of knowledge, attitudes and practices (behaviours) related to pesticide handling and management (Kosamu, Kaonga and Utembe, 2020), and the project missed the opportunity to fill that gap.

165. While the design was good, implementation of some activities faced challenges as explained under effectiveness. For example, although innovative approaches such as piloting of container management system had worked elsewhere, this proved to be too ambitious in the Malawian context where legislation changes take time and require intensive education/awareness and advocacy efforts. Furthermore, while the project was meant to develop and implement a communication strategy to raise awareness on pesticide risks targeting a wide spectrum of stakeholders from grassroots, especially women and children through to policymakers, this failed to take off.

3.5.2 Monitoring and evaluation system

3.5.2.1 Monitoring and evaluation design

EQ 5.1. Was the M&E design practical and sufficient and did it work as intended? Did it specify clear targets and appropriate indicators to track environmental, gender and socioeconomic results; a proper methodological approach; specify practical organization and logistics of the M&E activities including schedule and responsibilities for data collection; and budget adequate funds for M&E activities?

Finding 24. The results logic (output and outcome statements) is clear and congruent with the overall project objective but the indicators have gaps in their formulation and reporting, which undermines the extent to which results of the project can be assessed.

Finding 25. The M&E design was satisfactory in defining overall M&E activities, although an M&E plan with refined indicators, clearly defined roles and responsibilities of partners, tools to guide data collection, reporting and dissemination was not developed.

[4] Kulima worth EUR 100 million, focuses on climate change, food security and sustainable agriculture with private sector engagement. Afokepo, with a European Union allocation of EUR 70 million, addresses nutrition security issues through a multisector integrated programme covering agriculture, health, education and governance.

Overall rating: Satisfactory

166. The M&E design was satisfactory as it defined the main M&E activities, responsible parties for each activity, timeline and project activities, and budget. The results (outputs and outcomes) are clear, logical and congruent to the overall project objective "to reduce economic, environmental and social risks associated with the use of pesticides in agriculture and to promote sustainable intensification of agriculture". Targets and milestones have been defined for most indicators (although incomplete and not specific, measurable, achievable, relevant and time-bound [SMART]). Assumptions were well elaborated, although the policy dimension and government processes were underestimated but had an excessive influence on project activities.

167. The project's logical framework has undergone two revisions (2018 and 2019) to enhance clarity in the interrelationship between levels and in indicator definitions. Despite these adjustments, the logical framework has some gaps in formulation and reporting of some output and outcome indicators as reflected in Table 7.

Table 7. Summary of gaps in the project logical framework

	Indicator	**Comment**
Outcome 1: Risks to human health and the environment are reduced through safe disposal of POPs and other OPs and remediation of contaminated sites	No. of tonnes of POPs and other obsolete pesticides disposed by high temperature incineration. No. of tonnes of degraded pesticide disposed locally by the government. No. of sites (tonnes of soil treated/one contaminated site) remediated.	- Outcome statement changed to: *Increased capacity for the Ministry of Agriculture, Irrigation and Water Development to enhance evidence-based food and nutrition security policies, productivity and improve livelihoods but evaluation team retained the original indicator.* - The outcome indicator *"% decline in soil contaminants used at design dropped"* Some targets missing.
Output 1.1–1.3	Output 1.3 indicator is phrased at an outcome level *"% reduction in contamination level/risk of exposure of mitigated sites"*	- Other outputs are clearly defined with assigned responsibilities for data collection and reporting.
Outcome 2: Health and environmental risks associated with empty pesticide containers and their reuse are reduced	Number of empty containers triple rinsed, collected and stored awaiting recycling. National policy/action plan based on pilot adopted by Government of Malawi EAD/PCB.	- Indicators are at an output level.
Outcome 3: Legal and institutional frameworks strengthened for sound life cycle management	No. of revised national legislation and regulations in compliance with international obligations developed. No. of National Strategy and/or Action Plan (NSAP) specifically pertaining to implementation of the Code endorsement. No. of information exchange platform hosted by PCB to strengthen intergovernmental coordination and cooperation on hazardous chemical management established validated and operational.	- The project adjusted three indicator statements to ensure they are measurable (number was inserted). Although modified, it still remains at the output level and do not make it possible to measure the effects and/or changes expected from this outcome.
Output 3.1	No. of comprehensive national legal framework enabling the domestication of international and regional instruments developed and validated. No. of national IPM policy documents endorsed by stakeholders.	- All indicator statements adjusted to ensure they are measurable and are phrased at an output level.

	Indicator	Comment
Output 3.2	No. of measures to strengthen the capacity of the Pesticides Control Board (PCB) to enforce post-registration regulations developed.	- Percentage regulators trained on pesticide risk assessment and post registration changed to "*Number of staff trained on pesticide risk assessment and post registration*".
Output 3.2	No. of mandated and trained pesticide inspectors, customs, plant protection and other officers involved with enforcement. No. of national networks of pesticide information exchange established.	
Outcome 4: IPM alternatives to conventional pesticides successfully promoted and the use of chemical pesticides and highly hazardous pesticides (HHPs) reduced through FFS.	No. of IPM FFS implementation strategy validated in PY1. No. of national cadres of national facilitators and Farmer Field Schools (FFS) trained on agroecological management of farming systems. Percentage reduction in pesticide use on vegetables, cotton, and maize	- Indicators adjusted. - A new indicator was introduced "*Number of FFSs established and farmers trained through FFS.*" - Data on pesticide use not available.
Output 4.1	No. of IPM FFS strategy validated.	Indicator adjusted to make it measurable.

Source: Elaborated by Evaluation Team.

168. Outcome 1 statement was changed in 2018/19 to "Increased capacity for the Ministry of Agriculture, Irrigation and Water Development to enhance evidence-based food and nutrition security policies, productivity and improve livelihoods as reflected in the results framework". It is unclear on what basis this was changed as the original outcome statement "Risks to human health and the environment are reduced through safe disposal of POPs and other obsolete pesticides and remediation of contaminated sites" is congruent with the objective of this component. The quantitative data related to outcome indicators suggests that the logic model does contribute to outcome achievements, although the best fit of all the indicators is the percentage decline in soil contaminants used which unfortunately was dropped. The rest of the outcome indicators do not describe changes that these outcomes will produce.

169. There are similar challenges with Component 2–4, there are gaps when it comes to formulation of indicators and differentiating output from outcome indicators. The outcome and output indicators have minimal analysis of gender differences.

170. An M&E system that elaborates on indicator definitions, a data collection plan and tools for reporting were however never developed six months after project inception. Although the partner organizations were expected to track progress of specific indicators, there was no specific M&E person at each of the implementation partners to collect and upload M&E data periodically. The partners the evaluation team spoke to were not aware they had M&E responsibilities. The M&E activities were integrated within the FAO Country Office M&E function, but the activities did not take off smoothly due to many staff changes. It was only in 2018 that the FAO Country Office M&E was fully operational.

3.5.2.2 Monitoring and evaluation implementation

EQ 5.2. Was information gathered in a systematic manner, using appropriate methodologies? Was the information from the M&E system appropriately used to make timely decisions and foster learning during project implementation?

Finding 26. There were efforts in refining project indicators, sourcing data from partners to guide project implementation, but with serious constraints. The project lacked a solid methodological approach that specifies practical organization and logistics of the M&E activities. Data collection across all indicators was inconsistent and unsystematic and, in some cases, incomplete and could not feed into timely decisions and foster learning during project implementation.

Overall rating: Moderately unsatisfactory

171. The project benefited from the FAO designated M&E Officer who was responsible for managing, leading and responding to all the M&E project-related activities and needs for the project. The project indicators were reviewed and refined in the first half of project implementation and in response to mid-term review recommendations. Efforts were made by FAO project personnel to follow up on missing data from partner institutions to feed into the project indicators, but these were unsuccessful. Timely and regular reviews focusing on specific M&E areas were also organized by the Project Coordinator.

172. Overall, the project did not have a proper methodological approach; specify practical organization and logistics of the M&E activities including schedule and responsibilities for data collection. Data collection across all indicators was inconsistent and unsystematic and, in some cases, incomplete. One of the biggest gaps that affected M&E was the limited data, information and knowledge management system to feed into decision-making and policy formulation in terms of:

i. Storage – the PMU and partners had a serious challenge when it comes to proper[5] storage of their data, information and knowledge. For instance, the PMU and partners could not easily locate monitoring data across all the components due to improper storage. Informants admitted that data/information is stored in their laptops which is not safe and not easily accessible and shared within PMU and partners. Proper storage enables easy retrieval of data, information and knowledge which leads to time saving and less stress in search of relevant documents.

ii. Access/use – since the inception of the project, PMU and partners have produced some information and data (mainly trainings), conducted surveys and assessments presented in three reports, etc. However, this information and data is not easily accessible. In addition, the knowledge generated from the collected data and information produced is not accessible for decision-making and policy formulation. In the current situation, it is challenging for the project team and government policymakers to easily access and use project data, information and knowledge to make decisions without relying on focal point persons in the respective partners and of which in many instances also do not have the information or dataset required.

iii. Collection – the project did not develop standardized ways among partners on proper ways of primary data collection, analysis, subsequent storage and dissemination.

[5] Proper as used in this strategy implies safe, secure and an organized way of storing documents without loss.

3.5.3 Quality of implementation

EQ 5.3. To what extent did FAO deliver on project identification, concept preparation, appraisal, preparation, approval and start-up, oversight and supervision? To what extent have the implementing risks been identified and managed? To what extent did the COVID-19 pandemic and other emerging emergencies in the country like fall armyworm, cholera outbreak, etc. affect project implementation and achievement of results?

Finding 27. FAO operated within a challenging institutional context where stakeholder participation and commitment was low. Despite this, FAO supervision missions and consistent follow-ups were found to have provided appropriate recommendations that ultimately improved delivery of outputs. With more integration between missions, some implementation challenges around CMS and poor M&E system could have been addressed.

Overall rating: Moderately satisfactory

173. FAO, as an implementation agency, was responsible for the overall supervision and to ensure that GEF policies and criteria are adhered to and that the project meets its objectives and achieves expected outcomes in an efficient and effective manner. FAO was also responsible for the financial execution of the project, including procurement of goods and services for the project in consultation with project partners based on annual work plans and budgets approved by the Project Steering Committee.

174. FAO operated within a challenging institutional context where stakeholder participation and commitment was an inhibiting factor (this is explained in more detailed in section 3.5.4) to the achievement of desired outcomes of the project. Despite this, FAO supervision missions were found to have provided appropriate recommendations and consistent follow-up missions that ultimately brought improvements in delivery of outputs. FAO backstopping and supervision consisted of a mix of technical support, training, knowledge transfer and mentoring provided by headquarters, FAO Regional Office for Africa and FAO Country Office. Analysis of FAO support particularly at Project Coordinator and other Project Task Force members shows varied levels of performance.

175. The FAO technical backstopping missions were highly rated by partners consulted as being technically sound and useful for reviewing project implementation, readjustment of targets as well as provided justifications for no-cost project extensions. After each mission, they were detailed briefings at the FAO Country Office level and also with stakeholders concerned providing in-depth observations and recommendations for follow-up. Some of the FAO mission outputs are elaborated below as an illustration of their effectiveness.

176. In 2016, a mission to support activities under Component 4 on promotion of safer alternatives to chemical pesticides and to review and discuss general progress on project implementation was successfully undertaken (Saunyama and Chizonda, 2016). In the following year (2017), a consultancy mission was undertaken for the establishment of a container management system. This mission came up with clear recommendations concerning disposal options, institutional arrangements and dual container management pilots (Döhnert, 2017). The project also received technical support for the training of enumerators for the national HHP survey conducted in 2018 (Saunyama and LoyDona, 2018). As a result, a total of 25 enumerators (15 female and 10 male) were trained. During the same year (2018), a consultancy mission was conducted to review the pesticide management and regulations in Malawi; development of the PCB strategic plan and training on FAO Pesticide Registration Toolkit (van der Valk, 2018).

177. While these missions were very useful, there was little integration between them. Follow-up missions seemed to review progress of implementation without much analysis of how recommendations from previous missions had been addressed. Some missions were silo focused on specific activities with less emphasis on creating synergies with other components of the project. This may have undermined risk assessment across the four components and attending to them timeously particularly around legislation review under the container management component. Greater supervision could have been provided particularly with respect to creating a more consultative process to design changes that took place under Component 4; also, that greater support and overview could have been focused on the M&E design enhancement particularly in developing monitoring tools and providing M&E technical support to PCB. The issue raised in the mid-term review about high level lobbying over legislation on triple rinsing could have benefited from more targeted FAO technical oversight.

178. At the FAO Country Office level, the Project Coordinator was able to coordinate project activities satisfactorily as evidenced by regular progress reporting, annual workplans, reports and associated budgeting reallocations. As the lead institution, PCB were concerned that apart from proving information needed for reporting, they did not have access to copies of project reports. The location of the Project Coordinator in Bvumbwe during the first three years of project implementation caused a lot of coordination challenges within FAO Country Office. However, this was addressed when Project Task Force members decided to bring the Project Coordinator to Lilongwe. This improved overall office coordination and programme management.

179. A consistent frustration identified in the mid-term review and highlighted by all informants is the rigid FAO procedures and systems, particularly procurement processes, the high reliance on international consultants which contributed to delays in implementation of project activities.

3.5.4 Quality of execution

EQ 5.4. To what extent did the execution agency effectively discharge its role and responsibilities related to the management and administration of the project?

Finding 28. PCB as the lead partner had varying levels of success in chairing the Project Steering Committee, hosting PMU and leading in Component 1, and suffered from understaffing challenges. The performance of other partners (government departments, private sector, NGO) was mixed with varying level of achievement in project implementation.

Overall rating: Moderately unsatisfactory

180. Table 8 summarizes project partners, overview of their expected responsibilities and assessment of their performance as perceived by informants. PCB as the lead partner on all components of the project played a critical role in chairing the Project Steering Committee, hosting PMU, and especially leading in Component 3. Their performance was influenced by institutional challenges as well as their relationship with FAO. In the former, PCB suffered from understaffing and uncertainties around future staffing issues caused by its transition from Ministry of Agriculture to a standalone independent entity. According to the project design, PCB PMU was supposed to be staffed by a part-time Communications/Visibility Officer and a part-time M&E Officer, but this never materialized. It is partly for this reason that the documentation, communication and awareness activities had limited achievements. On the latter, there are perceptions from some informants that PCB did not fully play its role as the lead institution. Although PMU was located within PCB, decision-making seemed to take place at FAO Country Office levels.

Table 8. Overview of responsibilities of project partners

Project partners	Overview of responsibility	Perceptions of informants on performance
PCB	Lead institution for the whole project implementation. Chair to the Project Sterring Committee. Hosts PMU. Execution of Component 3.	- Satisfactory performance albeit with some constraints. Performance affected by understaffing. - FAO perceived to be too controlling and PCB not given opportunity to play their role as lead institution.
Self Help Malawi	Was expected to be involved in pilot empty CMS, promotion of good agricultural practices, development of a communication strategy and awareness raising on pesticide risks.	- Not participating due to misunderstanding over co-financing.
Project Sterring Committee	General oversight of the project's implementation ensuring all activities agreed upon under the GEF project document are adequately prepared and carried out.	- Met regularly but the members of the Project Sterring Committee were underutilized. - Project Sterring Committee meetings were not regularly attended by all stakeholders due to limited commitment and competing priorities.
CropLife Malawi	Execution of Components 1 and 2	- Active – had challenges in the earlier years.
Department of Crop Development	Execution of Component 4 in close liaison with the Department of Agricultural Extension Services.	- Not so active, although involved in the development of the IPM strategy. The integration of Component 4 into FAO projects limited their involvement.
EAD	A task team member of activities under Component 1, 2 and 3.	- Very active and provided policy direction.
Ministry of Justice and Constitutional Affairs	Supported implementation of Component 3.	- Successfully worked towards development of pesticides legislation and regulations.
Illovo	Participated in the pilot container management programme.	- Actively participated in container management and piloting of innovations.
Ministry of Health-Public Health Preventive Health Services	Participated in the development of management options for the highly hazardous pesticides (HHPs).	- Limited and currently not participating due to unclear role and loss of interest.
Centre for Agricultural Bioscience International (CABI) – Plantwise	Development of a management strategy for the HHPs by identifying safer alternatives and development of a national IPM strategy.	- Active when required.
Malawi Bureau of Standards	Adherence to quality standards across project components and provision of laboratory analysis services, if required.	- Limited and currently not participating. There was a loss of interest which the project never followed-up.
Lilongwe University of Agriculture and Natural Resources and Mzuzu University	Contribute to knowledge generation and dissemination through research and outreach.	- Active as members of Project Sterring Committee but underutilized

Source: Elaborated by the Evaluation Team.

181. Apart from the Environmental Affairs Department, informants mentioned that other departments (Department of Crops and Department of Agricultural Extension Services) had limited participation while Ministry of Health did not show much interest. Similarly, Self Help Malawi stopped completely due to misunderstanding over co-financing thus affecting implementation of activities under Component 4.

182. The Project Steering Committee met regularly and appears to have been well coordinated as evidenced by the minutes of the meetings since the start of the project. Absenteeism of some Project Sterring Committee members, delays in the procurement of goods and services (including consultants) and implementation of activities were some of the pressing challenges discussed in the Project Sterring Committee meetings. According to most informants, Project Sterring Committee largely played its oversight role in the effective execution of the project. There is evidence from the Project Sterring Committee minutes reviewed since 2016 that shows how Project Sterring Committee consistently discussed/identified project risks and mitigation of these risks by providing recommendations to various components. Work planning was results-based and done yearly by the Project Coordinator, the Chief Technical Adviser in consultation with specific lead institutions for each component. The only limitation with this process was the lack of integrated planning inclusive of all partners involved which could have enhanced synergies between components, increased transparency in decision-making by FAO and enhanced project results.

3.5.5 Financial management and mobilization of expected co-financing

EQ 5.5. To what extent has the expected co-financing materialized and how has its decrease or increase affected project results?

Finding 29. Despite the co-financing agreements signed during project design in 2014, the co-financers did not honour their full commitments. Several attempts by the project to follow-up with co-financers on challenges around poor annual in-kind co-finance contribution reporting did not yield any results.

183. The total project budget is USD 14 281 373, of which USD 2 550 000 were financed by the GEF. The other part of the budget (USD 11 879 373) represents the co-financing (in cash or in-kind) committed by the co-financing partners including CropLife (USD 1 300 000), Self Help Africa (USD 1 158 359), the Government of Malawi (USD 3 333 000), and FAO (USD 8 574 161).

184. The financial management (including quality, effectiveness and timeliness of project financial planning, control of financial resources and financial reporting, level of actual disbursement versus planned disbursement, and implications, etc.) has already been analysed in section 3.3 (Efficiency). The contributions from various co-financing partners have remained varied. In principle, the PCB and CropLife contributions have increased while contributions from the Malawi Bureau of Standards, the Ministry of Agriculture and the Environmental Affairs Department have remained low. Furthermore, Self Help Africa stopped participating and co-financing never materialized as previously reported. The latest detailed co-financing table for July 2021 to June 2022 period is found in Appendix 4. However, the figures are far less than the actual for the PCB and FAO while the Malawi Bureau of Standards, Environmental Affairs Department and Ministry of Agriculture have not co-financed the project.

185. The project took financial responsibility whenever they participated in any project activity. Self Help Africa completely dropped out of the project from the onset. The challenge has been agreeing the computation of the figures and submitting the same to FAO by the partners that made co-financing efforts, the main reason being an apparent misunderstanding on the concept of co-finance. Most partners thought they were required to pay money to FAO and in some instances had expectations of receiving funds from the project. The PMU continued to engage partners through informal discussions and email reminders of partner responsibilities in a bid to improve co-finance reporting, but this did not yield results. The project did not organize a workshop or specific meetings focusing on co-financing with the partners concerned.

3.5.6 Project partnerships and stakeholder engagement

EQ 5.6. How were other actors, such as civil society, Indigenous population or private sector involved in project design or implementation, and what was the effect on the project results? To what extent has the project built on existing agreements and protocols, initiatives, data sources and synergies, complementarities with other projects and partnerships, etc. and avoided duplication of similar activities of other groups?

Finding 30. The design emphasized strong partnerships and stakeholder engagement as key to IPM but this proved to be difficult to achieve during implementation.

Overall rating: Unsatisfactory

186. The project was designed to be multistakeholder working with several NGOs and private sector partners. The partners were meant to be part of component task teams set-up to enhance engagement of key stakeholders, to access a variety of skills needed to implement the components, and to capitalize on resources, networks and channels of communication already established. Informants confirmed that the design involved a wide stakeholder consultative process which culminated in a validation workshop in 2014 where key roles were discussed.

187. A successful promotion of IPM requires strong involvement of government extension staff and participation of NGOs, research institutes and collaboration of key government departments and academia. Wide consultations were held, and linkages established during the project preparation grand (PPG) phase to secure participation of these stakeholders from disposal of pesticide work to activities that prevent further accumulation.

188. However, as already discussed (see section 3.5.4 on quality of execution and Table 8), during implementation, the engagement of stakeholders and partners was inadequate. As already stated, some stakeholders either pulled out (e.g. SHA, Ministry of Health) or had minimal involvement (Department of Crop Development, Department of Agricultural Extension Services, Ministry of Health) thus negatively impacting on project activities. The minimal participation of the Ministry of Health means the project did not fully embrace the health aspects in all its outcomes. The stakeholders and partners that remained active are the PCB, CropLife and the Environmental Affairs Department. As noted during the mid-term evaluation, most of the stakeholders and partners approach their work individually, and without interaction with each other.

3.5.7 Communication, knowledge management and knowledge products

EQ 5.7. How is the project assessing, documenting and sharing its results, lessons learned and experiences? To what extent are communication products and activities likely to support the sustainability and scaling-up of project results?

Finding 31. The project design placed emphasis on value of knowledge products and information exchange, but lacked a knowledge management approach and a learning agenda.

Overall rating: Unsatisfactory

189. The project design placed emphasis on development of knowledge products, information exchange and communication strategy but did not mention any knowledge management approach or provide guidance on how to document and share lessons learned and good practice.

190. The communication strategy under Output 4 was supposed to use the existing infrastructure from the Department of Agricultural Extension Services' mobile communication units which delivers extension materials through road shows, distribution of printed materials and use of "push" messaging using SMS system. As noted in section 3.2 on effectiveness, the communication

strategy was never shared or fully owned by the Department of Agricultural Extension Services and remained an FAO internal document.

191. Information exchange among institutions although identified as essential in pesticide risk reduction, remained challenged at terminal evaluation. A local platform where stakeholders can hold virtual meetings regularly to exchange information pertaining to pesticide management was never developed.

192. The project lacked a specific learning agenda and adaptive management which should have been linked to an M&E system. As a result, no tools and approaches were developed to promote learning within the project and nationally. Apart from posters, the evaluation team did not find substantial evidence-based lessons learned examples on successful approaches across the four components that could be adopted elsewhere, in the form of documentaries (videos and pictures) on outcomes resulting from project activities.

3.6 Cross-cutting concerns

3.6.1 Gender

Finding 32. The project had a gender lens in its design but lacked clear strategies and activities that relate to gender.

Overall rating: Moderately unsatisfactory

193. The project was designed with a gender lens by ensuring that project activities are inclusive of women, identifying specific needs and concerns, especially through the FFS approach. The design was clear that women needed to be represented in project component activities, thus increasing opportunities for professional women in the agriculture sector; and specifically target women through partnerships with civil society organizations in training and awareness-raising activities, to ensure women are aware of the risks posed by pesticides and empty pesticide containers.

194. Upon implementation, the project did not conduct any gender analysis and had no clear strategy, objectives and activities related to gender. This posed challenges in ensuring that the interventions are gender-sensitive, they address gender inequalities and respond to the specific needs and priorities of all women and men.

195. Although there were no clear gender empowerment activities in the project, there is some gender-disaggregated reporting under capacity building activities, especially Component 4. The integration of gender into the FFS curriculum contributed to the active participation of women. Not only was it evident that women participated in the FFS groups, but they also held leadership positions (FAO, 2019a). In the technical trainings that were offered by the project under Components 1, 2 and 3, there was low participation of women compared to men. This could reflect the general high male dominance in most technical science fields in Malawi where most of the training participants were drawn from.

3.6.2 Minority groups, including Indigenous Peoples, disadvantaged, vulnerable and people with disabilities and youth.

Finding 33. The project was deficient in the involvement of minority, disadvantaged, vulnerable groups, people with disabilities and the youth both in its design and implementation.

Overall rating: Unable to assess

196. Malawi faces a myriad of challenges hoovering around poverty, inequality and access to basic services. The government has put in place several initiatives to address these challenges, including the involvement of youth in development as a strategy towards building a more inclusive and sustainable society. Malawi has a predominantly youthful population. The 2018 population and housing report indicates that 51 percent of the population is under the age of 18. Youth have the potential of contributing to the nations development if given the necessary support and enabling environment.

197. The 2018 population and housing census report indicated that about 10.4 percent of the population aged five years and older in Malawi had at least one type of disability, 10 percent were males and 11 percent females (National Statistical Office, 2019). The Government of Malawi and various NGOs have made efforts to promote active involvement of vulnerable groups in development through programmes, such as providing access to education and healthcare, promoting gender equality, and providing economic opportunities through microfinance and livelihood programmes.

198. While all the initiatives are in place, the "Pesticides Risk Reduction" project did not have a clear strategy in its design and implementation for the involvement of minority groups, including Indigenous People, disadvantaged, vulnerable and people with disabilities and youth. It is therefore not possible to assess the projects level of achievement in these areas.

3.6.3 Indigenous peoples and local communities

Overall rating: Unsatisfactory

199. The project through Component 4 was designed to involve local communities directly through IPM FFS. During its implementation, however, in the spirit of efficiency and integration of programmes, the IPM FFS were incorporated into FAO project namely Kulima and AFIKEPO. Local communities were involved through their extension workers who attended trainings and were expected to transfer their knowledge and skills from the training to the local communities.

200. Since the local communities were involved through other projects, it remains challenging to fully attribute the FFS progress and success to the "Pesticides Risk Reduction" project alone but rather to mention that there was evidence of knowledge and awareness of pesticide risks on the part of the communities in the FFS. Furthermore, all FFS visited had demonstration plots where they were studying the use of botanicals for pest control.

3.6.4 Environmental and social safeguards, risk classification and risk mitigation provisions identified at the project's formulation stage

Overall rating: Satisfactory

201. By its design, the project has positive benefits to the environment through the removal of obsolete pesticides, risk reduction of contaminated sites, reduction in use of hazardous pesticides and environmentally sound management of empty pesticide containers. To address the potential for environmental impairment during these project activities, the project followed FAO's Environmental Management Tool Kit for the assessment, safeguarding, transportation and disposal of obsolete pesticides. Environmental management plans were developed for the safeguarding activities that consider all potential risks as well as related mitigation strategies. The contracted companies (POLYECO in 2017 [POLYECO, 2017] and Veolia ES Field Services Ltd in 2022 [Veolia ES Field Services Ltd. (VFS), 2022]) developed a health, safety and environmental plan for safeguarding, stowage and disposal of obsolete pesticides.

202. The project's main goal in 2017 in which POLYECO was tasked to implement, was to safeguard, export and dispose obsolete pesticides from three sites: the Smallholder Farmers Fertilizer Revolving Fund Lilongwe-Kanengo, SFFRFM Blantyre-Chirimba, and the ADMARC Midima, Blantyre-Newlands sites in Malawi. Standard operating procedures were developed in accordance with Tool L of FAO's EMTK volume 4. The purpose of the standard operating procedures was to provide clear instructions on the activities needed for the safe repackaging of the pesticides. Based on the guidance materials, all activities were successfully carried out, and all stakeholders consulted were happy with the results.

203. Veolia ES Field Services Ltd. (VFS) has been contracted for the safeguarding, stowage and disposal of obsolete pesticides and contaminated soils in Malawi to a disposal facility in South Africa. As part of the contract, VFS has developed a health, safety and environment plan to allow safe repackaging and transport of obsolete pesticide stocks to the point(s) of export. The health, safety and environment plan provides information on how the repackaging of unsafe and environmentally damaging obsolete pesticide stocks identified by the inventory at the four stores in Malawi can best be safeguarded. The health, safety and environment plan also provides: i) a monitoring plan for the work; ii) a management plan for the personnel involved; iii) an information and communication plan aimed at site workers and other stakeholders outside the site operations and an environmental risk assessment data. VFS is yet to fully implement the plan as the services have not taken place. The activities had been halted due to the wet conditions but should be completed before 31 August 2023.

204. An analysis of both health, safety and environment plans shows that they are comprehensive, include capacity building elements in the form of training and have clear roles and responsibilities and display strong environmental and social safeguards, risk classification and risk-mitigation approaches.

4. Conclusions and recommendations

4.1 Conclusions

Conclusion 1. The project – both in its design and implementation – has demonstrated that pesticide management in Malawi remains a major and priority national issue presenting a crucial need to protect the environment, human health, and to improve food security. Although technical and organizational solutions exist to ensure the rational management of pesticides and pests – and to prevent the risks and dangers they carry – their implementation remains jeopardized by several factors, including the important one of insufficient capacities at the individual, organizational and enabling environment levels.

205. The project design was robust, comprehensive, and built on prior project interventions and/or created synergies with similar interventions in Malawi. By design, the project is multisectoral in nature, and more could have been done to clarify roles and utilize technical inputs from some critical stakeholders (academia, WHO) particularly on the alternatives to synthetic pesticides, thus bringing more learning and sharing of experiences.

206. The project's alignment to FAO strategic priorities and in particular the Malawi CPF contributed to increased relevance and enhanced positioning of FAO as a key actor in this area. The project's relevance has increased and was able to deal with the emergence of new pests and diseases such as the fall armyworm and the accompanying rise in the use of pesticide use. It has been able to consistently promote environmentally sound management of chemicals and all wastes throughout their life cycle (SDG 4) as attested by all stakeholders consulted. However, the project's human health aspects were narrowly focused on occupational/workplace health.

207. There are limited financial resources and organizational capacities, and the enabling environment – even if it has been improved by the project – still presents gaps. The state's commitment to promoting sustainable agricultural systems based on integrated crop protection and other biological or alternative means of control is still little affirmed or at least not very visible in a context where the long-term vision is centred on increasing agricultural productivity. Strategies to deploy the necessary resources to prevent pesticide accumulation and to develop alternative production systems are lacking.

Conclusion 2. Implementation of project components has been somewhat challenging as it involved a lot of innovation, required specialized expertise, and assumptions underestimated the policy environment influence and stakeholder participation and commitment (e.g. smallholder farmers in particular). Consequently, the satisfactory project results achieved on some project components and activities were mitigated by the absence of results or gaps and weaknesses in others, such that achievement of the overall objective and progress towards the impact are moderately unsatisfactory.

208. In general, FAO and partners were able to raise the level of awareness on the environmental and health risks of using pesticides among various stakeholders in Malawi, build capacity of partners and farmers on IPM, demonstrate the safe disposal of POPs, and partly demonstrate the remediation of contaminated sites. Performance was particularly good for the review and updating of the pesticides legislation and development of pesticides regulations. Achievements across the other components resulted in uneven outputs and can be partly attributed to the rigid legislative context in Malawi, procurement delays, differing stakeholder interests and commitment, and limited synergies between components.

209. Despite delays associated with procurement of specialized incineration services, the project was able to export 90 percent of baseline POPs and obsolete pesticides stocks for disposal by high temperature incineration in Sweden and 40.24 tonnes of burned ash for landfilling in Uganda,

which is a commendable achievement. The systematic assessment of contaminated sites is robust and follows a proven methodological approach which results in development of a conceptual site model and environmental management plan before actual remediation can take place. The extension of the project to 31 August 2023 will allow Veolia (the South African based company) to conduct the safeguarding, stowing, disposal and remediation of the contaminated site at Agricola farms in Zomba. Both outcomes are difficult to achieve without technical expertise, technological resources and adequate funding.

210. Performance was satisfactory when it comes to development of a business case for container management in Malawi, a first of its kind. But the business case was rather too ambitious and assumed government would buy in quickly and waiver legislation on triple rinsing for the purposes of the pilot. But this did not happen, which resulted in uneven outputs that can be attributed to challenges with stakeholder mobilization and lack of incentives. Further, the limited achievements were also due to compartmentalization of activities within the project in general. Closer synergies with Component 3 could have helped address the legal requirement challenges associated with triple rinsing.

211. The commercial container management pilot partly adapted to the challenges presented by restrictive legislative environment on triple rinsing. The creation of flexible partnerships (especially among farmer associations/suppliers of pesticides and farmers and PCB) with strong technical support from FAO became a significant factor in implementation performance and is a significant step towards finding a lasting solution for dealing with shredded waste. However, the non-take off the smallholder pilots remains a concern which unfortunately the project was not able to resolve.

212. The enactment of the Pesticides Act of 2018 and the accompanying pesticides regulations to address the weaknesses in the law is a big achievement under the project. The performance of the project in strengthening PCB institutional capacity through development of a strategic plan and support to short-term and long-term training was highly appreciated by partners. PCB staff benefiting from these trainings confirmed that their capacities to perform daily duties had been enhanced. Enforcement of legal pesticide legal requirements is constrained by shortage of manpower, equipment and lack of a platform for information exchange and continuous learning.

Conclusion 3. The project generally managed the resources well under a series of cost-extensions and challenges with delays in implementation of activities; the challenges related to weak commitment (with the risk of non-ownership of results and achievements) and insufficient capacity, etc. However, ensuring sustainability of results has been difficult across all four components.

213. Capacity building achievements targeting agriculture extension services and smallholder farmers through FFS exceeded targets; this is clear evidence of the strength of the project's integration efforts. All the output performance at the farmer level is a result of a combination of stakeholders who unfortunately operate in an uncoordinated way – without much sharing of experiences. The project did not demonstrate whether interventions promoting alternatives had led to a reduction in the use of synthetic chemicals. FAO systems and procedures are frustrating for all stakeholders and leading many to question FAO as a trusted partner. The projects were managed generally well, apart from Components 1 and 2 – which experienced a series of procurement delays.

214. Most government departments have not shown significant commitment in most areas of the four components of the project, as evidenced by their limited participation and honouring of co-financing agreements. Government resources – including those of the PCB – are scarce and therefore the possibility of autonomously taking over and continuing with the project interventions is unlikely; the government still relies on the financial resources and technical

assistance from FAO and other partners. There are also internal gaps in staffing within the PCB – and the lack of a data and knowledge management system – which compromise the ability of the PCB to sustain and enforce pesticides regulations.

Conclusion 4. Quality of project implementation and execution was mixed. The project lacked a robust M&E system and failed to adequately contribute to achieving cross-cutting aims with regards to gender and minority groups.

215. FAO's expert and technical inputs contributed to keeping the project on track and their role as implementer was highly rated. Some design gaps and implementation gaps, particularly M&E and integration of FFS into FAO projects, promoting information exchange, lack of knowledge management approach, documenting and communicating lessons learned, and high-level policy engagement could have benefitted from better oversight from FAO.

216. While the project had defined monitoring activities, there was no M&E plan and hence no tools and capacity to support it. Consequently, this limited the ability to which achievements and non-achievements can be attributed to the project. There are also serious gaps in framing and reporting of indicators and both the output and outcomes which reflects gaps in M&E skills within FAO, partners and stakeholders.

217. Apart from gender statements promoting participation of women in project interventions, the design did not specify the gender-transformative approaches that look at changes in decision-making around IPM at farmer levels, for example. During implementation, the project made strides in including gender-disaggregated data for training activities and deliberately targeting women. There are still gendered differences in terms of skills development at trainer and farmer levels that remain to be addressed.

4.2 Recommendations

Recommendation 1. The FAO Country Office in Malawi must continue to consult and advocate with the government for the establishment of an environment conducive to the rational and sustainable management of pests and pesticides and sustainable intensification of farming systems. This could be done, for example, through the development and promotion of policies and technical, organizational and regulatory tools and options supporting and promoting the popularization of the IPM approach and alternative means of pest control – and to protect the environment and human health along agricultural value chains that already rely heavily on chemical pesticides or are likely to rely on them.

218. The government's policy towards agricultural intensification will most likely lead to greater exposure to pests and disease risks and increased dependence on the use of pesticides. The continued use of HHPs undermines the attainment of several SDGs because of their adverse effects on health, food security, biodiversity and the environment.

219. It has now been demonstrated in several countries that pesticide management is achieved ideally through a multidisciplinary team approach – encompassing actors along the supply chain. This approach utilizes the combined expertise of the health and agricultural sciences in addressing the pesticide management problem. The logic of this approach is seen in the fact that the well-being of a population is found not only in its economic status but in its nutritional and health status as well. Sound pesticide management can make significant contributions to the economic, nutritional, and health status at the village, district and national levels.

220. Such an approach is in line with FAO's Strategic Framework, particularly the better production priority and BP3: One Health outcome: Strengthened and better performing national and international integrated One Health systems for human, animal, plant, and environmental health

achieved through improved pest and disease prevention, early warning, and management of national and global health risks, including AMR.

221. FAO is better placed to support the Department of Crops and the PCB in ensuring the IPM approach is interdisciplinary and inclusive of all actors along the pesticides supply chain. Through the FAO Plant Production and Protection Division, guidance on sustainable crop production intensification with a particular focus on ecological approaches as embodied in IPM will be essential. The following actions cane be undertaken:

i. Introduce a supply chain approach (with an emphasis on human health and role for the Ministry of Health) to pesticide management in the draft Malawi IPM strategy which is currently waiting endorsement. The supply chain from: inputs/production; processing; trade/distributors; logistics; market (consumers, buyers) should allow for an inclusive assessment of pesticide risks to human health and environmental health to inform an integrated policy response.

ii. Engage with academia and leverage national and local partnerships to support interdisciplinary/multistakeholder capacity building efforts, information sharing, learning and evidence-based advocacy on sustainable IPM.

Recommendation 2. FAO to continue providing technical support towards strengthening the legal frameworks for pesticide risk management and life cycle management.

222. The disposal/exportation of POPs and obsolete pesticides through high temperature incineration is costly and demands specialized expertise and procurement. Further, the evaluation team established that GEF will no longer be funding disposal activities, which means the government needs to consider other ways as the stocks will keep piling. Another issue that was not resolved was the management of the end products of the empty pesticide containers; this requires legislative advocacy.

223. In consolidating investments made by the project, FAO should provide high level lobbying support on review of legislation, design and implementation of the following:

i. Investigate/develop and implement the extended producer responsibility (EPR) for private sector as an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle. An EPR policy is characterized by the shifting of responsibility (physically and/or economically; fully or partially) upstream towards the producer and away from municipalities and the provision of incentives for producers to consider environmental considerations when designing their products (OECD, 2016).

ii. Currently about 400 such schemes are in operation across the world, most of them in the Organisation for Economic Co-operation and Development (OECD) and some in emerging market economies. It is an environmental policy strategy in which the responsibility of producers for their products is extended to include the costs and sometimes the management of end-of-life products, especially the recycling of their products. Some of these systems are put in place by industry on a voluntary basis, while others are based on legislative obligations requiring companies to pay fees to support the costs of organizing the (separate) collection, sorting and recycling of specific waste streams to meet certain targets.

iii. All extended producer responsibility systems include roles for government, producers and providers of collection and processing services, but differ in the number of producer responsibility organizations involved; which entities collect and distribute funds and

monitor and enforce compliance; and the responsibility and autonomy granted to the participating entities.

iv. Review of the Environmental Management Act of 2017 to declassify triple rinsed empty containers as hazardous waste. This might even mean their recycling and transportation may become less challenging – creating an opportunity to build on what the project has done by providing room for an end use of the shredded material through recycling.

v. Learning from the project, support the redesign of the container management system with a broader representation of stakeholders (female smallholder farmers, in particular) and greater linkages to the legislative context and consider using the extended producer responsibility approach.

Recommendation 3. FAO Country Office and other Malawian development partners must support the PCB to develop a long-term vision and strategy for strengthening national capacity in the individual, institutional and policy domains that will function as a roadmap for enforcement of pesticide legislation.

224. The project has made significant achievement in building capacity of PCB staff and other stakeholders, albeit with some resource gaps (e.g. lack of skills for law enforcement, lack of quality testing equipment, limited number of staff, skills for developing effective indicators and routine monitoring, etc). The purpose of the strategy is to guide the capacity development efforts of the PCB, government and non-government actors in support of the enforcement of pesticide legislation.

225. To catalyse and galvanize transformative action, it is necessary for government and non-government actors at various levels – from national to subnational and local – to have the requisite capacities, tools and resources. This requires better resourced, more effective, coordinated and complementary capacity development activities. Also, achieving transformative change requires thinking beyond short time horizons and calls for interventions that are robust, institutionalized and sustainable. This strategic framework aims to help all actors along the pesticides supply chain to achieve coherence, efficiency and effectiveness in their capacity development efforts at all levels – fostering a coordinated strategic approach to capacity development which will create opportunities for cooperation and synergy.

Recommendation 4. For sustainable pesticide management in Malawi, FAO Country Office and other Malawian development partners must support the PCB and partners to establish a data and knowledge management system to enable the monitoring of pesticide use and its effects.

226. One of the biggest gaps under the project was lack of a data and knowledge management system to collect, manage and provide controlled access to data and knowledge resources. A data and knowledge management system is integral to the functions of the PCB – ranging from registering pesticides and issuing certificates and permits in accordance with this act to monitoring and control of the import, export, manufacture, distribution, sale, storage, use and disposal of pesticides in Malawi, among others.

227. The lack of effective and integrated surveillance, M&E systems for the management and communication of pesticide use and its effects undermines efforts to reduce health and environmental risks. Monitoring pesticide use and its effects is critical to inform decision-making and policy development. It is recommended that the PCB with support from FAO establish a robust, digital and real time monitoring system of pesticide use and its effects which could include:

i. Strengthen the collection of statistics on importation, use and sales of pesticides to support the implementation of the PCB strategic plan (2010–2025). Such a system should include designating powers and responsibilities, including the ability to impose

reporting requirements on importers, distributors and sellers of pesticides. Data on the use and disposal of pesticides should be compiled. After a pesticide is marketed, data collection and assessment may take place through regular monitoring, specific scientific studies, or feedback about incidents.

ii. Establish a national pesticide residue in food monitoring system (control of pesticide residue is provided for under the Pesticides Act of 2018 section 31).

iii. Ensure feedback into policy- and decision-making. An analysis and reporting system needs to be put in place to ensure that the results obtained by monitoring and surveillance will inform policy- and decision-making on the authorization and use of pesticides.

iv. Establish post-registration monitoring and studies that complement prospective risk assessments. In the long-term, pesticide registrations should be subject to a periodic review process for re-authorization based on the outcomes of post-registration monitoring and studies.

5. Lessons learned

5.1 Monitoring and evaluation

228. The design and implementation of the M&E systems in projects like the multisectoral pesticide risk reduction is complex due to the diverse range of aspects: legal frameworks, individual, institutional and enabling environment capacity strengthening. This requires the use of different skills and methodologies according to each of the aspects to be monitored and evaluated in formulating indicators and subsequent monitoring. Hence, the need for multidisciplinary teams within the M&E unit of institutions to be involved and for various aspects to be incorporated in the design of its constituent parts and budget.

229. It is important that the implementing agencies set up procedures and systems for regular information collection which can monitor project activities with clear responsibilities for each partner. Baselines and targets should be established, hence the need for a detailed investment in this area during the design phase.

230. Building capacity of partners in M&E should not be overlooked. Executing agencies such as FAO need to design mechanisms for transferring skills especially in terms of developing monitoring tools, data management, and archiving systems that allow for generation of evidence that can inform decision-making.

5.2 Stakeholder engagement

231. The project was involved in mobilization of stakeholders with different interest groups to implement a complex project characterized by innovation and piloting of the CMS. There are lessons around the required softer skills for the broker/facilitator like FAO that needed to be in place. The organizational awareness of focusing on convincing stakeholders of the value of the innovation and return on investment for each was crucial. In addition, leading change in perspectives is going to be at the forefront of getting stakeholders onboard and keeping them onboard. Stakeholder engagement needed to be tied with data/information generation that would act as an advocacy tool and the basis of discussions, decisions and recommendations. Stakeholder engagement included awareness/education on some of the misunderstanding of the project requirements (co-financing).

232. Mobilization of stakeholders over a common purpose would require stakeholder mapping exercises at the design stage and at various intervals of project implementation. Understanding levels of influence and identifying triggers will avoid preventable challenges and lack of interest and commitment. The key lesson is that project teams should be multidisciplinary to cater for these softer skill areas of technical expertise.

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Additional resources

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Appendix 1. People interviewed

Date	Time	Stakeholder to interact with	Name, designation and contacts	Location
Monday, 20 February 2023	8:30-10:30	FAO	George Phiri Assistant FAOR for Programmes Precious Chizonda Mischeck Fombe	Lilongwe
	11:00-12:00	Environmental Affairs Department	Carol Theka National Designated Authority for Rotterdam Convention, Member of the PCB Technical Board, and the Technical Committee Shamiso Najira The focal point for Global Environmental Facility	Lilongwe
	13:30-14:30	Ministry of Justice	Isaac Chiundira Registrative Counsel	Lilongwe
	15:00-16:00	Crops Development department	Aida Mwato Deputy Director	Lilongwe
Tuesday, 21 February 2023	8:00	Departure for Blantyre		
	13:00-14:00	Illovo Sugar	Peter Chiipanthenga, Agronomist PCB Board member	Nchalo/Virtual
Wednesday, 22 February 2023	8:00-9:00	Pesticides Control Board(PCB)	Misheck Soko Acting Registrar of Pesticides	Bvumbwe, Thyolo
	9:30-10:20	PCB	Lesten Banda Principal Pesticides Inspector	Bvumbwe, Thyolo
	10:30-11:20	PCB	Young Chakana Principal Pesticides Analyst	Bvumbwe, Thyolo
	13:30-14:30	CropLife Malawi	Ronald Chilumpha CropLife Malawi chairperson	Makata, Blantyre
	15:00-16:00	Malawi Bureau of Standards	Willy Muira Deputy Director of Malawi Bureau of Standards, PCB Board member	Blantyre
Thursday, 23 February 2023	8:30-9:30	AEDO DLRCO	Judith Kakhobwe Chicco Kayange	Mulanje
	10:00	Departure for Lilongwe via Zomba		
	12:00-13:00	Agricola farms	Mr Kaledonis	Zomba
	14:00	Travel from Zomba to Lilongwe		
Friday, 24 February 2023	8:30-9:30	Department of Agricultural Research Services	Elisa Mazuma Deputy Director of Agricultural Research PCB Board member	Chitedze
	10:30-11:30	Lilongwe University of Agriculture and Natural Resources	Trust Donga PCB Executive Board Member	Bunda
	13:30-14:30	Ministry of Health	Godfrey Kadewere Director	Lilongwe
	15:00-16:00	Self Help Africa	Kate Hartley	Lilongwe
Sunday, 26 February 2023	10:00	Departure for Mzuzu		

Date	Time	Stakeholder to interact with	Name, designation and contacts	Location
Monday, 27 February 2023	8:30-9:30	PCB	Blessings Mulima Pesticides Inspector	Mzuzu
	10:00-11:00	Mzuzu University	John Kamanula Analytical Plant Chemist	Mzuzu
	13:30-15:00	AEDO	Janet Moyo Alfonso Chidungwa	Mzuzu
Tuesday, 28 February 2023	8:00-	Departure for Lilongwe via kasungu		
	11:30-12:30	AEDO	Arthur Kacheche	Kasungu
	13:00-14:00	CropLife Malawi	Christopher Beya CropLife Secretary	Kasungu
Wednesday, 1 March 2023	8:00-	Departure for Salima		
	10:00-11:00	PEMO	Adam Kabango	Salima
	13:00-14:00	AEDC, Mtonga East Section	Elia Kazinga	Salima
	15:00	Travel to Lilongwe		
Thursday, 2 March 2023	8:30-10:30	Debrief of findings	Briefing with FAO Malawi and discussion of preliminary findings	Lilongwe
	11:00-	Outstanding consultations	Virtual meetings with stakeholders depending on gaps	

Appendix 2. GEF evaluation criteria rating table

GEF criteria/sub-criteria	Rating[1]	Summary comments
A. Strategic relevance		
A1. Overall strategic relevance	S	Section 3.1
A1.1. Alignment with GEF and FAO strategic priorities	S	Section 3.1, Finding 2
A1.2. Relevance to national, regional, and global priorities and beneficiary needs	S	Section 3.1, Finding 1
A1.3. Complementarity with existing interventions	S	Section 3.5.1, Finding 4
B. Effectiveness		
B1. Overall assessment of project results	MU	Section 3.2, Finding 5
B1.1 Delivery of project outputs	S	Section 3.2
B1.2 Progress towards outcomes[2] and project objectives	MU	Section 3.2
B1.3 Likelihood of impact	MU	Section 3.2.6
C. Efficiency		
C1. Efficiency[3]	MS	Section 3.3, Finding 19
D. Sustainability of project outcomes		
D1. Overall likelihood of risks to sustainability	ML	Section 3.4
D1.1. Financial risks	MU	Section 3.4
D1.2. Socio-political risks	L	Section 3.4
D1.3. Institutional and governance risks	ML	Section 3.4
D1.4. Environmental risks	ML	Section 3.4
D2. Catalysis and replication	MU	Section 3.4
E. Factors affecting performance		
E1. Project design and readiness[4]	S	Section 3.5.1
E2. Quality of project implementation	MS	Section 3.5.3
E2.1 Quality of project implementation by FAO (Budget Holder [BH], Lead Technical Officer [LTO], Project Task Force [PTF], etc.)	MS	Section 3.5.3
E2.1 Project oversight (Project Steering Committee, project working group, etc.)	MU	Section 3.5.4
E3. Quality of project execution For decentralized projects: Project Management Unit [PMU]/BH For Operational Partners Implementation Modality [OPIM] projects: Executing agency	MU	Section 3.5.4
E5. Project partnerships and stakeholder engagement	U	Section 3.5.6
E6. Communication, knowledge management and knowledge products	U	Section 3.5.7
E7. Overall quality of monitoring and evaluation [M&E]	MU	Section 3.5.2
E7.1 M&E design	S	Section 3.5.2
E7.2 M&E implementation plan (including financial and human resources)	MU	Section 3.5.3
E8. Overall assessment of factors affecting performance	MU	Section 3.5

GEF criteria/sub-criteria	Rating[1]	Summary comments
F. Cross-cutting concerns		
F1. Gender and other equity dimensions	MU	Section 3.6.1
F2. Human rights issues		N/A
F3. Indigenous Peoples	U	Section 3.6.3
F4. Environmental and social safeguards	S	Section 3.6.4
Overall project rating	MU	

Notes:
[1] See rating scheme in Appendix 3.
[2] Assessment and ratings by individual outcomes may be undertaken if there is added value.
[3] Includes cost efficiency and timeliness.
[4] This refers to factors affecting the project's ability to start as expected, such as the presence of sufficient capacity among executing partners at project launch.

Source: Elaborated by the Evaluation Team.

Appendix 3. Rating scheme

Project results and outcomes

Project outcomes are rated based on the extent to which project objectives were achieved. A six-point rating scale is used to assess overall outcomes:

Rating	***Description***
Highly satisfactory (HS)	*Level of outcomes achieved clearly exceeds expectations and/or there were no shortcomings.*
Satisfactory (S)	*Level of outcomes achieved was as expected and/or there were no or minor shortcomings.*
Moderately satisfactory (MS)	*Level of outcomes achieved more or less as expected and/or there were moderate shortcomings.*
Moderately unsatisfactory (MU)	*Level of outcomes achieved somewhat lower than expected and/or there were significant shortcomings.*
Unsatisfactory (U)	*Level of outcomes achieved substantially lower than expected and/or there were major shortcomings.*
Highly unsatisfactory (HU)	*Only a negligible level of outcomes achieved and/or there were severe shortcomings.*
Unable to assess (UA)	*The available information does not allow an assessment of the level of outcome achievements.*

During project implementation, the results framework of some projects may have been modified. In cases where modifications in the project impact, outcomes and outputs have not scaled down their overall scope, the evaluator should assess outcome achievements based on the revised results framework. In instances where the scope of the project objectives and outcomes has been scaled down, the magnitude of and necessity for downscaling is taken into account and despite achievement of results as per the revised results framework, where appropriate, a lower outcome effectiveness rating may be given.

Project implementation and execution

Quality of implementation and of execution will be rated separately. Quality of implementation pertains to the role and responsibilities discharged by the GEF agencies that have direct access to GEF resources. Quality of execution pertains to the roles and responsibilities discharged by the country or regional counterparts that received GEF funds from the GEF agencies and executed the funded activities on ground. The performance will be rated on a six-point scale:

Rating	***Description***
Highly satisfactory (HS)	*There were no shortcomings and quality of implementation or execution exceeded expectations.*
Satisfactory (S)	*There were no or minor shortcomings and quality of implementation or execution meets expectations.*
Moderately satisfactory (MS)	*There were some shortcomings and quality of implementation or execution more or less meets expectations.*
Moderately unsatisfactory (MU)	*There were significant shortcomings and quality of implementation or execution somewhat lower than expected.*
Unsatisfactory (U)	*There were major shortcomings and quality of implementation or execution substantially lower than expected.*
Highly unsatisfactory (HU)	*There were severe shortcomings in quality of implementation or execution.*
Unable to assess (UA)	*The available information does not allow an assessment of the quality of implementation or execution.*

Monitoring and evaluation

Quality of project M&E will be assessed in terms of:

i. design

ii. implementation

Sustainability

The sustainability will be assessed taking into account the risks related to financial, socio-political, institutional and environmental sustainability of project outcomes. The evaluator may also take other risks into account that may affect sustainability. The overall sustainability will be assessed using a four-point scale:

Rating	***Description***
Likely (L)	*There is little or no risk to sustainability.*
Moderately likely (ML)	*There are moderate risks to sustainability.*
Moderately unlikely (MU)	*There are significant risks to sustainability.*
Unlikely (U)	*There are severe risks to sustainability.*
Unable to assess (UA)	*Unable to assess the expected incidence and magnitude of risks to sustainability.*

Appendix 4. GEF co-financing table

Sources of co-financing	Name of co-financer	Type of co-financing	Amount confirmed at CEO endorsement /approval	Actual amount materialized as of 30 June 2022	Actual amount materialized at mid-term *(confirmed by the evaluation team)*	Expected total disbursement by end of project
International Association of Agrochemical Companies	CropLife International	Grant	1 250 000	1 250 000	1 250 000	1 250 000
		In-kind	50 000	200 000	50 000	50 000
NGO	Self Help Africa (SHA)	In-kind	1 158 359	0	0	1 158 359
National Government	Pesticides Control Board (PCB)	In-kind	1 113 854	150 000	450 000	1 113 854
National Government (Statutory Organization)	Malawi Bureau of Standards	In-kind	350 000	0	0	350 000
National government	Environmental Affairs Department (EAD)	In-kind	360 000	0	0	360 000
	Ministry of Agriculture	Grant	380 000	0	0	380 000
		In-kind	2 243 000	1 682 250	0	2 243 000
UN Agency	FAO	Grant	4 574 161	50 000	50 000	4 574 161
		In-kind	400 000	264 396.25	123 831	400 000
Total in USD			**11 879 374**	**3 596 646.25**	**673 832.25**	**11 879 374**

Appendix 5. Stakeholder mapping

Key stakeholders	What role related to the intervention/evaluand	How will they use the evaluation	How and when they should be involved in the evaluation
Active stakeholders with the authority to make decisions related to the evaluand FAO PCB EAD	FAO – lead executing agency. Lead executing partner and hosted the PMU. PCB – coordinated the implementation of all project activities in collaboration with key stakeholders. It participated in the piloting of the empty pesticide management scheme. EAD is a task team member of disposal of obsolete pesticides and remediation of contaminated sites, container management and strengthening legal and institutional frameworks for sound pesticide life cycle management.	The evaluation results will inform future decision-making and policy on pesticide management in Malawi. Inform future decision-making on pesticide management, inform stakeholder engagement in pesticide management and has potential of informing future policy direction.	They will be involved at the onset of the evaluation. Data to be collected through key informant interviews and focus group discussions
Active stakeholders with direct responsibility for the evaluand CropLife Department of Agricultural Research Services Department of Crop Development Department of Agricultural Extension Services Ministry of Justice and Constitutional Affairs Illovo Sugar Company	CropLife Malawi led the task teams on disposal of obsolete pesticides and remediation of contaminated sites as well as Component 2 on the management of empty containers. The Department of Agricultural Research Services is a member of the two task teams, namely: integrated pest management/Farmer Field School (IPM/FFS) and strengthening of legislative and institutional frameworks for sound pesticide life cycle management. The Department of Crop Development, in close collaboration with the Department of Agricultural Extension Services, led Component 4 on the promotion of alternatives to POPs and other hazardous chemical pesticides. The Department of Agricultural Extension Services collaborated closely with the Department of Crop Development in the promotion of alternatives to POPs and other hazardous chemical pesticides. The project relied heavily on existing Department of Agricultural Extension Services infrastructure in developing a communication strategy to promote IPM and raise awareness on pesticide risks. Ministry of Justice and Constitutional Affairs was a task team member for the main legal elements under Component 3 on strengthening legal and institutional framework for pesticide risk management and life cycle management, including strengthening of the legal and institutional capacity of PCB. Illovo participated in the pilot container management programme as they generate large volumes of empty pesticide containers.	Provide information on available options for empty container management and can form a basis of farmer engagement in the process of sustainable use and management of pesticides. Results will inform future research on pesticide management in Malawi. Results will provide information which can be used in the promotion of safer alternatives to chemical pesticides such as IPM. Extension workers trained in the project will cascade the knowledge gained in their training to others. Over time, awareness will be created. Results will inform policy direction regarding pesticides. Results will provide information on available options for sustainable use of pesticides, especially empty container management.	These stakeholders will be involved midway within the evaluation. Data will mainly be collected through key informant interviews.

Key stakeholders	What role related to the intervention/evaluand	How will they use the evaluation	How and when they should be involved in the evaluation
Secondary stakeholders Ministry of Health Self Help Africa Lilongwe University of Agriculture and Natural Resources Mzuzu University Malawi Bureau of Standards Indirect stakeholders (smallholder farmers)	The Ministry of Health was designed to participate in Component 2 on the management of empty pesticide containers. SHA – implementation of the pilot empty container management scheme (CMS), promotion of good agricultural practices (GAP), development of a communication strategy on the benefits of IPM and awareness raising on pesticide risks. SHA was further scheduled to co-finance Component 4 on promoting alternatives to POPs and other hazardous chemical pesticides. The Lilongwe University of Agriculture and Natural Resources and Mzuzu University's role in the project was to contribute to knowledge generation and dissemination through research and outreach. The Malawi Bureau of Standards ensured adherence to quality standards across project components, and provision of laboratory analysis services if required were among the roles of Malawi Bureau of Standards. Indirect stakeholders (smallholder farmers) benefited from training on IPM.	Provide information on sustainable management of empty pesticide containers and their safe disposal. Generation of knowledge and dissemination of the same to relevant stakeholders. Provide information on sustainable pesticide management which NGOs can incorporate into their programmes. Enhancement of knowledge and expertise in appropriate standards for POPs and the standards for their disposal, including those for the management of empty pesticide containers. Enhancing their (smallholder farmers') knowledge on alternative strategies for managing pests.	These stakeholders will be involved midway within the evaluation. Data will mainly be collected through key informant interviews. Smallholder farmers will be involved during data collection.

Appendix 6. Project logical framework

Objective	Assumptions
To reduce economic, environmental and social risks associated with the use of pesticides in agriculture and to promote sustainable intensification of agriculture	Security conditions remain stable and allow project personnel to operate in all project countries

Component 1: Safe disposal of POPs and other obsolete pesticides and remediation of heavily contaminated sites				
Outcome 1	**Outcome indicators and targets**	**Baseline**	**Milestones**	**Assumptions**
Risks to human health and the environment are reduced through safe disposal of POPs and other obsolete pesticides and remediation of contaminated sites.	Up to 240 tonnes of POPs and other obsolete pesticides disposed by high temperature incineration. 150 tonnes of degraded pesticide disposed locally by the government. Tonne of soil treated One contaminated site remediated. % decline in soil contaminants (target to be determined).	390 tonnes of waste inventoried in 2012. 230 tonnes repacked and centralized by CropLife in 2012 (52 tonnes of which require to be repacked again). 150 tonnes of the inventoried pesticides are government procured stocks; the bulk being disputed stocks that did not meet registration requirements and others simply not distributed in time. These are degraded and low hazardous so should be disposed local by the government. A further 10 tonnes of obsolete stocks will arise from the empty containers that were not adequately cleaned by CropLife during the CleanFarms project and also as a result of repackaging of the deteriorating CropLife safeguarded stocks. Samples from the government ISP stocks sent for analysis during PPG. The test results of the 150 tonne government test to inform final quantity of obsolete stocks to be disposed. Environmental assessment (EA) done during Technical Cooperation Programme (TCP) (to be updated). Four sites with approximately 382 tonnes of contaminated soils have been identified in inventory. Zero sites remediated.	**Year 1:** Risk reduction strategies for obsolete stocks developed, approved and safeguarding completed (with complete environmental management plans [EMPs] and EIA) Risk reduction strategies for one contaminated site developed and approved. **Year 2:** One contract signed for disposal. Implementation of long-term risk reduction strategies for one contaminated site. **Year 3:** Disposal of obsolete stocks completed. Monitoring and evaluation of risk reduction measures. Risk reduction in one prioritized contaminated site completed.	CropLife Malawi and key institutions from the government ministries of agriculture and environment are willing and available to cooperate in project execution and support from co-financiers is maintained. Safeguarding and disposal prices do not exceed USD 4 500/tonne. Support from key government institutions and co-financiers is maintained.

Output	Indicator	Baseline	Milestones and target values				Data collection and reporting
			Year 1	Year 2	Year 3	Means of verification	Responsibility for data collection
Output 1.1: A safeguarding and disposal strategy is developed in line with national and international best practice (include local disposal of 150 tonnes of obsolete stocks).	Updated environmental assessment and environmental management plan (EMP) Number of trained local waste handlers and improvement in knowledge (male/female). Disposal strategy for local disposal of 150 tonnes of degraded pesticides.	Two sites repackaged (EMP completed but to be updated during PY1). 52 tonnes repacked by CropLife in 2012 have degraded and cannot be shipped in their present condition either because drums are leaking or plastic packaging is past shelf life.	Updated EA and EMP approved	Strategy for local disposal available		EA EMPs	CropLife Malawi Project coordinator (PC)
Output 1.2: 240 tonnes of obsolete stocks and associated waste are disposed of in an environmentally sound manner (include up to 240 tonnes of obsolete stocks for disposal abroad).	Tonnes/sites safeguarded and disposed in line with international standards (Environmental Management Tool Kit [EMTK]). Quality of tender specification and compliance with Steering Committee (SC)/best practice. Number of non-conformities reported in line with contract and EMTK.	390 tonnes safeguarded in Blantyre and Lilongwe. 150 tonnes to be disposed of locally. 52 tonnes need repackaging.		Disposal company selected and contract signed	390 tones disposed of in line with international standards.	Technical specifications. List of pre-selected firms. Signed contract. Contractors clean up report. Basel Transport Certificates. Destruction certificates.	CropLife Malawi Contractor National Project Coordinator (NPC)/FAO Task Team
Output 1.3: Risks posed by one contaminated site are significantly reduced.	% reduction in contamination level/risk of exposure at mitigated sites against baseline. Number of people trained and improvement in knowledge (male/female).	Six potentially contaminated sites identified in TCP. Four priority sites identified for further investigations. *(Levels of contamination TBD based on detailed site specific remediation plans)*	Four conceptual site models (CSMs) developed. Local team trained in risk assessment of contaminated sites.		Remediation of the prioritized sites completed.	Analytical and evaluation reports. Remediation strategy document. Laboratory analysis report. Participant list, itinerary. Post-training questionnaire.	CropLife Malawi NPC Task Team Laboratory

Appendix 6. Project logical framework

Component 2: Management of empty containers				
Outcome 2	**Outcome indicators and targets**	**Baseline**	**Milestones**	**Assumptions**
Health and environmental risks associated with empty pesticide containers and their reuse are reduced.	Number of empty containers triple rinsed, collected and stored awaiting recycling; 90 percent of all containers triple rinsed and collected/stored/recycled.	Of 55 000 containers generated annually, 5 percent are triple rinsed, none is collected and recycled. 75 percent of known farms store containers onsite. No data on unknown farms.	**Year 1 and 2:** 10 000 are triple rinsed, collected and stored awaiting recycling and/or disposal. **Year 3:** 45 000 containers are triple rinsed, collected and stored awaiting recycling and/or disposal. Legacy containers that cannot be triple rinsed are disposed under Outcome 1, if possible.	Stockpiles of containers remain secure and have not been pilfered and sold. Farmers are willing and able to carry out triple rinsing. The triple rinsing process results in non-hazardous levels of residues in line with legislation. Government institutions and private sector willing to cooperate.
	National policy/action plan based on pilot adopted by Government of Malawi. EAD/PCB.	POPTT Indicator 1.4.2.4 Status = 0	POPTT status = 2	

Component 2: Management of empty containers							
Output	**Indicator**	**Baseline**	**Milestones and target values**				**Data collection and reporting**
			Year 1	**Year 2**	**Year 3**	**Means of verification**	**Responsibility for data collection**
Output 2.1: Container management pilot implemented in southern regions of Malawi	Value, type of recycling equipment installed (*tbd based on strategy*). Number of farmers trained in triple rinsing (M/F) and motivations (target to be determined). Number of empty metallic and plastic containers reused/ triple rinsed and collected in Blantyre.	Metal drum crushing/recycling equipment. 20 protocol estates (15 sites). Smallholder out grower schemes and CropLife member employees trained. An estimated 55 000 plastic, 5 000 metal – partly triple rinsed not collected.	Equipment procured. Baseline data from survey on pesticide management practices.	Agents trained in container management. Pilot operational. 40 percent collected.	60 percent collected. Assessment and handover of scheme.	Invoices/procurement. Equipment. Report. Training modules/reports.	Project PMU. The collecting company.

Component 2: Management of empty containers							
Output	**Indicator**	**Baseline**	**Milestones and target values**				**Data collection and reporting**
			Year 1	**Year 2**	**Year 3**	**Means of verification**	**Responsibility for data collection**
		No data on levels of reuse.					
Output 2.2: Assessment and scaling up of the Blantyre pilot scheme to a permanent operator completed.	Number of stakeholders contributing to a sustainable container management facility in Blantyre.	Waste management companies exist but do not handle pesticide containers.	Feedback received on options proposed for strategy.	Industry roles and support during pilot operation. Number of participants attending annual review.			PMU. Industry/EAD/PCB.

Component 3: Strengthening legal and institutional frameworks for pesticide risk management and life cycle management				
Outcome 3	**Outcome indicators and targets**	**Baseline**	**Milestones**	**Assumptions**
Legal and institutional frameworks strengthened for sound life cycle management.	Revised national legislation and regulations in compliance with international obligations developed. Endorsement of the national strategy and/or Action Plan (NSAP) specifically pertaining to implementation of the Code. An information exchange platform hosted by PCB to strengthen integovernmental coordination and cooperation on harzardous chemical management validated and operational.	Current legislation in Malawi (Pesticides Act 2000) is not aligned with Malawi's international commitments for pesticide risk reduction and does not enable effective pesticide life cycle management. No IPM policy in place. Draft Bill prepared under TCP/MLW/3302 undergoing approval process but still missing some key enabling regulations for effective post registration enforcement. The PCB is the legislated body for pesticide registration and post registration enforcement but its operations are severely hampered by financial, technical and human resource constraints. No formal mechanisms for exchange of information, for example for implementation of the Rotterdam Convention; new registrations, etc.	**Year 1:** Drafting the texts of the technical regulations and IPM policy. Drafting the texts of National Strategy and/or Action Plan (NSAP) for the implementation of the Code ensures sound life cycle regulation of pesticides. **Year 2:** Legal validation of regulations and NSAP. **Year 3:** Manuals of procedures and legal capacity development activities drafted. Draft IPM policy submitted to the government for approval. Monitoring and evaluation of effectiveness of PCB. National system for inspection and quality control of pesticides operational.	Timely adoption of the updated legislation by the Parliament. Beneficiaries are willing to participate in training seminars and apply the acquired knowledge in effective implementation of the revised legal framework for the management of pesticides. Effective enforcement of reforms. Stability in staff appointments.

Appendix 6. Project logical framework

Component 3: Strengthening legal and institutional frameworks for pesticide risk management and life cycle management							
Output	**Indicator**	**Baseline**	**Milestones and target values**				**Data collection and reporting**
			Year 1	**Year 2**	**Year 3**	**Means of verification**	**Responsibility for data collection**
Output 3.1: National regulations developed and updated in conformity to international guidelines and submitted to government for approval.	Comprehensive national legal framework enabling the domestication of international and regional instruments. National IPM policy document endorsed by stakeholders.	The Pesticides Act 2000; Pesticides Regulations 2002; Plant Protection Act in place and Draft Bill submitted for approval in 2013. There are gaps in regulations for sound life cycle management (for transportation, illegal trade, disposal of used or empty containers, control of pollution and disposal of pesticide waste). Assessment report of legislative and regulatory framework (TCP/MLW/ 3302).	Pesticides regulations drafted for transportation, illegal trade, disposal of used or empty containers, control of pollution and disposal of pesticide waste.	Draft IPM policy submitted to government for approval.	Draft regulations submitted to government for approval.	Project Progress Reports (PPR). Finalized national legislation and policy document. Record of submissions to national authorities.	FAO – Plant Production and Protection Division and Legal Office. National legal expert. Concerned governmental bodies responsible for approval.
Output 3.2: Measures to strengthen the capacity of the Pesticides Control Board (PCB) to enforce post-registration regulations developed.	Development of a national strategy and/or action plan for implementation of the Code of Conduct. % regulators trained on pesticide risk assessment and post-registration.	No clear national strategic plan for effective lifecycle regulation of pesticides.	Draft national strategy, workplan and budget for inspection and quality control of pesticides developed.	Revised strategy document for pesticide developed.		PPR. Evaluation and assessment.	FAO PCB

Component 3: Strengthening legal and institutional frameworks for pesticide risk management and life cycle management							
Output	**Indicator**	**Baseline**	**Milestones and target values**				**Data collection and reporting**
			Year 1	**Year 2**	**Year 3**	**Means of verification**	**Responsibility for data collection**
Output 3.3: National capacity for pesticide inspections and post-registration enforcement strengthened.	Number of mandated and trained pesticide inspectors, customs, plant protection and other officers involved with enforcement. National network of pesticide information exchange.	Poor post-registration enforcement and substandard products on the market. PCB currently conducts fortnightly inspections. Each inspection results in several confiscations from illegal traders mainly with illegal products. The number and frequency of inspections falls short of optimal requirements due to manpower and resource limitations. Multiple initiatives in broader chemicals and pesticides management but no systematic information sharing. Database of all registered pesticides now available in Excel ready for uploading into the Pesticides Stock Management System (PSMS). 11 pesticides containers purchased during the TCP for PSMS deployment, 2 PCB staff trained in PSMS.	Training plan and material, developed and under implementation. Training of PCB staff. PSMS training for six officers. Deployment of PSMS for registered products. Platform membership for information exchange identified.	20 plant protection, inspectors, customs and other concerned staff trained (M/F). National network of pesticide information exchange operational.	Re-evaluation of PCB capacity.	Training modules. Training reports. Performance tests. Inspection reports. Records of meetings. Records of communications for information exchange. Training. PSMS logs	PCB; PC

Appendix 7. Evaluation matrix

No	Subquestions	Measure/ indicator	Main sources of information	Data collection methods	Data analysis methods
1.	**Strategic relevance: To what extent was the project aligned to FAO and national policies and strategies, and international protocols and the priorities to reduce economic, environmental and social risks associated with the use of pesticides in agriculture and to promote sustainable intensification of agriculture?**				
1.1	Were the project outcomes congruent with the GEF focal areas/operational programme strategies, country priorities and FAO Country Programming Framework (CPF)?	• Relevance and complementarity of project outcomes to GEF strategic priorities and operational programmes • Relevance and complementarity to country priorities • Relevance and complementarity to FAO's Country Programming Framework	Design documents Relevant policy documents Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Review of relevant documentation Key informant interviews (KII) with project staff (PCB, PTF, FAO, PMU), government stakeholders, private sector	Content analysis of project design documents, mid-term review (MTR), various GEF, FAO and Malawi policy documents to see if the project objectives address the priorities identified in these policy documents. Analysis of alignment or disconnection and gaps.
1.2	Was the project design appropriate for delivering the expected outcomes?	• Perception of extent to which desired outcomes address the needs Perception of extent to which the proposed activities and outputs deliver the desired outcomes	Project design documents Project theory of change (TOC) Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Review of relevant documentation KII with project staff (PCB, PTF, FAO, PMU), government stakeholders, private sector	Content analysis of design documents, gaps identified. Data from KII will be analysed using Excel.
1.3	Has there been any change in the relevance of the project since its design, such as new national policies, plans or programmes that affect the relevance of the project objectives and goals?	• Type and reason for design changes • List of effects on relevance of project because of design changes	MTR report and Project Implementation Reports (PIRs) Key informants with project staff (PCB, PTF, FAO, PMU)	Review of relevant documentation KII with project staff (PCB, PTF, FAO, PMU)	Content analysis of project documents Data from KII will be analysed using Excel
2	**Effectiveness: To what extent have project objectives been achieved, and were there any unintended results?**				
2.1	**Component 1** To what extent were risks to human health and environment associated with disposal of POPs and obsolete pesticides reduced?	**Outcome 1** • Up to 240 tonnes of POPs and other obsolete pesticides disposed by high temperature incineration. • 150 tonnes of degraded pesticide disposed locally by the government. • Tonnes of soil treated/one contaminated site remediated • Percent decline in soil contaminants **Output 1.1**	PIRs MTR Monitoring reports Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector Site observation during the field visits	Review of relevant documentation KII with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector Observations by the evaluation team during the field visit	Systematic review of the quantity and quality of outputs and outcome delivered vs planned Content analysis of PIRs and other monitoring reports

No	Subquestions	Measure/ indicator	Main sources of information	Data collection methods	Data analysis methods
		• Updated environmental assessment (EA) and environmental management plan (EMP) • Number of trained local waste handlers and improvement in knowledge (male/female). • Disposal strategy for local disposal of 150 tonnes of degraded pesticides **Output 1.2** • Tonnes/sites safeguarded and disposed in line with international standards (EMTK) • Quality of tender specification and compliance with the Steering Committee (SC)/best practice. • Number of non-conformities reported in line with contract and EMTK **Output 1.3** • Percent reduction in contamination level/risk of exposure at mitigated sites against baseline; number of people trained and improvement in knowledge (male/female)			
2.2	**Component 2** To what extent were health and environmental risks associated with empty pesticide containers and their use reduced? To what extent can the attainment of results be attributed to the GEF-funded component?	**Outcome 2** • Number of empty containers triple rinsed, collected and stored awaiting recycling • 90 percent of all containers triple rinsed and collected/stored/recycled. • National policy/action plan based on pilot adopted by government of Malawi EAD/PCB **Output 2.1** • Value, type of recycling equipment installed (*tbd based on strategy*). • Number of farmers trained in triple rinsing (M/F) and motivations (target to be determined) • Number of empty metallic and plastic containers reused/triple rinsed and collected in Blantyre **Output 2.2**	PIRs MTR Monitoring reports Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector Site observation during the field visits	Review of relevant documentation KII with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector Observations by the evaluation team during the field visit	Systematic review of the quantity and quality of outputs and outcome delivered vs planned Content analysis of PIRs and other monitoring reports

No	Subquestions	Measure/ indicator	Main sources of information	Data collection methods	Data analysis methods
		• Number of stakeholders contributing to a sustainable container management facility in Blantyre			
2.3	**Component 3** To what extent were legal and institutional frameworks strengthened for sound life cycle management? To what extent can the attainment of results be attributed to the GEF-funded component?	**Outcome 3** • Revised national legislation and regulations in compliance with international obligations developed • Endorsement of the National Strategy and/or Action Plan (NSAP) specifically pertaining to implementation of the Code of Conduct. • An information exchange platform hosted by PCB to strengthen intergovernmental coordination and cooperation on hazardous chemical management validated and operational **Output 3.1** • Comprehensive national legal framework enabling the domestication of international and regional instruments • National IPM policy document endorsed by stakeholders **Output 3.2** • Development of a National Strategy and/or Action Plan for implementation of the Code of Conduct. • Percent regulators trained on pesticide risk assessment and post-registration **Output 3.3** • Number of mandated and trained pesticide inspectors, customs, plant protection and other officers involved with enforcement • National network of pesticide information exchange	PIRs MTR Monitoring reports Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector Relevant national legislation, strategies	Review of relevant project and national documentation KII with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector Focus group discussions with indirect beneficiaries (smallholder farmers)	Systematic review of the quantity and quality of outputs and outcome delivered vs planned Content analysis of PIRs and other monitoring reports NSAP and legislation has been development, endorsed as envisioned
2.4	**Component 4** To what extent were IPM alternatives to conventional pesticides successfully promoted and the use of chemical pesticides and highly hazardous pesticides (HHPs) reduced through Farmer Field Schools (FFS)?	**Outcome 4** • IPM FFS implementation strategy validated in PY1 • A national cadre of national facilitators and 40 FFS building farmers' capacity on agroecological management of farming systems	PIRs MTR Monitoring reports Key informants with project staff (PCB, PTF, FAO, PMU), ministries and	Review of relevant documentation KII with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Systematic review of the quantity and quality of outputs and outcome delivered vs planned. Content analysis of PIRs and other monitoring reports

No	Subquestions	Measure/ indicator	Main sources of information	Data collection methods	Data analysis methods
	To what extent can the attainment of results be attributed to the GEF-funded component?	• 800 farmers trained through FFS • Percent reduction in pesticide use on vegetables, cotton and maize among trained farmers **Output 4.1** • Validated IPM FFS strategy **Output 4.2** • Number of trainers trained in IPM FFS (M/F) • Number of farmers trained in IPM FFS (M/F) **Output 4.3** • Number of awareness raising activities (materials and or events) • Number of extension providers, farmers and other pesticide users receiving information (materials and/or events).	departments, private sector	Focus group discussions with indirect beneficiaries (smallholder farmers)	Triangulation and analysis of information obtained during the interviews
2.5	**Capacity development: To what extent has the project contributed to the development of the capacities of Malawi and the beneficiaries regarding the reduction of economic, environmental and social risks associated with the use of pesticides in agriculture and the promotion of sustainable intensification of agriculture?**				
	Individual level • To what extent did the intervention enhance target beneficiaries' functional and technical skills and their knowledge? • To what extent has the capacity building intervention contributed to changing behaviours/attitudes? • Are target beneficiaries implementing/using them and demonstrating changes in attitudes and practices?	• Number or percentage of participants satisfied with the capacity development (CD) activities • Number or percentage of participants that feel confident they acquired new skills (both technical and functional), knowledge, confidence and commitment • Percentage of women out of total participants who acquired new knowledge and skills • Examples of application of new acquired knowledge of skills by participants (M/F) in their work	MTR report and project reports, training reports Key informants with project staff (PCB, PTF, FAO, PMU) FAO capacity development evaluation framework – Kirkpatrick model	Review of relevant documentation KII with project staff (PCB, PTF, FAO, PMU) Online/email survey of extension workers that participated in the trainings	Content analysis of project documents Analyse the indicator according to differences in the profile of the beneficiaries (gender, years of experience, years/role in the Organization) Analysis of the results of the interviews and focus group discussions
	Organizational/institutional level To what extent did the intervention contribute to improve the performance of the Organization, promote institutional changes and informed decision-making in the concerned development sector?	• Number of manuals, standard operating procedures (SOPs) and guidelines developed through the project	Manuals, SOPs and guidelines developed through the project Key informants with the partner and beneficiary organizations	Review of relevant documentation KII with the partner and beneficiary organizations	Content analysis of the documents Analysis of the results of the interviews

No	Subquestions	Measure/ indicator	Main sources of information	Data collection methods	Data analysis methods
	Was an organizational/institutional needs assessment across national and subnational levels conducted?				
	Enabling environment What are the outcomes at enabling environment level, within the intervention/CPF? • What is the level of awareness of pesticide risk reduction at legal/political level across stakeholders (government, donors, local authorities, private sector, civil society)? • What is the level of multistakeholder participation and civil society engagement at decision-making level?	• Number and types of decisions and commitments reflecting political will to implement policies/frameworks • Type of changes identified as a result of the new policy/programme implementation	Minutes of National Task Team meetings Key informants with the partner and beneficiary organizations	Review of relevant documentation KII with the partner and beneficiary organizations	Content analysis of the documents. Analysis of the results of the interviews
3	**Efficiency: To what extent has the project been implemented in an efficient, cost-effective, and timely manner, and management been able to adapt to any changing conditions to improve the effectiveness of project implementation?**				
3.1	**Timeliness** Extent to which activities were implemented within the intended work plan and at appropriate moments. Did the project experience delays? What factors contributed to the multiple no-extension requests and how would this have been mitigated?	• Planned and actual activity implementation plan	Financial reports PIRs Project extension requests, as relevant Key informants with project staff (PCB, PTF, FAO, PMU)	Review of relevant documentation KII with project staff (PCB, PTF, FAO, PMU) and other stakeholders	Quantitative data analysis using Excel Narrative analysis of secondary data and primary data collected by Evaluation Team
3.2	**Project cost-efficiency** Extent to which required resources have been adequately defined and available resources have been adequately used	• Variances between planned and actual expenditures • Level of implementation of the project budget by component • Perceptions of project team and key stakeholders on the adequacy of the planned and available resources	Financial reports, budget revisions and justifications PIRs Key informants with project staff (PCB, PTF, FAO, PMU)	Review of relevant documentation KII with project staff (PCB, PTF, FAO, PMU) and other stakeholders	Quantitative data analysis using Excel Narrative analysis of secondary data and primary data collected by evaluation team

No	Subquestions	Measure/ indicator	Main sources of information	Data collection methods	Data analysis methods
4	**Sustainability: Are the results of the project contributions sustainable, i.e. continuing or likely to continue after the interventions?**				
4.1	What is the likelihood that the project results will continue to be useful or will remain even after the end of the project?	• Existence and quality of the exit strategy and/or measures planned to support sustainability of results • Number and range of ways in which the project has promoted national/community ownership and/or demand for the services • Types and extent of government ownership and investments made because of project supported interventions	Design documents and PIRs Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Review of relevant documentation KII with key stakeholders to seek explanations	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category
4.2	What mechanisms are in place to ensure replication and continuity of results?	• List and type of mechanisms for replication and continuity of results	Design documents and PIRs Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Review of relevant documentation KII with key stakeholders to seek explanations	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category
4.3	What are the key risks which may affect the sustainability of the project benefits?	• Range and types of risks (technical, financial, economic, political, social) affecting sustainability identified by stakeholders and evaluation team	Design documents and PIRs Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Review of relevant documentation KII with key stakeholders to seek explanations	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category
4.4	How sustainable are the results achieved on capacity development? • To what extent did the achievement of capacity development outputs and outcomes contribute to achieve development outcomes? • What are the cumulative and/or long-term effects expected/resulted from the capacity development intervention, including contribution towards the intended impact, positive or negative, or intended or unintended changes? • What transformational change has the intervention contributed	• Stakeholder perceptions on sustainability of capacity development results • Stakeholder perceptions in terms of long-term effects of CD (positive, negative) and (intended or unintended) • Stakeholder perceptions on transformational change & creation of virtual connections	Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	KII with key stakeholders to seek explanations.	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category.

No	Subquestions	Measure/ indicator	Main sources of information	Data collection methods	Data analysis methods
	to generate (or has the potential to) from its work on capacity development dimensions and the creation of virtuous interconnections?				
5	**Factors affecting performance**				
5.1	**Implementation:** To what extent did FAO deliver on project identification, concept preparation, appraisal, preparation, approval and start-up, oversight and supervision? To what extent have the implementing risks been identified and managed? To what extent did the COVID-19 pandemic and other emerging emergencies in the country like fall armyworm, cholera outbreak, etc affect project implementation and achievement of results?	• Quality of project design • Quality of project implementation by FAO (Budget Holder [BH], Lead Technical Officer [LTO], Project Task Force [PTF], etc.) in terms of supervision, guidance and technical backstopping • Quality of project oversight (Project Sterring Committee, project working group, etc.) • List of external factors affecting implementation of project • Quality of mitigation measures • Presence of sufficient capacity among partners	Project design documents Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Review of project design documents KII with project staff and key stakeholders to seek explanations	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category
5.2	**Execution:** To what extent did the execution agency effectively discharge its role and responsibilities related to the management and administration of the project?	• Quality of project execution by Ministry of Agriculture against specified terms of reference (TOR) roles and responsibilities	Key informants with project staff, Ministry of Agriculture and other stakeholders	KII with project staff and key stakeholders to seek explanations	Thematic analysis of qualitative results through frequency of emergent themes
5.3	**Monitoring and evaluation (M&E):** Was the M&E design practical and sufficient and did it work as intended? Was information gathered in a systematic manner, using appropriate methodologies? Was the information from the M&E system appropriately used to make timely decisions and foster learning during project implementation?	• Stakeholder perceptions on design of M&E in terms of it being practical and sufficient • Quality of data collection including methods used • Level and type of use of information • Evidence of use of information in decision-making • Availability of an M&E plan	Project design documents Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Review of project design documents KII with project staff and key stakeholders to seek explanations	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category
5.4	**Financial management and co-financing:** To what extent has the expected co-financing materialized and how has	• Adequacy between planned and realized expenditures • Expected partner co-financing vs delivered	Financial reports Key informants with project staff	Review of financial records KII with project staff and key stakeholders to seek explanations.	Quantitative and qualitative analysis of results

No	Subquestions	Measure/ indicator	Main sources of information	Data collection methods	Data analysis methods
	its decrease or increase affected project results?				
5.5	**Project partnership and stakeholder engagement:** How were other actors, such as civil society, Indigenous population or private sector involved in project design or implementation, and what was the effect on the project results? To what extent has the project built on existing agreements and protocols, initiatives, data sources and synergies, complementarities with other projects and partnerships, etc. and avoided duplication of similar activities of other groups?	• Stakeholder perceptions on actor (civil society, Indigenous population, or private sector) involvement in project design and implementation • Synergies and complementarity with other projects and partnerships	Project design and progress documents Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Review of the relevant project documents KII with project staff and key stakeholders to seek explanations	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category Analysis of the documentation for evidence of stakeholders engagement and progress
5.6	**Communication, knowledge management and knowledge products:** How is the project assessing, documenting and sharing its results, lessons learned and experiences? To what extent are communication products and activities likely to support the sustainability and scaling-up of project results?	• Existence and quality of a documentation and communication plan • Stakeholder perceptions on effectiveness of communication of project aims, progress, results and key messages to date • Evidence of structured lesson-learning, experience-sharing between project partners and interested groups • Likelihood of communication products to support sustainability and scaling up of project results	Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector Communications and knowledge management documentation	KII with project staff and key stakeholders to seek explanations Review of the communications and knowledge management documentation	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category Analysis and assessment of the communications and knowledge documentation produced by the project
6	**Environmental and social safeguards**				
	To what extent where environmental and social concerns taken into consideration in the design and implementation of the project?	• Evidence of mainstreaming of appropriate environmental and social safeguards, including gender in project design and implementation	Project design documents, PIRs Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Review of project design documents KII with project staff and key stakeholders to seek explanations.	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category
7	**Gender, human rights issues, Indigenous Peoples**				
	To what extent were gender and human rights considerations considered in designing and implementing the project?	• Existence of a gender analysis report • Existence of gender-disaggregated data • Existence of gender empowerment activities	Project design documents, PIRs Key informants with project staff (PCB, PTF, FAO, PMU), ministries and	Review of project design documents KII with project staff and key stakeholders to seek explanations	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category

Appendix 7. Evaluation matrix

No	Subquestions	Measure/ indicator	Main sources of information	Data collection methods	Data analysis methods
	Was the project implemented in a manner that ensures gender and vulnerable groups' equitable participation benefits and empowerment?		departments, private sector		
8	**Progress to impact**				
8.1	To what extent may the progress towards long-term impact be attributed to the project?	• Perception of stakeholders and evidence of long-term impact that can be attributed to the project	Project design documents, PIRs Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Review of project design documents KII with project staff and key stakeholders to seek explanations	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category
8.2	Are there any evidence of behaviours and practices changes of the actors along the pesticides value chains, as well as any evidence of reduction of economic, environmental and social risks associated with the use of pesticides?	• Type of changes in behaviours and practices according to actors • Evidence of reduction of economic, environmental and social risks associated with the use of pesticides	Project design documents, PIRs Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Review of project design documents KII with project staff and key stakeholders to seek explanations	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category
8.3	Are there any barriers or other risks that may prevent future progress towards long-term impact?	• Type and barriers or risk preventing future progress towards long-term impact	Project design documents, PIRs Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Review of project design documents KII with project staff and key stakeholders to seek explanations	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category
9.	**Lessons: What knowledge has been generated from project results and experiences that has wider value and potential for wider application, replication and use?**				
9.1	What lessons from the project in varying contexts should influence design and implementation of future interventions (including good practices to be emulated and weaknesses to be mitigated)?	Evidence of successful approach and/or good practice in terms of design and different approaches to design and implementation of the project Stakeholder perceptions on what they think was the most contributing factor to the success of the project or achievements of results	Project design documents, PIRs Key informants with project staff (PCB, PTF, FAO, PMU), ministries and departments, private sector	Review of project design documents KII with project staff and key stakeholders to seek explanations	Thematic analysis of qualitative results through frequency of emergent themes disaggregated by stakeholder category Synthesizing patterns emergent from the findings into key lessons for future projects

Appendix 8. Data collection tools

Key informant interviews (KII) guides for project staff (FAO, Environmental Affairs Department, Pesticides Control Board)

Strategic relevance

i. To what extent was the project aligned to international, FAO, GEF and national policies and strategies on pesticide risk reduction and to the promotion of sustainable intensification of agriculture?

ii. What is your comment on the project design? Was it appropriate to deliver its expected outcomes? [*probe by reminding the respondent of the four project outcomes]*

Effectiveness

i. To what extent have project objectives been achieved, and were there any unintended results?

Component 1 – Safe disposal of POPs and other obsolete pesticides, and remediation of heavily contaminated site

Component 2 – Management of empty containers

Component 3 – Strengthening legal and institutional framework for pesticide risk management and life cycle management

Component 4 – Promotion of alternatives to POPs and other hazardous chemical pesticides

Capacity development

Individual level

i. To what extent did the capacity building efforts enhance target beneficiaries' functional and technical skills and their knowledge?

ii. To what extent has the capacity building intervention contributed to changing behaviours/attitudes?

iii. Are target beneficiaries implementing/using them and demonstrating changes in attitudes and practices?

Organizational/institutional level

i. To what extent did the intervention contribute to improve the performance of the Organization, promote institutional changes and informed decision-making in the concerned development sector?

Enabling environment

i. What is the level of awareness of pesticide risk reduction at legal/political level across stakeholders?

ii. What is the level of multistakeholder participation and civil society engagement at decision-making level?

Efficiency

i. How efficient was the project implementation in terms of:

- *Financial management:* Were available financial resources well managed?
- *Cost effectiveness:* Were available resources adequately used?
- *Timeliness:* Were activities of the project implemented in a timely manner? Did the project experience delays?
- *Adaptability to changing situations:* Were there changes made to the project scope, timeline or budget during implementation? What changes were made?

Sustainability

i. What is likelihood that the project results will continue to be useful or will remain even after the end of the project?

ii. What strategies are in place to ensure sustainability post project life?

iii. What are the key risks which may affect the sustainability of the project benefits?

iv. How sustainable are the results achieved on capacity development?

v. Factors affecting performance:

- *Implementation:* To what extent did FAO deliver on project identification, concept preparation, appraisal, preparation, approval and start-up, oversight and supervision?
- *Execution:* To what extent did the execution agencies effectively discharge their roles and responsibilities in the management and administration of the project? How were the implementing risks identified and managed?
- *Monitoring and evaluation (M&E):*
  - Was the M&E design practical and sufficient and did it work as intended?
  - Was information gathered in a systematic manner, using appropriate methodologies?
  - How was the information from the M&E system used to make timely decisions and foster learning during project implementation?
- *Financing and co-financing:* To what extent has the expected co-financing materialized? How did co-financing arrangements affect project results?
- *Partnership and stakeholder engagement:*
  - How were other actors, such as civil society, Indigenous population or private sector involved in project design or implementation?
  - What was the effect of their involvement on the project results?
  - To what extent has the project built on existing agreements and protocols, initiatives, data sources and synergies, complementarities with other projects and partnerships?
- *Communication, knowledge management and knowledge products:*
  - How is the project assessing, documenting and sharing its results, lessons learned and experiences?
  - Was there a communication plan? Was it effectively executed? Were there any issues with communication?
  - To what extent are communication products and activities likely to support the sustainability and scaling-up of project results?

Environmental and social safeguards

i. To what extent where environmental and social concerns taken into consideration in the design and implementation of the project?

Gender, human rights issues, Indigenous People

i. What was the extent of gender and human rights consideration during the project implementation?

Progress to impact

i. To what extent may the progress towards long-term impact be attributed to the project?

ii. Is there any evidence of behaviour and practice changes of the actors along the pesticides value chains, as well as any evidence of reduction of economic, environmental and social risks associated with the use of pesticides?

iii. Are there any barriers or other risks that may prevent future progress towards long-term impact?

Lessons learned

i. What lessons from the project in varying contexts should influence design and implementation of future interventions (including good practices to be emulated and weaknesses to be mitigated)?

Recommendations

i. Are there any recommendations for improving in future projects?

Interview guides for government organizations – Ministry of Justice, Department of Crop Development, Malawi Bureau of Standards, Department of Agricultural Extension Services, Ministry of Health

Strategic relevance

i. To what extent was the project aligned to national policies and strategies on pesticide risk reduction and to promotion of sustainable intensification of agriculture?

Effectiveness

i. What was your role in the project?

ii. To what extent have project objectives been achieved, and were there any unintended results?

iii. Was the project scope well defined and understood by all stakeholders?

iv. Were the project management processes and methodologies followed effectively?

v. In which component of the project were you involved? (*ask questions depending on the component where a stakeholder was involved)*

Capacity development

Individual level

i. To what extent did the capacity building efforts enhance target beneficiaries' functional and technical skills and their knowledge?

ii. To what extent has the capacity building intervention contributed to changing behaviours/attitudes?

iii. Are target beneficiaries implementing/using them and demonstrating changes in attitudes and practices?

Organizational/institutional level

i. To what extent did the intervention contribute to improve the performance of the Organization, promote institutional changes and informed decision-making in the concerned development sector?

Enabling environment

i. What is the level of awareness of pesticide risk reduction at legal/political level across stakeholders?

ii. What is the level of multistakeholder participation and civil society engagement at decision-making level

Efficiency

i. Were available financial resources well managed?

ii. Were available resources adequately used?

iii. Were activities of the project implemented in a timely manner?

iv. Did the project experience delays?

v. Were there changes to project implementation as situations on the ground changed? What changes were made?

Sustainability

i. What strategies are in place to ensure sustainability post project life?

ii. How sustainable are the results achieved on capacity development?

Factors affecting performance

i. What factors may have affected the projects performance with regards to:

- *Implementation:* To what extent did FAO deliver on project identification, concept preparation, appraisal, preparation, approval and start-up, oversight and supervision?
- *Execution:* To what extent did the execution agencies effectively discharge their roles and responsibilities in the management and administration of the project?
- *M&E:* How was the information from the M&E system used to make timely decisions and foster learning during project implementation?
- *Financing and co-financing:* To what extent has the expected co-financing materialized? How did co-financing arrangements affect project results?
- *Partnership and stakeholder engagement:*

- As a stakeholder, how were you involved in project design or implementation?
- What was the effect of your involvement on project results?
- To what extent has the project built on existing agreements and protocols, initiatives, data sources and synergies, complementarities with other projects and partnerships?

- *Communication, knowledge management and knowledge products:*
  - How is the project assessing, documenting and sharing its results, lessons learned and experiences?
  - Was there a communication plan? Was it effectively executed? Were there any issues with communication?
  - To what extent are communication products and activities likely to support the sustainability and scaling-up of project results?

Environmental and social safeguards

i. To what extent where environmental and social concerns taken into consideration in the design and implementation of the project?

Gender, human rights issues, Indigenous People

i. What was the extent of gender and human rights consideration during the project implementation?

Progress to impact – all

i. To what extent may the progress towards long-term impact be attributed to the project?

ii. Are there any evidence of behaviours and practices changes of the actors along the pesticides value chains, as well as any evidence of reduction of economic, environmental and social risks associated with the use of pesticides?

iii. Are there any barriers or other risks that may prevent future progress towards long-term impact?

Lessons learned

i. What lessons from the project in varying contexts should influence design and implementation of future interventions (including good practices to be emulated and weaknesses to be mitigated)?

Recommendations

i. Are there any recommendations for improving in future projects?

Interview guide for Self Help Africa

Strategic relevance

i. To what extent was the project aligned to national policies and strategies on pesticide risk reduction and to promotion of sustainable intensification of agriculture?

ii. What is your comment on the project design? Was it appropriate to deliver its expected outcomes?

Effectiveness

i. In which component of the project were you involved?

ii. To what extent have project objectives been achieved, and were there any unintended results?

iii. Was the project scope well defined and understood by all stakeholders?

iv. Were the project management processes and methodologies followed effectively?

Factors affecting performance

Implementation

i. To what extent did FAO deliver on project identification, concept preparation, appraisal, preparation, approval and start-up, oversight and supervision?

Execution

i. To what extent did the execution agencies effectively discharge their roles and responsibilities in the management and administration of the project?

ii. How were the implementing risks identified and managed?

M&E

i. Was the M&E design practical and sufficient and did it work as intended?

ii. Was information gathered in a systematic manner, using appropriate methodologies?

iii. How was the information from the M&E system used to make timely decisions and foster learning during project implementation?

Financing and co-financing

i. To what extent has the expected co-financing materialized?

ii. How did co-financing arrangements affect project results?

Partnership and stakeholder engagement

i. As a stakeholder, how were you involved in project design or implementation?

ii. What was the effect of your involvement on the project results?

iii. To what extent has the project built on existing agreements and protocols, initiatives, data sources and synergies, complementarities with other projects and partnerships?

Communication, knowledge management and knowledge products

i. How is the project assessing, documenting, and sharing its results, lessons learned and experiences?

ii. Was the communication plan effectively executed? Were there any issues with communication?

iii. To what extent are communication products and activities likely to support the sustainability and scaling-up of project results?

Lessons learned

i. What lessons from the project in varying contexts should influence design and implementation of future interventions (including good practices to be emulated and weaknesses to be mitigated)?

Recommendations

i. Are there any recommendations for improving in future projects?

Online/interview survey

General information

Institution	
Position	
Gender	
Age	
Location (city, district)	

Questions

No.	Questions	Options	Select code
Individual level			
1.	Name of training(s) attended	1 = Pesticide Risk assessment 2 = Risk assessment tools and post registration regulation 3= Enforcement of post registration of pesticides and Pesticides Stock Management System (PSMS) 4= Training of trainers (Farmer Field School [FFS]) 5= Other (please specify)	
1.a	How do you feel about the training? Were you satisfied?	Yes=1 | No=2 | Somewhat = 3	
1. b	Give reasons for your answer in (1a)		
2.a	Are you confident you acquired new skills (functional and technical)?	Yes=1 | No=2 | Somewhat= 3	
2.b	Give reasons for your answer in (2a)		
3.	What knowledge, skills and attitudes did you learn from the training?		
4.	Give examples of where you have applied the new acquired knowledge and skills		
ORGANIZATIONAL/INSTITUTIONAL LEVEL			
5.a	Are there manuals, standard operating procedures, guidelines that have been developed through the project? If yes name them	1= 2= 3= 4=	
5.b	Was an organizational needs assessment conducted by the project?	Yes=1 | No=2	
6.a	Have the training efforts improved the performance of the organization/institution?	Yes=1 | No=2	
6.b	Give reasons for your response in (6a)		
ENABLING ENVIRONMENT			
7	What is the level of awareness of pesticide risk reduction at legal/political levels within your institution?	1 = High 2 = Satisfactory 3= Low	
8	What is the level of multistakeholder participation and civil society engagement at decision-making on pesticide risk reduction?	1 = High 2 = Satisfactory 3= Low	

Appendix 9. Sustainability ratings for each component

Based on four-point scale already defined in Appendix 2.

Risk category	Sustainability rating	Explanations
Component 1	U	There is severe risk to sustainability because of absence of disposal facilities in the country. This has a high cost. Absence of an institution to oversee the remediation efforts (the national task force that was designated by the projects remains non-functional) and resource challenges (both human and financial)
Component 2	MU	The active involvement of CropLife provides an opportunity for sustainability. In fact, CropLife already has a facility in Kanengo. Lilongwe where they are shredding empty containers (ECs) and are actively looking for an end use of the shredded materials. International demand for agroproduce from certified farms (including certification of empty container management [ECM]) remains an opportunity which can increase the drive among farms to commit to the container management systems that have been established. Most key players in the ECM processes have vested interests which may lead to the container management scheme (CMS) being implemented but probably in an adapted manner. Rinsed pesticide containers are still categorized as hazardous waste according to the waste management regulations for Malawi. This implies that local disposal of recycling of the same will remain an impediment until this is revised.
Component 3	ML	There is moderate risk to sustainability since following the revision of the Pesticides Act and the Regulations, places huge responsibilities on the PCB. All these require resources (financial and human), infrastructure as well as equipment. Understaffing of PCB remains a risk. In the country's borders for example, PCB relies on Malawi Revenue Authority (MRA) staff to perform its functions. These staff may not have all the necessary training and equipment to perform their functions. The size of the pesticide industry keeps expanding in the wake of increased demand for pesticides. This makes monitoring and enforcement a challenge. This is coupled with the porous borders of the country where pesticides still find their way into the markets following unscrupulous routes.
Component 4	ML	There is moderate risk to sustainability because, to a large extent, some degree of knowledge transfer was done by the project in collaboration with other projects. This was through the training of extension workers who have been training farmers. The evaluation team conducted interviews with Farmer Field Schools (FFS) which showed evidence that knowledge acquisition by farmers cannot only be attributed to the project since the IPM FFS elements were incorporated into other projects.

Annexes

Annex 1. Terms of reference for the evaluation

https://www.fao.org/3/cc9949en/GCP_MLW_052_GFF_Annex_1.pdf

Office of Evaluation
evaluation@fao.org
www.fao.org/evaluation

Food and Agriculture Organization of the United Nations
Rome, Italy

CC9949EN/1/03.24