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Final evaluation of “Disposal of Persistent Organic Pollutants and Obsolete Pesticides in Mozambique”



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“Disposal of Persistent Organic Pollutants
and Obsolete Pesticides in Mozambique”

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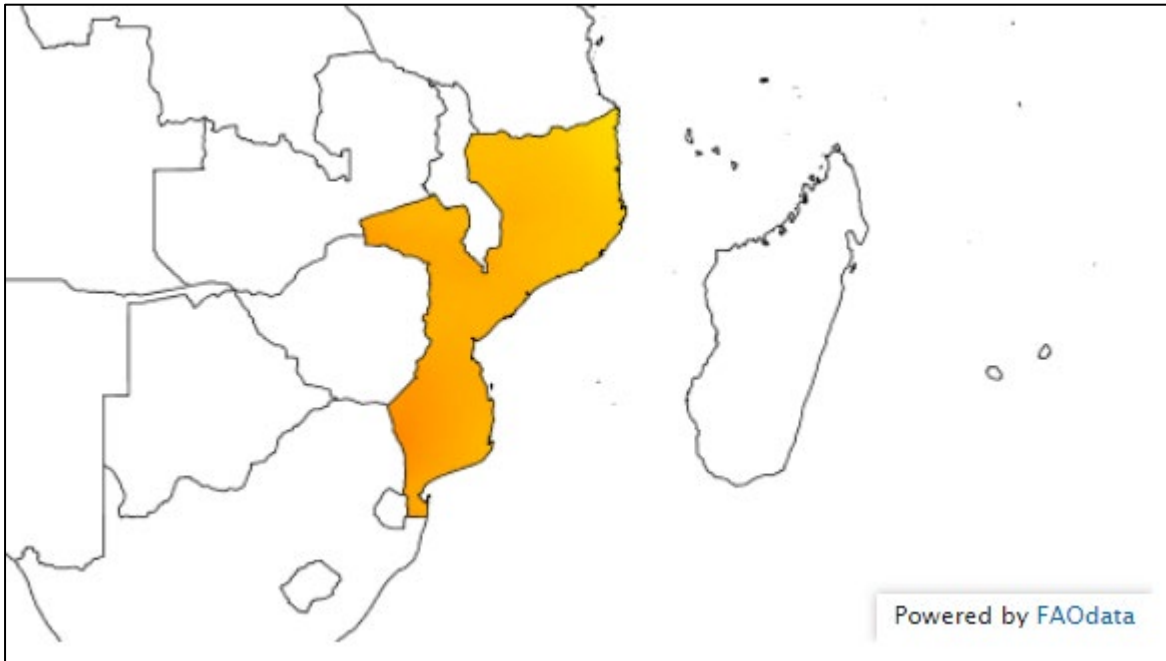
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Map of Mozambique



Adapted from UNITED NATIONS, World Map, February 2019.

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The evaluation benefited from the inputs of many other stakeholders, including government officers, farmers' organizations and the staff of other UN agencies, research centres and private sector. Their contributions were critical to the team's work and are deeply appreciated.

Acronyms and abbreviations

EA	Executing Agency
EMP	Environmental Management Plan
EPC	Empty Pesticide Containers
EQ	Evaluation Question
ET	Evaluation Team
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FPMIS	Field Programme Management Information System
GEF	Global Environment Facility
IA	Implementing Agency
IPM	Integrated Pest Management
LTO	Lead Technical Officer
LTU	Lead Technical Unit
MASA	Ministry of Agriculture and Food Security
MICOA	Ministry for Coordination of Environmental Affairs
MITADER	Ministry of Land, Environment and Rural Development
MTE	Mid-Term Evaluation
NIP	National Implementation Plan of the Stockholm Convention
PCU	Project Coordination Unit
PIR	Project Implementation Review
PMU	Project Management Unit
POPs	Persistent Organic Pollutants
PPR	Project Progress Report
PSC	Project Steering Committee
PSMS	Pesticide Stock Management System
PTF	Project Task Force
QPIR	Quarterly Project Implementation Report
SDG	Sustainable Development Goals
TA	Technical Advisor
TCI	Investment Centre Representative
TCP	Technical Cooperation Project
WHO	World Health Organization

Executive summary

The Food and Agriculture organization of the United Nation's (FAO) Office of Evaluation (OED) assessed the project "Disposal of Persistent Organic Pollutants (POPs) and Obsolete Pesticides" implemented in Mozambique. The total value of the project was USD 6.2. million. The Government of Japan was the principal donor, providing over USD 3.48. million. The Global Environmental Facility (GEF) provided USD 1.95. million, and the rest of the budget was to come from co-financing. OED evaluated the project through the use of Theory of Change, Evaluation Questions and the required GEF evaluation criteria of Relevance, Efficiency, Effectiveness, Quality of Implementation/Execution, Quality of Monitoring and Evaluation and Sustainability.

The evaluation found that the Project is relevant to global and national efforts for reducing risks to human health and the environment due to POPs and pesticide residues. Its objectives were consistent with GEF4 strategic objectives, the United Nations Sustainable Development Goals SDG2 and SDG12; and objectives of the Basel, Stockholm and Rotterdam Conventions. The Project addressed priorities identified in the country's national implementation plan for the Stockholm Convention and FAO's country programming framework.

The Project was successful in safeguarding POPs, pesticide waste and contaminated containers, and had to deal with a much larger quantity of contaminated soil and obsolete pesticides than originally planned for. Despite extensions to the Project it was not able to complete the disposal of safeguarded materials, although processes to achieve this were initiated. Limited progress was made with regards to establishing systems to reduce future risks from pesticides.

The quality of project execution was satisfactory while implementation at times fell short of expectation, evidenced in the need for five no-cost extensions. Worryingly, as of April 2019, the tender to dispose of over 700 tonnes of contaminated soil had still not been floated.

The design of the M&E system was fit for purpose, although proposed number of reports and short reporting periods was originally impractical. Lack of detailed reporting on co-financing was a major shortcoming. Although the Project was designed before FAO and GEF minimum standards for environmental and social safeguarding had been developed, it contributed towards protection of public health and the environment. The Project did little to address gender in its design and implementation.

The evaluation makes the following recommendations to FAO and the Project Steering Committee (PSC).

1. FAO and the PSC should continue to keep the issue of risk from pesticides as a government priority and should lobby for continued efforts to reduce risk from pesticides in Mozambique;
2. FAO and the PSC should ensure that Project activities are completed including remediation of highly contaminated sites, establishment of a sustainable system for managing empty pesticide containers (EPC), and establishment of a national pesticide stock management system;
3. FAO should facilitate completion of processes necessary for adoption of harmonized pesticide regulations by the Southern Africa Development Community (SADC);
4. FAO and GEF should ensure gender mainstreaming and inclusion of social and environmental safeguards in future projects;
5. The PSC should ensure that efforts are made to sustain capacity developed for safeguarding obsolete pesticides;
6. GEF and FAO should ensure that in future projects budget for maintaining activities to reduce future risk from pesticides is not reallocated to other activities.

1. Introduction

1. The “Disposal of Persistent Organic Pollutants (POPs) and Obsolete Pesticides in Mozambique” project (POPs Project) was designed to eliminate stockpiles of POPs and other obsolete pesticides in Mozambique, and to make sustainable improvements in pesticide management and use in order to reduce the serious threat these chemicals can pose to human health and the environment. Specifically, the project worked on three components:
 - i. safeguarding and disposal of known obsolete pesticides, excavating and treatment of contaminated soil and treatment of empty pesticide containers;
 - ii. improving pesticide lifecycle management;
 - iii. project management and capacity development.
2. The first component worked to reduce risk from existing stocks and contamination while the second worked to reduce future risk.
3. The Project built on technical cooperation led by FAO with funding from the Governments of Japan, the Netherlands and the USA, through USAID. Phase 1 focused on situation analysis and inventory of pesticides in Mozambique. Phase 2 concentrated on environmental assessment followed by safeguarding of all obsolete stocks. Phase 3 involved the export of all POPs pesticides and higher risk obsolete stocks for environmentally sound disposal by a dedicated incinerator.
4. The evaluation used a cluster approach. This means that this Project, with two similar GEF-funded projects in Botswana and Eritrea due for final evaluation, used a common evaluation management and evaluation team. This approach allows for cross-project comparisons and learning. In addition to individual country-level evaluation reports, the evaluation also produced a lessons learned document of relevance to reducing risk for pesticide use in East and Southern Africa, adding to a similar synthesis from West Africa.¹

Box 1. Basic project information

GEF ID:	3986
FAO Project Symbol:	GCP/MOZ/100/GFF
GEF Implementing Agency:	FAO
GEF Executing Agency:	FAO
National Executing Partner:	Ministry of Agriculture
Other Executing Partners:	Ministry for Coordination of Environmental Affairs
GEF-4 Strategic Programs:	POPs SP-1, Strengthening Capacities for NIP Implementation; POPs; SP-2, Partnering in Investment for NIP implementation; POPs; SP-3, Partnering in the demonstration of feasible, innovative technologies and best practice in POPs reductions; Sound Chemicals Management
Date of CEO endorsement:	23 December, 2010
Date of project start (effective):	1 July 2011
NCE date:	August 2019
Date of mid-term evaluation:	December 2016

¹ Document available from OED. See Bibliography for full list of evaluation documents consulted.

1.1 Purpose of the evaluation

5. The final evaluation is a requirement of the main donor, the Global Environment Facility (GEF). It provides an account of how donor funds were spent and what was achieved for different stakeholders involved. As well as meeting accountability requirements, the evaluation also reviews the Project's successes and challenges to learn lessons for future work in the area. Findings, conclusions and recommendations are based on triangulated evidence and analysis.
6. The evaluation will assess the project against its goal: "To evaluate and reduce the risk posed by POPs and pesticide contaminated sites and associated wastes in Mozambique and to strengthen institutional capacity to manage similar risks in the future." The evaluation also documents intended and unintended consequences and how the Project contributed to them.

1.2 Intended users

7. The intended users of the results of the final evaluation include: focal points in the line ministries involved with the project (Agriculture and Food Security, Environment, Health); members of the Project Steering Committee; the Project Management Unit; Project donors; the FAO Country Office; and, the units within FAO responsible for project implementation and execution. Broader lessons will be useful to donors, governments, multilateral implementing agencies, private sector (e.g. CropLife) and civil society organizations interested in reducing risk throughout the pesticide lifecycle. Other uses of evaluation results will include meeting GEF and FAO accountability requirements and informing next steps to consolidate and build on Project successes and learn from Project shortcomings.

1.3 Scope and objective of the evaluation

8. The final evaluation assessed the Project from its inception in August 2011 until December 2018. The evaluation focuses on results generated by funds spend during this period, not on earlier work even though it was conceived as Phase II and III of the same initiative, and the earlier phases appeared in the Project budget as co-financing. The scope of the evaluation is determined by five evaluation questions shown in Box 2.

1.4 Methodology

Box 2. Evaluation questions, scope of inquiry and GEF rating criteria addressed

EQ 1: How relevant was the project to global and national efforts for reducing risks to public health and the environment due to POPs and POPs contaminated soil?

EQ 1 addresses the relevance of the project at global and national scale. This involved establishing government position on pesticide use and disposal in policy documents, establishing relevance of project objectives to main chemical conventions through relevant websites and asking FAO and government representatives as to their view of the relevance of the project.

GEF rating criteria addressed: Relevance

EQ 2: How effective has the project been on delivering results?

EQ 2 addresses the delivery of project outcomes. The question considers whether project design was adequate to achieve outcomes as well as the extent to which project outcomes have been realized. This involves developing a theory of change based on project documents and conversations with key change agents and then testing it against data gathered in the field and monitoring and evaluation (M&E) reports.

GEF rating criteria addressed: Achievement of project results; stakeholder engagement

EQ 3: How satisfactory was project implementation and execution in achieving results? How satisfactory was M&E?

EQ3 considers whether institutional arrangements, project management, oversight, financial management and M&E were fit for purpose. The main sources of information were Project Implementation Reviews (PIRs), budgets, minutes of Steering Committee meetings as well as interviews with staff involved in implementation and execution.

GEF rating criteria addressed: Efficiency, project implementation and execution; monitoring and evaluation; co-financing

EQ 4: To what extent and how did the project include gender and environmental and social safeguarding in project design and implementation?

EQ 4 addresses gender and environmental and social safeguarding in project implementation. The Project began before GEF or FAO revised requirements to include gender mainstreaming in project design. The evaluation focuses on what steps the Project took to incorporate gender considerations and environmental and social safeguarding in project design and operation, particularly after recommendations made in the Mid-term Evaluation.

GEF rating criteria addressed: Gender, environmental and social safeguards

EQ 5: To what extent and how can project outcomes be sustained and scaled to achieve wider impact?

EQ 5 addresses Project sustainability and future impact at scale by developing and critiquing a theory of change for the Project as well as understanding the different types of project results and what they need to be sustained and scaled. Information and insight for generating the theory of change came from the Project documents, the Inception Workshop, from evaluation team interviews with key stakeholders and from observation during visits to the field.

GEF rating criteria addressed: Sustainability, progress towards impact

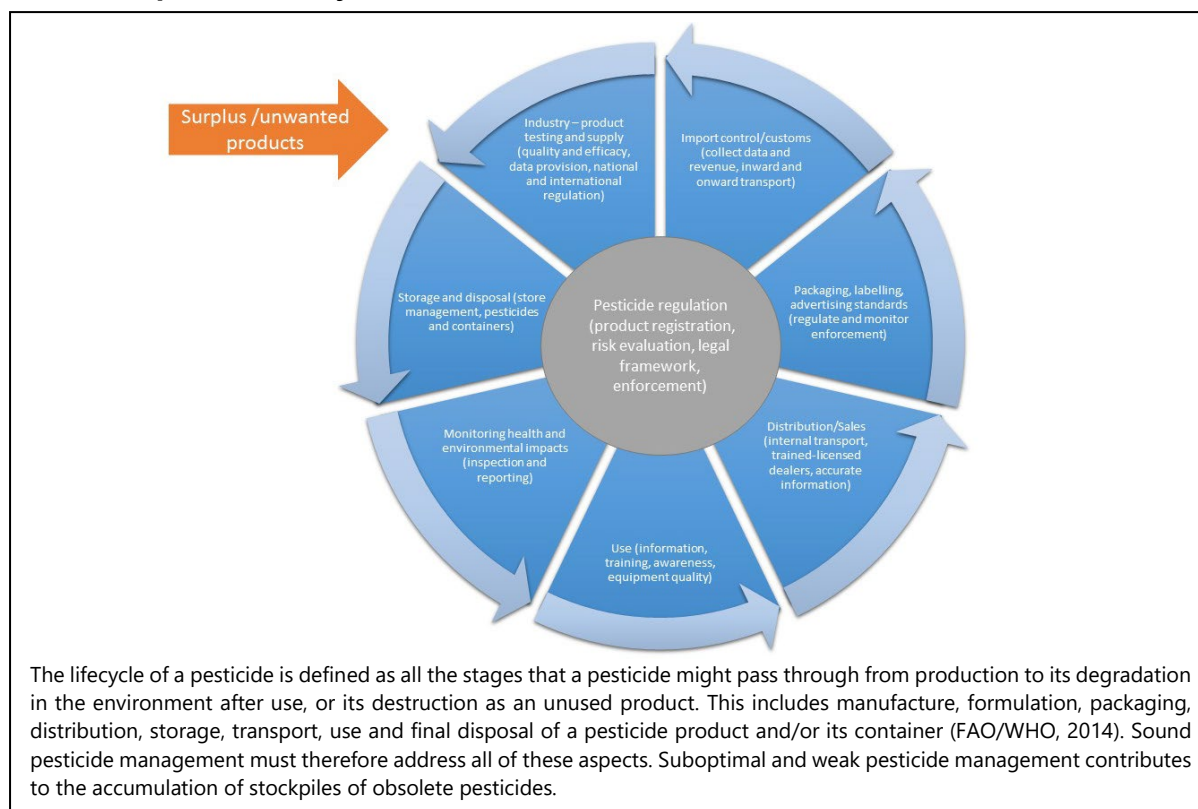
9. The evaluation methodology was described in an Inception Report (Annex 2) which passed through an internal FAO Office of Evaluation (OED) review process.
10. The evaluation adheres to the United Nations Evaluation Group Norms and Standards, the Global Environment Facility (GEF) Evaluation Policy and is in line with the FAO Office of Evaluation manual, methodological guidelines and practices. The evaluation was undertaken in line with the United Nations principles of independence, impartiality, transparency, disclosure, ethical behaviour, partnership, competencies and capacities,

credibility and utility, and adopted a consultative and transparent approach with the Project's internal and external stakeholders throughout the evaluation process.

11. The evaluation follows GEF guidance for evaluating environmental and development outcomes of the Project as reflected in the evaluation questions shown in (Box 2.) Sub-questions were developed to further define the objectives of the evaluation (refer to Annex 2 – Inception Report).
12. The evaluation is based on the analysis of project documents (see Annex 3) and interviews with main actors involved in project implementation (see Appendix 1). The evaluation team:
 - i. undertook a review of the project's relevance, efficiency, effectiveness and approach to gender and equity;
 - ii. carried out an analysis of the Project's design, potential impact, likely sustainability, institutional arrangements, management and financing;
 - iii. recommended next steps for the Project Steering Committee to continue to reduce risks from pesticides;
 - iv. identified lessons learned from project design, implementation and management of relevance to future efforts to reduce risk from pesticides regionally and globally.
13. The evaluation questions are further elaborated by several sub-questions. The sub-questions were chosen based on an exhaustive reading of the project document and mid-term evaluation report. The sub-questions are also chosen and worded such that answering them will provide a basis for the evaluators to rate project performance as per GEF requirements for terminal evaluations. Judgement criteria for answering the sub-questions, as well as sources of data and methods of analysis, are shown in an evaluation matrix in Annex 2.
14. An inception workshop was held at the start of the evaluation team's visit to Mozambique to build participants understanding and ownership of the evaluation process and results. The dates of the mission were 19 to 27 November 2018. The evaluation team developed a theory of change for the Project based on the Project proposal and presented it to participants for validation on day 1. Participants then carried out a self-evaluation of the Project which the evaluation team used to inform and validate their own findings, working on the assumption that project staff and implementers are in the best position to identify Project results, successes and shortcomings. Moreover, the literature on utilization-focused and participatory evaluation suggests that evaluations that include project staff and stakeholders in the evaluation are more likely to produce results that are useful and used. For example, Patton, M.Q., *Utilization-focused evaluation*.
15. The inception workshop was attended by seven people including the focal point for the Rotterdam Convention, the Pesticide Registrar, the NPC and representative of the NGO Livaningo.
16. On day 2, participants reviewed and commented on the evaluation questions and provided a set of recommendations to be considered by the evaluation team for inclusion in the final report.
17. In addition to the Project theory of change, the evaluation team also used the pesticide lifecycle (see Box 3) to help identify gaps in implementation and priorities for next steps.

18. The evaluation questions were answered through an extensive review of documents listed in the Bibliography and through talking to people listed in Appendix 1. People were interviewed using questions derived from the evaluation matrix and questions designed to elicit understanding of underlying motivations and dynamics. The interviews were targeted based on initial analysis, recommendations from the country teams and snow-balled from previous interviews. Respondents names were anonymised when the evaluation refers to something specifically said in an interview.
19. The evaluation team carried out two parallel field visits. One visit centred on Maputo, and involved one evaluator accompanied by the NPC making visits to the former chair of the PSC and former National Director of Agriculture, the GEF Focal Point, two private sector companies (TECAP, an agrochemical importer and distributor and OLAM, a large cotton contract farming operation), Department of Health, USAID and the Japanese Embassy. The second team member travelled to Quelimane in Zambezia Province accompanied by a national consultant. Meetings were held with staff from the Ministry of Agriculture and Food Security (MASA) and the Ministry of Land, Environment and Rural Development (MITADER) at the MASA Provincial Headquarters. A visit was made to the MASA Pesticide Store in Saguar, Quelimane, and to the Ministry of Health Malaria Control Program Chemical Store. The following day the team member visited Moziva, accompanied by staff from MASA, the national consultant and the District Director of Agronomy. Interviews were held with a community leader there and members of the community residing around the contaminated site. More details of who the evaluation team talked to are provided in Appendix 1.
20. At the end of the in-country mission and interviews, the evaluation team presented the preliminary findings to the FAO Country Representative and the national project coordinator. An internal Office of Evaluation peer review of the draft of the evaluation report was conducted to ensure quality. The first draft of the report went through an OED internal quality control check before circulation to a wider group of stakeholders. The evaluation report was finalized after the comments were received and corrections and suggestions were incorporated as considered appropriate by the Office of Evaluation and the evaluation team.
21. In order to meet GEF evaluation requirements, facilitate comparisons with other GEF implementing agencies and contribute to the GEF programme learning process, the evaluation rated the Project in accordance to the existing GEF rating scheme and Office of Evaluation guidelines.

Box 3. The pesticide lifecycle



1.5 Limitations

22. The Project was conceived as Phase IV following on from Phase I to III. The co-financing in the Project budget was largely the funding spent on earlier work. The main concurrent co-financing came from a UTF project that started later. The team were unable to see a final version of the UTF project budget nor the contribution made to Project components. This made it impossible to know how much had been spent on each component and therefore to properly assess the extent that funds may have been shifted from one to the other.
23. The Project proposal was developed before it was an FAO or GEF requirement for projects to have an explicit gender strategy or develop a theory of change. The former made it hard to say much about the fourth evaluation question on gender and equity. The lack of a theory of change was less of a constraint because the evaluation team were able to infer one from the Project's result framework.

1.6 Structure of the report

24. The report is published with the following annexes:

Annex 1. Terms of Reference:

<http://www.fao.org/3/ca7859en/ca7859en.pdf>

Annex 2. Inception Report:

<http://www.fao.org/3/ca7658en/ca7658en.pdf>

2. Background and context of the project

2.1 Context of the project

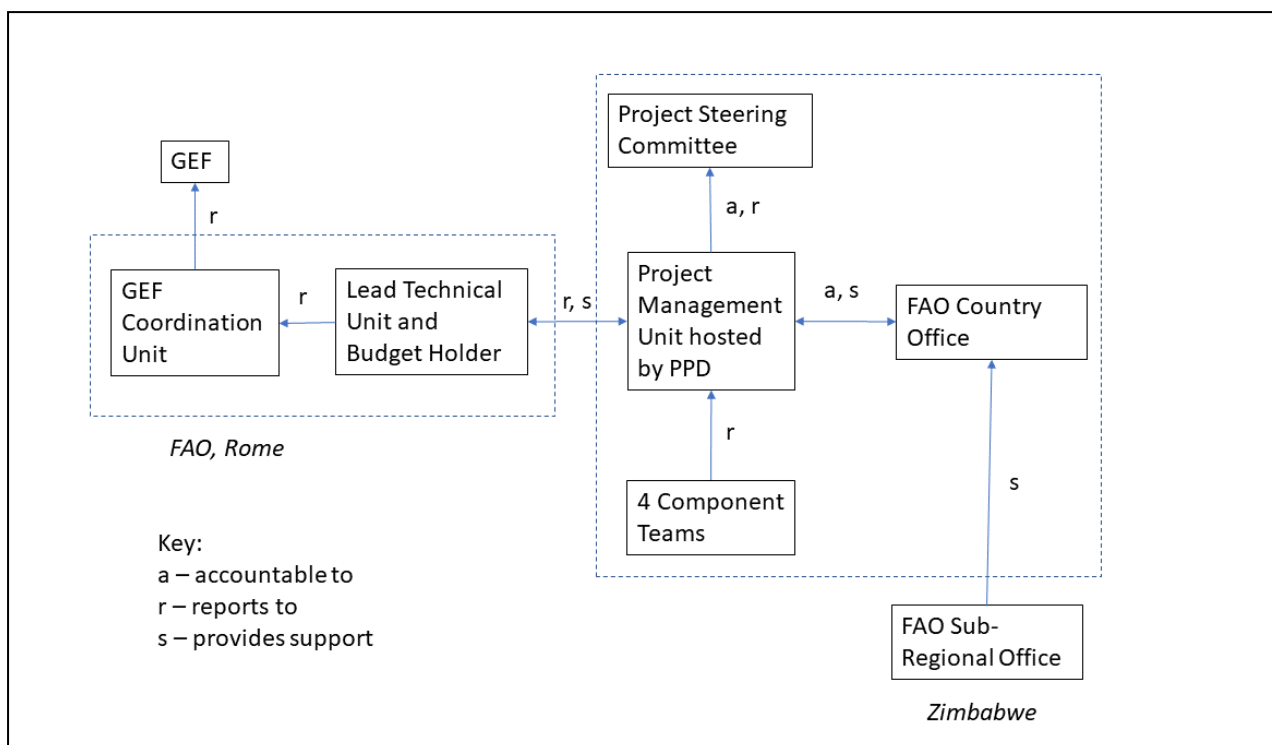
25. Historical mismanagement of pesticides in Mozambique led to problems including accumulation of and leakage from obsolete stockpiles, inappropriate disposal of unwanted stocks by uncontrolled burial, and the use of contaminated containers for water and food storage.
26. In the 2000s, a concerted effort began to deal with the risk from existing stockpiles, working in parallel with the GEF supported Africa Stockpiles Programme (ASP). Phase 1 focused on situation analysis and inventory of pesticides in Mozambique. Phase 2 concentrated on environmental assessment followed by safeguarding of all obsolete stocks. Phase 3 involved the export of all POPs pesticides and higher risk obsolete stocks for environmentally sound disposal by a dedicated incinerator. 330 tonnes of POPs and other obsolete pesticide wastes were disposed of successfully. The work has largely been implemented in technical cooperation with FAO with funding from the Governments of Japan, the Netherlands and the US, through USAID.
27. The three phases also worked to prevent future accumulation of obsolete stocks by carrying out: a review of existing pesticide legislation and adoption of new laws for pesticide management; a complete review of the pesticide lifecycle to identify key areas of concern; and, the examination of opportunities for promotion of low input intensification of food production. Links with national and international NGO partners were established and communications materials were developed and disseminated.
28. This Project, being evaluated, was conceptualized as the fourth phase to continue safeguarding and disposal work, particularly of buried pesticides. It was also funded to continue working on to improve pesticide lifecycle management to reduce future risk.
29. A Mid-Term Evaluation (MTE) of the Project was published in December 2016 which made seven recommendations, summarised as follows:
 - i. to revise the Project budget to take better account of co-financing;
 - ii. to ensure that GEF funding was being disbursed as envisaged in the Project budget;
 - iii. to be more certain of how quantities of contaminated material destined for landfill or incineration and the financial implications of disposal;
 - iv. to assess financially and technically the contaminated material coming from the Lamego storage;
 - v. to assess the cost of disposing contaminated material in an existing landfill or a new one;
 - vi. in the expectation of having more material to dispose of than budget available, to move funding from the other Project components and prioritise disposal of the material posing the greatest risk;
 - vii. for the Government of Mozambique to invest in better internet in key offices to run FAO's pesticide stock management system (PSMS);
 - viii. for FAO to run a lighter version of PSMS that can run on limited bandwidth.

2.2 Institutional arrangements

30. The POP Project institutional structure is shown in Figure 1. FAO was both the **GEF implementing agency (IA)**² and the **executing agency (EA)**.³ The former role was carried out by the **GEF Coordination Unit** in the Investment Centre Division (TCI) while the latter was carried out by the Pesticide Risk Reduction Group in the Plant Production and Protection Division (AGP). AGP was the **Budget Holder** and also provided the **Lead Technical Unit (LTU)** responsible for providing technical support and ensuring delivery of outputs and outcomes.
31. The LTU, led by the Chief Technical Advisor, reviewed and provided clearance on consultancies and contracts on: selection of consultants and firms to be hired with GEF funding; all technical reports; reports on project progress; implementation reviews and financial reports. The LTU prepared the annual Project Implementation Review (PIR) to be cleared by the GEF Coordination Unit and submitted to the GEF.
32. The GEF Coordination Unit also approved external evaluations, implementation reviews, financial reports and budget revisions. The Unit was responsible for providing an FAO GEF Annual Monitoring Review to GEF, based on the annual PIR. GEF made tranche payments on the basis of these reports.
33. The Ministry of Agriculture and Food Security (MASA in Portuguese) was be responsible for the activities under the sub-component 1.2 and component 2 of the project.
34. MASA was the main technical executing partner responsible for hosting the **Project Management Unity (PMU)**, appointing the National Director of Agrarian Services as the Chair of the **Project Steering Committee (PSC)** and designating the National Project Coordinator (NPC) in charge of the PMU. From the outset, the NPC was employed by, and reported to, FAO, which was different to Botswana and Eritrea where the NPC was originally conceived of as seconded employee of the lead executing partner, receiving a regular government salary and reporting to the government. In Mozambique, the project document specified that the NPC should be the National Prevention Coordinator of the Phase 3 work, presumably to ensure continuity of the work as it moved into Phase 4.

² Partner directly managing the project, executing project activities, monitoring project progress, sub-contracting, managing project staff and funds, and carrying out other project management functions.

³ Agency making the funding available and providing oversight during the entire project cycle and being held accountable to the GEF Council for delivering global environmental benefits. Responsibilities include ensuring fiduciary standards are applied, and supervising the development and implementation of projects, including monitoring and evaluation, on behalf of the GEF.

Figure 1. Project institutional arrangements

FAO. 2018. 'BOT Pro Doc.pdf'. FAO Internal document. Project document. Rome.

35. MASA was also responsible for: providing office space for the PMU in the Plant Protection Department; mobilising all national and provincial resources needed for the successful implementation of the programme; and providing vehicles at provincial level when required and provide one driver for the project.

The PMU was organized around five sub-component teams:

- 1.1 buried pesticides and contaminated sites;
- 1.2 contaminated pesticide containers;
- 2.1 sustainable container management;
- 2.2 legislative framework;
- 2.3 pesticide stock management.

36. The second executing partner, the Ministry for Coordination of Environmental Affairs (MICOA in Portuguese), was responsible for implementing activities under sub-component 1.1 and providing the Project's National Environmental Coordinator was to be the former National Disposal Coordinator (NDC) of the Phase 3 work. Like the NPC, the NDC was to be employed by FAO. However, the nominee for the job preferred to stay employed by MICOA and to do the work without a formal contract. The Project proposal does not provide the NDC's job description but does say that MICOA were responsible for:

- i. identifying and facilitating the purchase of material for safeguarding of buried pesticides and contaminated soils;

- ii. facilitating the import and export of needed equipment and material for safeguarding and disposal;
 - iii. processing notifications for shipment of waste for disposal under the Basel Convention; providing vehicles ant provincial level;
 - iv. supporting MASA in the development of the project annual work plan and detailed budget.
37. The NPC and MASA were responsible for the other four sub-components. The Project proposal envisaged that each sub-component would be led by a sub-component team leader (STLs) who could be government representatives of national consultants, to be selected on the basis of their technical competence. The NPC's overall job was to lead the PMU meaning being responsible for overall planning and coordination of all project activities, supported by the Lead Technical Officer (LTO)⁴ based in the LTU. The PMU was responsible for:
- i. be the secretariat for the PSC;
 - ii. preparing and following up on work plans and budgets;
 - iii. managing the Project's monitoring system and carrying out monitoring visits;
 - iv. prepare M&E reports, in particular project progress reports;
 - v. support the preparation of statements of expenditure;
 - vi. review and provide comments and/or no objection to ToRs and technical outputs;
 - vii. coordinate workshops and meetings in Mozambique;
 - viii. support mid-term and terminal evaluations of the Project.
38. The Project proposal also indicates a role and budget for a full-time Chief Technical Advisor based in Maputo, to provide backstopping on day-to-day implementation.
39. The PSC was the same steering committee that oversaw the Phase 3 work. The Project proposal described the PSC membership as including at least one member from each relevant Ministry or from the responsible service or office therein;
- i. the Mozambican GEF focal point;
 - ii. at least one technical specialist from a university;
 - iii. one or two representatives from NGOs involved in environmental issues;
 - iv. representation from the private sector/pesticide suppliers;
 - v. the FAO Country Representative.
40. The PSC was envisaged to meet once every three to six months, to coincide with technical backstopping missions from the LTO. The role of the PSC was to:

⁴ The Project proposal describes the position as "LTU Backstopping Officer"

- i. Review project progress versus the approved work plan and to monitor project expenditure in line with budget estimations.
 - ii. Approve the proposed work plan and budget forecast for the upcoming period.
 - iii. Identify issues of major environmental and administrative concern to the country and discuss these among the members of the group and to examine and propose ways and means on how to optimize the use of pesticides and to avoid accumulation of hazardous waste.
 - iv. Identify issues causing bottlenecks, provide policy makers at high Government level with advice addressing problems or negative issues.
 - v. Raise awareness of Government officials concerned, of technical staff and all other stakeholders of the problem of toxic substances and the need to protect the environment and human health.
 - vi. Address problems at the port of disembarkation of goods and pesticides, customs procedures and regulations for clearance in particular of imported toxic substances.
 - vii. Regularly examine reports and pertinent problems of obsolete pesticides and pesticides waste, identified and presented by the project management responsible, its administration and compilation of information.
 - viii. Harmonise activities to avoid duplication of efforts and wastage of resources and to promote smooth working relationships, information sharing and good understanding among the various departments concerned.
41. The **FAO Country Representative (FAO-R)** supported project execution, liaising with Government bodies, and linking with other FAO interventions. The FAO Country Office supported financial management, procurement and human resources. In particular, the CO was the Budget Holder for the Government-of-Japan-funded technical cooperation office that co-financed much of Component 1 on disposal.
42. The institutional arrangements described are consistent with GEF's Direct Execution modality, described in Box 4.

Box 4. FAO's Direct Execution modality for GEF projects

Under the Direct Execution (DEX) modality, FAO implements and executes projects and provides services to National Institutions under the guidance of the Project Steering Committee (PSC), chaired by the lead Ministry or main National Executing partner. FAO is technically and fiduciary accountable for the achievement of all expected project results. The separation of implementation and execution functions, an important aspect of the GEF Minimum Fiduciary Standards, is ensured by maintaining the following setup. The day-to-day management of an FAO-GEF project is the responsibility of the FAO Budget Holder (BH) and the Project Management Unit (PMU) established for each project (execution function), while technical oversight, project supervision, and evaluation are the responsibilities of the FAO technical officers assigned to the specific FAO-GEF projects, FAO GEF Coordination Unit as Funding Liaison Unit, and the FAO Office of Evaluation (OED), respectively (implementation function).

Source: FAO's role and responsibility as a GEF Agency.doc p. 1 of Annex 3

2.3 Aims of the Project

43. The Project's overall goal, as stated in the Project Logical Framework, is "to evaluate and reduce the risk posed by POPs and pesticide contaminated sites and associated wastes in Mozambique and to strengthen institutional capacity to manage similar risks in the future." Stakeholders and beneficiaries of the project were identified as: policy makers in several ministries (e.g., Agriculture, Environment, Interior, Finance, Justice); national authorities involved in the control of pesticide imports and quality control of pesticides; national staff involved in safeguarding, disposal and prevention activities; environmental NGOs; recycling industry; private sector suppliers; advisory / extension services; farmers; and, women and men living near contaminated and leaking stores and contaminated soil. Indirect beneficiaries were identified as: consumers unaware of threat caused by overuse of pesticides; farmers exposed to illegal or sub-standard products; and, the global population and environment in the case of releases of POPs pesticides.
44. The project's Global Environmental Objective was to eliminate risks from POPs and obsolete pesticides in Mozambique through the use of sound environmental management methods to dispose of existing stocks and contaminated soils and prevent further accumulation of POPs and obsolete pesticides. The Project aimed to contribute to Millennium Development Goal (MDG) 7 on environment by reducing the environmental impact of obsolete pesticides entering the environment in an uncontrolled manner, and pesticides in use that impact on health and the environment through poor management and use practices. The Project also aimed to impact on MDG 1 by contributing to more sustainable agricultural practices, improving food quality and value for the farming communities. Although the Sustainable Development Goals were proposed after the start of the Project, the Project could also have contributed to SDG3 on good health and well-being and SDG12 on responsible production and consumption.
45. The Project aimed to be fully consistent with relevant provisions in the GEF POPs Focal Area Strategy. It intended to contribute to the GEF-4 strategic objectives of reducing and eliminating production, use and release of POPs and address all three strategic programmes:
 - i. SP-1 strengthening capacity for National Implementation Plan (NIP, of the Stockholm Convention) development and implementation;
 - ii. SP-2 partnering in investments needed for NIP implementation;
 - iii. SP-3 partnering in the demonstration of feasible, innovative technologies and best practice in POPs reduction.
46. The Project set out to achieve its aims through working on three components:
 - i. disposal of buried pesticides, contaminated soils and contaminated containers (GEF USD 1 297 000);
 - ii. improved pesticide lifecycle management (GEF USD 556 745; co-finance USD 311 000);
 - iii. management and M&E (GEF USD 342 000).

47. Two thirds of the GEF budget was allocated for disposal work (component 1). Neither the Project document nor the MTE gave details of the allocation of co-financing budget to the components.

2.4 Theory of change

48. A theory of change is an evidence-based story of how a project *has* or *will* achieve outcomes using the resources at its disposal. Most are the former -- predictions of how a project will bring change. A good theory of change builds its predictions on evidence of what is already starting to happen, from the social science literature and/or from stakeholder experience. It identifies the underlying mechanisms, that when triggered, will drive results with less or no subsequent project intervention. It also identifies their absence.
49. The evaluators classify project outcomes according to three categories to help answer the evaluation question on sustainability and impact of project outcomes. Doing so helps identify what the underlying mechanisms are and if they have the potential to drive change. The categories of outcomes are described in Box 5.

Box 5. Categories of project outcomes that require different approaches to be sustained and scaled

Self-sustaining: An outcome that will sustain itself and/or go to scale after the project has finished without significant further external investment, for example the setting up of a system for disposing of used plastic containers that pays for itself. Self-sustaining outcomes depend on the Project triggering a causal mechanism and dynamic.



Stepwise: A process towards an outcome that reaches a stable stopping point. The main outcome has not yet been achieved but progress can be put on hold for some time without major reversals, e.g. development of a communication strategy to be implemented sometime in the future. A stepwise process may or may not eventually lead to a self-sustaining outcome.



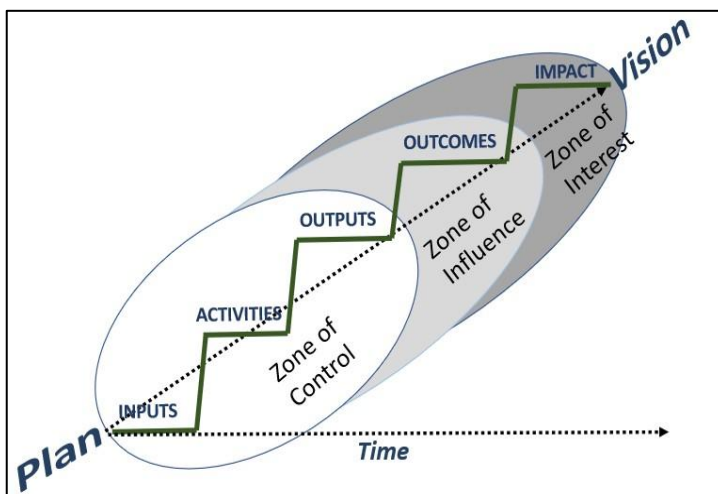
Contiguous: Need to continue to fund the work if the outcome is to be maintained or repeated, for example the safeguarding and international disposal of obsolete pesticides. There is no expectation of a self-sustaining causal mechanism that will continue after the project ends. Future outcomes require the government or a donor to provide the necessary funding to do it again. There can be major reversals, for example the capacity built in safeguarding, disposal and remediation is lost because team members leave to find more secure work.



Source: Hardcastle, P.D. 2008. *Thematic review of Darwin Initiative projects related to forest biodiversity.*

50. A theory of change is usually accompanied with a diagram that shows a pathway from inputs to impact following the steps shown in Figure 2. Projects generally have control over whether they produce outputs, because they can be purchased. For example, a communication strategy is an output - a consultant can be employed to produce it. However, how farmers respond to a communication campaign on safe pesticide use is not under the project's control, but is under its influence. The project can tailor the campaign to the target audience. Outcomes, for the purposes of this evaluation are defined as changes in knowledge, attitude, skills, aspirations and/or practice by stakeholders engaging in project processes using project outputs. Outcomes also include changes in social or environmental state, for example a healthier environment after toxic chemicals have been removed and stop contaminating the water supply.
51. Impacts are the cumulative knock-on effects of outcomes. The figure acknowledges that practically speaking, projects have little or no influence over impact, but is something they should be interested in, and reacting to, particularly if project outcomes result in unexpected negative consequences.
52. FAO has recommended that project concept notes include a theory of change since 2015. The POP Project began before 2015 and did not develop a theory of change as part of the project document.

Figure 2. Steps and level of certainty in a theory of change



Source: Hardcastle, P.D. 2008. *Thematic review of Darwin Initiative projects related to forest biodiversity.*

53. As suggested by the GEF Guidelines on the Project and Programme Lifecycle Policy, the evaluation team developed a theory of change (see Figure 3) from project documents, in particular the project results framework. The team presented the diagram for validation by project staff and key stakeholders during the inception workshop at the beginning of their country visit. Workshop participants confirmed that the diagram was a plausible model, to them, of how the Project was supposed to contribute to outcomes and impact.
54. The numbers in the theory of change diagram refer to Project components and subcomponents. The boxes are shaded according to the control - influence - interest spectrum shown in Figure 2. Each arrow in the diagram represents an if-then causal step. For example, arrow (a) implies that if buried pesticides and contaminated soils are

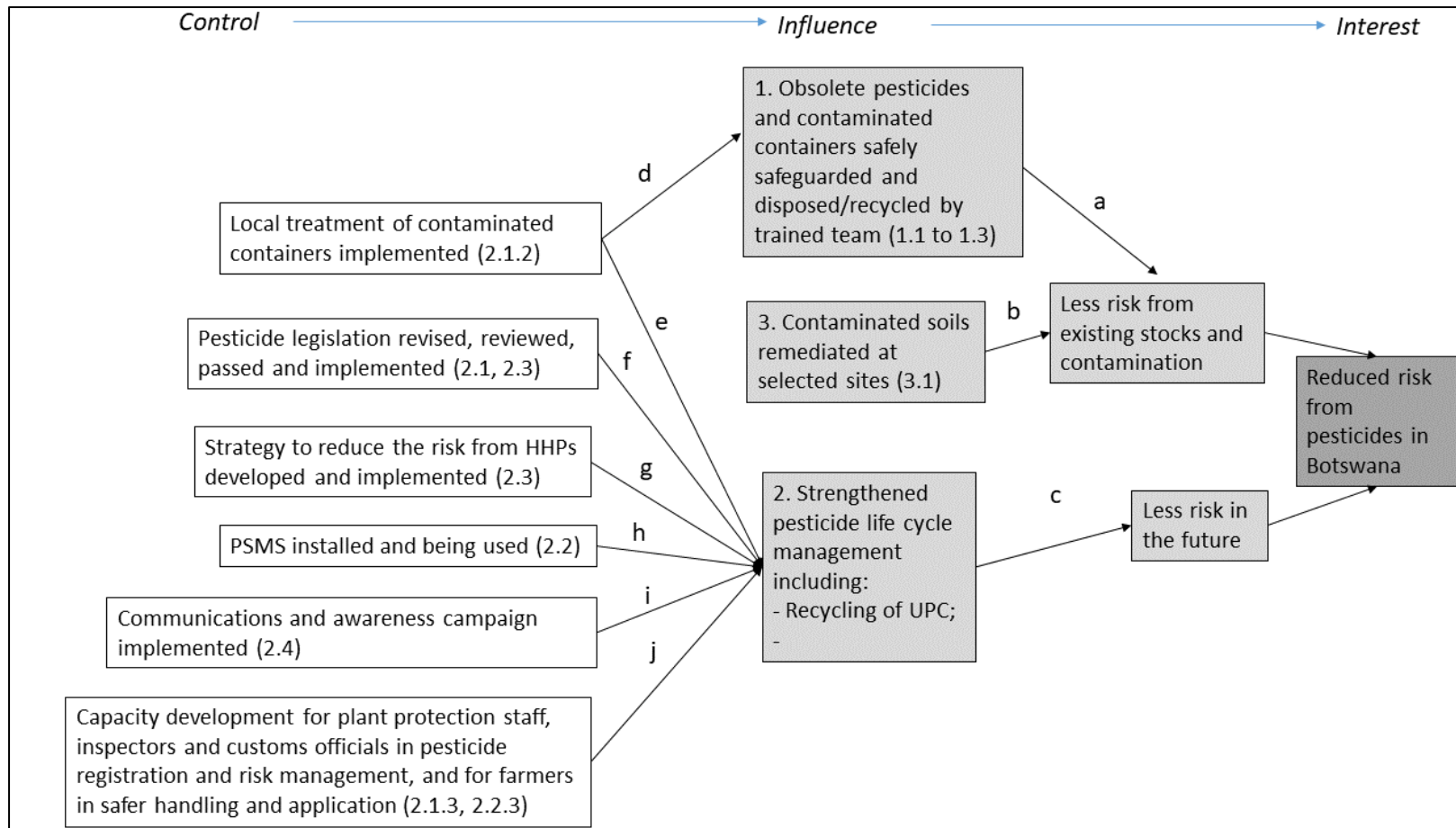
safeguarded and disposed of, then this will reduce risk from existing pesticide obsolete stocks and contamination. The if-then logic is captured in Table 1 as a first step to identifying underlying causal mechanisms needed to make the steps happen. The table is *in lieu* of a causal narrative that usually accompanies a theory of change to tell the outcome to impact story of the project.

55. The theory of change and the table are used to answer the main evaluation question on sustainability and impact, specifically, the extent to which the Project has moved along the impact pathways shown in Figure 3 towards achieving its goal (reduced risk from pesticides in Mozambique).
56. Theories of change often specify causal assumptions. In this theory of change, the causal assumptions are the assumptions about where and under what conditions the causal mechanisms are likely to work. Specifying and testing causal assumptions is best done as part of any future impact assessment that seeks to establish and quantify strong causal claims linking project intervention to impact on the ground.

Table 1. If-then logic underpinning the theory of change

Arrows	If – then logic
a.	A national team carries out safeguarding and disposal work with their capacity and experience is built in the process.
b.	Remediating, safeguarding and disposing of existing stockpiles of obsolete pesticides and contaminated soils and containers reduces risk to human and environmental health.
c.	Decontaminating and recycling empty containers (plastic and metal) on an on-going basis strengthens pesticide lifecycle management in Mozambique.
d.	Revising and implementing the 2009 pesticide lifecycle management policy strengthens pest lifecycle management in Mozambique.
e.	The institutional use of a pesticide stock management system will help strengthen pesticide lifecycle management.
f.	Better pesticide lifecycle management in Mozambique will reduce risk from pesticides in the future.

Figure 4. Project theory of change



Source: Project team - GCP/MOZ/100/GFF

3. Findings

3.1 Relevance

EQ1: How relevant was the project to global and national efforts for reducing risks to public health and the environment due to POPs and pesticide residues?

Finding 1 on the Project's global relevance: The Project's objectives were fully consistent with international objectives for reducing risks due to POPs and pesticide residues. The project was consistent with the GEF4 strategic objective to reduce and eliminate the production, use and release of POPs in order to protect human health and the environment, and to assist countries to develop capacity for the sound management of chemicals. It was aligned to FAO objectives to eliminate hunger, food insecurity and malnutrition, and United Nations Sustainable Development Goals SDG2 and SDG12 (EQ 1.1).

57. The Project's global environmental objective was to eliminate risks from POPs and pesticide residues in Mozambique through the use of environmentally sound management methods, which prevent the creation of additional POPs or other environmental contaminants. The Project was consistent with GEF long-term strategic objectives related to Land degradation, POPs, and Sound chemicals management. The Project contributed to the GEF4 focal area on POPs and the cross-cutting area of sound chemicals management through its safeguarding and disposal activities, through cleaning sites contaminated by pesticides, and strengthening lifecycle management of pesticides.

Box 6. Highly hazardous pesticides

Highly Hazardous Pesticides (HHPs) are defined as pesticides that are "acknowledged to present particularly high levels of acute or chronic hazards to health and/or the environment according to internationally accepted classification systems such as the World Health Organization (WHO) or the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) or their listing in relevant binding international agreements and conventions. In addition, pesticides that appear to cause severe or irreversible harm to health or the environment under conditions of use in a country may be considered to be and treated as highly hazardous" (FAO & WHO, 2014).

58. Building capacity through implementation of GEF funded projects is a cross-cutting goal of the GEF. The Project built national capacity in several areas including investigation techniques for contaminated sites; safeguarding of obsolete pesticides, associated waste and contaminated soils; and use of the FAO monitoring and evaluation system.
59. The Project planned to support adoption of integrated pest management practices that promote the use of less toxic alternatives to pesticides. This would contribute towards the GEF strategic programme 3 – Partnering in the demonstration of feasible, innovative technologies and best practices in POPs reduction. By involving the private sector in the review of draft waste management guidelines, the Project also contributed to the GEF strategy to enhance engagement with the private sector.
60. The FAO has developed a coordinated approach to achieve productive, sustainable agriculture through efficient use of resources; protecting and conserving the environment; and making agriculture resilient. The Project contributed to these areas, particularly

through its efforts to clean up contaminated sites and prevent further pollution from pesticides.

61. The Project was designed during the era of the United Nations Millennium Development Goals (MDGs) in which nations made a commitment to combat poverty, hunger, disease, illiteracy, environmental degradation, and discrimination against women. The Project specifically contributed towards achieving MDG7 - to ensure environmental sustainability, through activities in the component of improving pesticide lifecycle management. The aim of this component was to establish sustainable systems for managing POPs and pesticide residues that would prevent future pollution of the environment. The United Nations 2030 Sustainable Development Agenda and Sustainable Development Goals (SDGs) superseded the MDGs in 2015. The Project was aligned with the SDGs, and directly addressed SDG2: ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture; and SDG12: ensuring sustainable consumption and production patterns.

Finding 2 on the Project's relevance to international chemical conventions: The project's objectives are relevant to Mozambique's commitments to internationally ratified plans and conventions relating to POPs and pesticide residues. The Project was directly relevant to the objectives of the Basel, Stockholm and Rotterdam Conventions to which the country is party. It sought to comply with the requirements of the Basel Convention for movement of hazardous chemicals during safeguarding and disposal operations and strengthened national capacity to implement the Rotterdam Convention relating to international trade in hazardous chemicals. It also made reference to the Stockholm Convention for guidance on thresholds for contaminated soils during risk analysis and selection of remediation options; and addressed priorities identified in the National Implementation Plan of the Stockholm Convention (EQ1.2).

62. The objective of the Project - to eliminate risks from POPs and pesticide residues in Mozambique through the use of environmentally sound management methods that prevent the creation of additional POPs or other environmental contaminants – contributed to implementation of the main international chemical conventions. Mozambique ratified the Basel Convention on transboundary movement of hazardous waste in 1992; the Rotterdam Convention on Prior Informed Consent for trade in certain hazardous chemicals in 2009; and the Stockholm Convention on Persistent Organic Pollutants in 2005. These conventions lay out minimum acceptable international standards for management of POPs and certain hazardous chemicals and aim to reduce risks posed by pesticides. The Republic of Mozambique has appointed focal points for each of the three main chemical conventions, with the Stockholm Convention having a separate focal point for industrial POPs and another for agricultural POPs. The National Director for the Environment in the Ministry of Land, Environment and Rural Development (MITADER) is responsible for coordinating activities between the conventions.
63. Parties to the Stockholm Convention are required to develop a National Implementation Plan (NIP) that details how the country plans to manage POPs. Mozambique submitted its NIP to the Stockholm secretariat in 2008. The Project addressed all the priority areas identified in the NIP, namely: strengthening legal and institutional frameworks for managing POPs and chemical pollutants; enhancing transfer of appropriate technology for control of POPs releases; improving public information, awareness and education; and establishing a monitoring scheme for POPs and other chemical pollutants.

64. The Stockholm Convention Conference of the Parties states that “wastes consisting of, containing or contaminated with POPs above a specified low POP content should be disposed of in such a way that the POP content is destroyed or irreversibly transformed or otherwise disposed of in an environmentally sound manner where destruction or irreversible transformation does not represent the environmentally preferred option”. The Project ensured that risk assessments were carried out at sites that were prioritized for remediation, to determine if the level of contamination in the soil breached the Stockholm Conventions lower POPs limits. Results of these assessments were used to select risk management and remediation options.
65. The Project sought to improve management of the import and export of POPs and other pesticides by establishing a pesticides stock management system and strengthening pesticide regulatory procedures. Improving international trade of POPs would contribute to implementation of the Rotterdam Convention, which deals with control of trade in hazardous chemicals.
66. The Project made use of guidelines provided by the Basel Convention for safeguarding and movement of hazardous chemicals and waste. It complied with provision of the convention, and private contractors engaged by the Project were required to obtain all necessary permits for movement of hazardous consignments. The experience gained by Project staff during safeguarding activities greatly increased national capacity for implementation of the Basel Convention.

Finding 3 on the Project’s national relevance: The project was relevant to Mozambique’s national policies relating to POPs and protection of the environment. The project addressed priorities identified in the Country Programming Framework (CPF) and the National Implementation Plan (NIP) for the Stockholm Convention (EQ1.3).

67. The Government of Mozambique demonstrated its commitment to addressing POPs by the incorporation of POPs management in the Environmental Management Law (2002) and the Environmental Management Act (2004). The Environmental Management Law makes provisions for the prevention and management of risks of pollution to the environment, including disposal of obsolete pesticide stocks, development of regulations to control trade of POPs chemicals and the promotion of safer pest management alternatives.
68. Mozambique’s Country Programming Framework (CPF) for 2012 to 2015 was developed during implementation of the POPs Project. The framework defines the medium-term priorities of FAO in support of the program of the government. The project addressed one of the three main priority areas identified in the CPF: ‘Environment, natural resources, climate change, and disaster risk reduction. This priority area includes reducing the risk to human health and the environment associated with pesticides - the main objective of the Project. Mozambique set a target to safeguard and dispose of 180 tonnes of obsolete pesticides and associated waste in the CPF and the Project contributed directly towards this goal. The CPF also included the development of an action plan to reduce risks posed by HHPs. The governments concern over the use of hazardous pesticides and its desire to support sustainable intensification of agricultural production led to the implementation of a project to identify highly hazardous pesticides and develop a risk reduction plan. As a result of this effort, 61 pesticide products were deregistered, and risk reduction measures were developed for a further 52 products. In efforts to sustain these results, the POPs

Project planned to improve pesticide lifecycle management in order to prevent reintroduction of banned HHPs into the country.

69. Several gaps in management of POPs were identified in the NIP of the Stockholm Convention. Gaps included inadequate legislation for the management of POPs; lack of clarity on liability for disposal of POPs and remediation of POPs contaminated sites; a need to raise awareness about risks posed by POPs and the need to identify alternative pest management options that don't rely on POPs. The Project was extremely relevant to national priorities as it contributed towards addressing all these gaps. The government also made a commitment in the NIP to allocate funds to address POPs.

3.2 Effectiveness

EQ 2: How effective has the Project been in delivering outcomes? (Both expected and unexpected).

Finding 4 on delivering containment and disposal targets, and site remediation: The Project met its target for safeguarding obsolete pesticides with the exception of those located at the store in Beira. The company that was awarded the tender for disposal of obsolete pesticides, together with disposal of contaminated containers, was mobilizing to carry out the task as of December 2018. Limited progress was made with regards to excavation of buried pesticides and remediation of contaminated sites. An initial tender that had been awarded to Fuera Group had to be cancelled due to concerns regarding implementation of the selected local disposal option. The tender is due to be floated again in 2019 (EQ2.1).

70. Previous projects implemented between 1993 and 2008, funded by Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ), Danish International Development Agency (DANIDA) and the Governments of Netherlands and Japan, successfully disposed of over 1300 tonnes of obsolete pesticides. This Project planned to dispose of remaining obsolete pesticides, excavate and dispose of soils contaminated by POPs and other pesticides from selected high-risk sites, and remediate selected contaminated sites.
71. *Buried pesticides and contaminated sites:* Before the POPs project begun, 18 sites potentially contaminated with obsolete pesticides had been ranked according to the level of risk that they posed to the environment using the FAO Rapid Environmental Assessment (FAO REA) process. The REA is a priority setting model used specifically for prioritization of pesticide contaminated sites. Data is collected in a standardized way and assigned a score which is then used to calculate the level of risk that each site presents to environmental receptors.
72. The initial list of 15 sites was reviewed following results of soil tests and stakeholder consultations and a final list of 14 priority sites was produced. This ranking was used as a guide for the selection of sites that would be dealt with by the project.

Table 2. Final list of contaminated sites ranked using the FAO REA model

No.	Site	REA Score
1	Muziva A and B	635.5
2	Unango_Burial and Formulation	601.5
3	Lamego	599.8
4	Matola SDAE	528.0
5	Matola Waste Station (WS)	475.4
6	Matola PAS (ExDPA)	316.0
7	Nguri	486.0
8	Lichinga Militaire	409.0
9	Matama	392.3
10	Beira CFPA	370.0
11	Chokue ICM	337.4
12	Matola Frigo	331.0
13	Ifloma Wood Processing Company	309.4
14	Lichinga Hospital	290.4

73. Site investigations and risk assessments for four of the top five sites: Matola Waste Station, Matola SDAE, Lamego Farm and Muziva site, were carried out in September 2012. Intrusive investigation of these four sites was carried out between 2013 and 2015. It was established that the level of contamination at Matola Waste Station (MWS), Muziva and Lamego Farm warranted intervention, whereas Matola SDAE site did not pose risk to public health or the environment. Risk management strategies were developed for the three high risk sites, which included thermal disposal of highly contaminated soil from the hotspot at Lamego, and cement stabilization followed by landfilling for less contaminated soils from Lamego, MWS and Muziva.
74. Muziva site was contaminated around 1983/1984, when obsolete pesticides from a store were burnt on site. The site was ranked first out of 18 sites investigated in 2011, for level of risk posed to public health and the environment. Levels of Endosulfan, an organochlorine POP, exceeding US Environmental Protection Agency (EPA) threshold for residential soil, and higher than the lower POPs limits under the Stockholm Convention were detected. Although contamination is limited to one hotspot, perennial flooding results in overflow of contaminated water that has potential to contaminate nearby lagoons. **Contaminated soil from this site was being used to kill fish which was sold on the local market, presenting possible risk to public health.** Community leaders who were interviewed by the evaluation team expressed frustration at the lack of progress in cleaning up the site from the time that the site was first sampled under the UTF project. A pesticides management and environmental expert engaged by the POPs Project recommended that the contaminated soil gets excavated and exported to a landfill.
75. The Lamego site is an isolated farm with a heavily contaminated pesticide store. Endosulfan was identified as the main contaminant, at levels that breached US EPA limits for residential areas. The site posed a risk to the environment and to inhabitants on the farm, and leaking pesticide containers in the storeroom continued to add to the contamination. After the initial REA ranking was reviewed, Lamego site, which had been ranked fifth out of 18 sites was ranked third in the final list of contaminated sites. The pesticides management and environmental expert engaged by the Project recommended that the pesticide store at the site be demolished, and the site remediated.

76. The Matola Waste Station is a disused waste station located in a mixed light industrial and residential area. The site was initially ranked 10th among 18 sites, with low potential risk to public health and environmental receptors but was later elevated to 5th position after the ranking was reviewed. Contamination at the site is from bags of contaminated soils buried on the site and covered by rubber sheets. Soil was heaped over the burial site and the area was fenced off. Contamination exceeded the Stockholm Convention threshold for low POPs waste. Workers at the site were being exposed to DDT contaminated soils and there was potential for contamination of shallow water aquifers. Removal of the stockpile was recommended by the pesticides management and environmental expert, in order to protect against release of contaminants into the environment should the condition of the stockpile deteriorate. Disposal of the contaminated soil by HTI would be a costly exercise, estimated at over €441 000. The expert also recommended that the Project could consider constructing a concrete slab over the contaminated stockpile as an option, since the stockpile was stable and there were no signs of leakage (R. Cobban, 2012).
77. The three sites described above, Muziva, Lamego store and Matola Waste Station, were to be remediated by the contractor who would be awarded the disposal and remediation tender. Due to budgetary constraints the PSC decided that only two of the three sites would be remediated.
78. In addition to the three high risk sites that had been prioritized, stocks of a rodenticide from Lichinga Hospital, had been disposed of by burning. The project team was not able to establish where the rodenticide was burned, and it is possible that this may have resulted in the creation of another contaminated site.
79. The final quantity of contaminated soil that was to be disposed of was estimated at 783 tonnes, much higher than the original estimate of 100 tonnes. This led to an escalation of remediation costs, and money that was to be used for development of a local treatment strategy for empty containers was reallocated to complete remediation activities.
80. The Project submitted a request to FAO HQ in 2016 for a tender to be floated for the disposal of contaminated soils and remediation of contaminated sites. The tender was issued and awarded to Fuera Group. The company, with its headquarters in Bogota, Colombia, provides services that include sound final disposal of hazardous wastes. Fuera proposed local disposal of the contaminated soil at Mavoco Landfill. The landfill, built in 2005, is the only facility for disposal of hazardous waste in the country. The landfill was built under a joint venture with an aluminium smelter company, but it is owned by the government of Mozambique, and all operations are monitored by the government. Following extended negotiations, concerns regarding the capacity of the landfill, and issues regarding revised levels of contamination permitted for local disposal under the Basel, Rotterdam and Stockholm Conventions, FAO cancelled the tender. The tender is to be floated again in 2019 and is to include options for local or regional disposal.
81. When the Project was due for termination in January 2014, very little progress had been made with regards to remediation of the prioritized high-risk sites. A no-cost extension was requested, and the project was extended by a year to October 2015 (PIR 2013). However, after a second extension in 2016 (PIR 2015), remediation activities had still not been completed. The project was awarded three more extensions to September 2019, to allow for completion of disposal and remediation operations. All project extensions, and reasons for delays in execution are detailed under Finding 13.

82. *Remaining obsolete pesticides:* The Project successfully safeguarded all obsolete pesticide stock, except for those that were located in Beira, due to security concerns. An estimated 190 tonnes of obsolete pesticides were to be dealt with, consisting of stocks held by the Ministry of Health, private sector stocks and two containers of pesticides that were impounded at Nacala Port. The soil contaminated by the containers at Nacala Port had been dug out and disposed of at an unknown location. As was the case with the rodenticide from Lichinga Hospital, the project team was not able to establish where the soil had been disposed of. The Nacala site was not seen as presenting significant risk to public health or the environment, and it was not prioritized for remediation.
83. The project document had estimated a lower quantity of 70 tonnes of obsolete pesticides. The original plan was to landfill the pesticides, but after disposal by burial was considered as an unacceptable treatment option, alternative disposal methods had to be investigated. A decision was then made to dispose of the obsolete pesticides, together with contaminated plastic containers, under a single tender. The tender for disposal of remaining obsolete pesticides and empty plastic containers was awarded to Veolia, a company that operates waste management services, including treatment of hazardous waste. By the time of the Project's terminal evaluation in November 2018, the contractor was mobilizing to collect and ship the consignment for disposal.

Finding 5 on safe treatment of pesticide containers from past projects: All activities related to treatment of contaminated containers, which included procurement of decontamination and crushing or fragmentation equipment; decontamination and treatment of containers; safe disposal of contaminated wash water; and final recycling or disposal of the cleaned crushed containers, were cancelled. The level of contamination in plastic containers was found to be too high to be dealt with by local disposal or recycling of decontaminated containers, therefore a decision was made to export the containers for high temperature incineration together with obsolete pesticide stocks (EQ2.2).

84. The UTF/MOZ/107/MOZ co-finance project completed the exercise of collection and safeguarding of obsolete pesticides and heavily contaminated pesticide containers, except those stored at Beira, due to security restrictions. The POPs Project planned to carry out a detailed inventory of contaminated containers (estimated at over 6000 items) and dispose of, or recycle containers after decontaminating them. This would have involved procurement of decontamination and crushing/fragmentation equipment; decontamination and treating of containers; and safe disposal of contaminated wash water. Cleaned crushed containers would be sent for final disposal or introduced into the recycling chain through existing local plastic or scrap metal recycling operations.
85. Unfortunately, it was found that pesticides had solidified into the plastic, making decontamination of containers impossible. Due to this heavy contamination, and the large volumes of contaminated wash water that would have to be dealt with, a decision was made to export the contaminated containers for disposal by high temperature incineration together with obsolete pesticide waste.
86. As a result of these changes in dealing with contaminated containers, all activities related to this component, were cancelled (see finding in 'Programme Implementation Report 2015', 24 pp.).

Finding 6 on pesticide policy: The Project made moderate progress towards strengthening national pesticide policy by developing a draft waste management strategy document; guidelines for pesticide lifecycle management and waste management; and legislation for container management. The initiative to develop harmonized regional pesticide regulations hindered further progress since the Project decided to wait the development of the regulations (EQ 2.5).

87. The Project planned to strengthen national pesticide policy to minimize risk to the environment and public health by developing technical guidelines for pesticide registration, storage, transport and container handling, and regulations for pesticide waste classification, handling and disposal. Eight guidelines for pesticide lifecycle management were developed and translated into Portuguese. Adoption of the guidelines by government was put on hold pending the completion of harmonized regional guidelines by the Southern African Pesticide Regulators Forum (SAPReF). SAPReF was mandated by SADC through the SADC Plant Protection Technical Committee to deal with pesticide related issues in the region. Mozambique was aware of the regional guidelines that were being developed by SAPReF and decided to wait for and benefit from the process.
88. A draft waste management strategy document was developed under the co-finance project UTF/MOZ/107/MOZ and submitted to government for approval in 2016. Guidelines were discussed with public and private sector stakeholders to ensure that the industries interests were addressed. Legislation for pesticide container management and industry sector waste management, including small scale disposal of pesticides, was drafted and reviewed in preparation for submission to parliament. Adoption of guidelines by government has been put on hold for the same reasons as the pesticide management regulations.
89. According to the project document, the Project was expected to contribute towards “adopting the integrated pest management or biological agricultural techniques to reduce the use of pesticides.”
90. There is no further mention of the promotion of IPM in project implementation nor was there evidence that any progress was made towards development of a policy on Integrated Pest Management (IPM).

Finding 7 on future container management: Plans to develop a sustainable system for future container management were cancelled by the Project Steering Committee so funds could be used for disposal. The review of pesticide regulations on container management and the development of a plan for industry sector waste management were included under the pesticide management regulations that were under review (EQ 2.3).

91. The Project planned to improve pesticide container management through: (i) completing a feasibility study for management of existing and future pesticide containers; (ii) implementing a strategy for treating existing pesticide containers and associated waste; and, (iii) development of a sustainable container management strategy in collaboration with national stakeholders, and the adoption of a waste management plan for the pesticide industry sector through strengthened waste management legislation.
92. The feasibility study was completed, and a container management strategy document was developed. The strategy document was not translated into Portuguese as required, due to the PSC decision to prioritize funding on Component 1. The treatment of existing pesticide

containers and associated waste was cancelled due to high levels of contamination (see Finding 5). The country needs to develop a sustainable system to handle pesticide containers as currently there is none. The Ministry of Health sends cleaned pesticide containers for recycling at Incwala in Quelimane, and Tupack in Maputo. MITADER is not consulted about this movement.

93. Regulations for pesticide container management and management of industry sector waste management were developed but they were not submitted to parliament. These draft regulations were included in the hazardous waste management strategy being developed under the broader pesticide management regulations. Finalizing and adoption of revised pesticide legislation awaits completion of the development of harmonized regional guidelines by SAPReF.
94. The work on pesticide container management fell under Component 2 of the Project on pesticide lifecycle management. This budget was relatively small at just 8 percent of the GEF and UTF combined budget. In 2015, work on Component 2 was largely stopped, including work on container management, and unspent funds transferred to work on disposal (Component 1).
95. According to the NPC, this decision was supported by the PSC because of the collective view that future funding for disposal would be harder to find than for improving pesticide lifecycle management so the Project should prioritize disposal work. The decision was also greatly influenced by the discovery of much larger quantities of contaminated soil and obsolete pesticides than envisaged, and budgeted for, in the Project proposal (see Finding 4).
96. Following the cancellation of activities in this component and the identification of larger quantities of contaminated soil than anticipated at project design, the Project steering committee approved budget reallocation to cover increased safeguarding and disposal activities.

Finding 8 on capacity development: The project-built capacity in the Project team to carry out investigations of contaminated sites and safeguard obsolete pesticides and associated waste. Capacity to deal with other areas of pesticide management was not developed, mainly due to the delay in finalizing harmonized regional pesticide guidelines by SAPReF (EQ 2.4).

97. The Project planned to build capacity for pesticide and pest management through: (i) providing training of trainers in aspects of pest and pesticide management; (ii) developing legislation to support international standards for pesticide lifecycle management; (iii) reviewing guidelines to support pesticide lifecycle regulation in line with the international code of conduct on pesticide management; and, (iv) disposal of pesticide containers drawing on experiences from other countries and appropriate technologies.
98. The national project team received training in techniques for investigating contaminated sites and safeguarding of obsolete pesticides, from the pesticide management and environmental expert. Capacity was also built through experience gained while carrying out safeguarding operations under the project. The national project coordinator and staff at MITADER pointed out that the Project contributed towards building national capacity to deal with obsolete pesticides by using local staff to implement activities. This contrasted with the previous DANIDA funded project which made use of international staff, with local

staff only being used as unskilled labour. The assessment made by the pesticide management and environmental expert was that enough capacity had been developed in the national team to enable it to work unsupervised on remaining contaminated sites. The project contributed towards providing training in safe pesticide use and pesticide management to 142 government staff (extension workers and plant protection officers from MASA and MITADER) and 127 farmers.

99. Training of customs authorities and plant protection officers to improve management of pesticides imported into Mozambique for agriculture and public health, was not achieved as it was to be based on the new pesticide management guidelines that were not finalized.
100. Progress was made towards developing legislation and reviewing guidelines to support improved pesticide lifecycle management as detailed under Finding 6. Enactment of the new legislation and adoption of revised guidelines was put on hold after a decision was made to wait for the harmonized regional guidelines that were being developed by SAPReF.
101. Activities in the Project component that was designed to build capacity for pesticide management through establishment of a sustainable system for disposal of pesticide containers were cancelled due to excessive contamination of containers and budgetary constraints. A system for local management of pesticide containers either through disposal or through introduction into local recycling chains had not been established or piloted in any of the other POPs projects evaluated in Botswana and Eritrea, by the time of the projects; terminal evaluation. Capacity in this area of pesticide lifecycle management still needs to be built. Botswana referred to the system operating in South Africa (ref), but no evidence of efforts to draw on the experiences of other countries was seen in the Project in Mozambique.

Table 3: Details of training carried out by the Project

Nature & duration of training	Participants	Number trained	Date
Impact surveillance	Staff from Livaningo, a local NGO		Period under PIR 2012
Use of FAO M&E system. Work planning and project management	PMU personnel	8	Period under PIR 2012
PSMS	MASA and customs personnel		2011
PSMS refresher training	Project managers for Mozambique and Swaziland	2	Period 21 to 28/8/2013
2 days. Investigation techniques	Project team		Period 13-22/09/2012
Use of Topcon GRS-1 GPS recording instrument	NPC	1	Period 14/08 to 20/09 2012
Post graduate diploma in pesticide risk management. University of Cape Town, South Africa	NPC		

Finding 9 on PSMS: The PSMS was not institutionalized due to inadequate internet access and because the system was being reviewed by FAO. No alternative stock management system was extensively explored or adopted (EQ 2.6).

102. The Project planned to support the adoption of the FAO database tool, the Pesticide Stock Management System (PSMS), or explore alternative systems. The national project coordinator (NPC) was trained on use of the system in 2011 and 2013. The NPC in turn trained pesticide registration staff in MASA. Data collected during the inventory of obsolete pesticides and contaminated pesticide containers was to be loaded into PSMS. This was not achieved due to weak internet connection which was not able to run the system. Continued challenges with poor internet, combined with the fact that PSMS had been under review by the FAO Information Technology division (CIO), eventually led the Project steering committee to take the decision to cancel the activity in 2014. Participants at the terminal evaluation inception workshop indicated that an alternative system had been developed by the faculty of agronomy at the Universidade Eduardo Mondlane in 2013/14. This system was used briefly by the pesticide registration section. Failure to complete loading of data into the system was attributed to a lack of human resources and the system was abandoned. Before implementation of the Project the pesticide registration section recorded pesticide data on excel spreadsheets. The section still did not have a robust system to manage national pesticide stocks, by the time of the terminal project evaluation in November 2018.

3.3 Efficiency

Evaluation question 3: How satisfactory was project implementation and execution in achieving outputs? How satisfactory was M&E?

Finding 10 on Project institutional arrangements: Government ownership of the Project, seen as the fourth phase of work to reduce risk from pesticides, fell compared to Phases I, II & III. This was in part because the NPC for the earlier phases, who had been a government employee, was employed by FAO to play the role of both Chief Technical Officer and NPC. In retrospect, it would have been better to keep the two roles separate and have continued with the NPC as an employee of the Pesticide Registrar's office.

The Project's main institutional arrangement to ensure stakeholder engagement – the Project Steering Committee (PSC) – provided good guidance and support until 2015 when the Committee decided to reallocate funding for pesticide lifecycle management work to disposal. The PSC has not met since then because the Chair of the Steering Committee took the view that the Project has not done enough to warrant another meeting (EQ 3.1).

103. The Project's main institutional arrangement to ensure stakeholder engagement and ownership of was the Project Steering Committee (PSC). The PSC was inherited from the Phase I to Phase III projects upon which this Project was based. The authors of the Project proposal had high expectations of the roles that the PSC would play and what it would achieve (see Section 2.2 on Institutional Arrangements). These included reviewing and advising on the Project budget and workplan; awareness-raising on risks posed by pesticides; helping avoid duplication of effort between various departments; identifying bottlenecks; providing advice on pesticides to government; and, addressing issues with respect to clearance of pesticides at port of entry.
104. The Project document envisaged the PSC would meet every three to six months to carry out its review of work plans and budget. The Project held six meetings in total as follows:
- i. 11/11/2011

- ii. 20/04/2012
 - iii. 14/12/2012
 - iv. 22/08/2013
 - v. 13/03/2014
 - vi. 23/07/2015
105. The NPC plans to convene a final PSC before the Project closes in 2019.
106. Attendance at the meetings was strong. For example, the second meeting was attended by 17 participants which included:
- i. National Director of Agricultural Services (Chair);
 - ii. FAO Country Representative, Head of the Department of Plant Health;
 - iii. Lead Technical Officer from FAO, Rome;
 - iv. National Project Coordinator and
 - v. Project Environmental Coordinator (representing MICOA);
 - vi. Representative from the Japanese Embassy;
 - vii. Representatives from the NGO Livaningo,
 - viii. Representative from a pesticide dealer;
 - ix. Representative from the Ministry of Health;
 - x. Representative from the Agricultural Research Institute of Mozambique.
107. It appears from the minutes that the main role of the PSC was to provide the Project advice, review and guidance on protocol. For example, in the second meeting the PSC:
- i. advised that PPD staff should visit sugar plantations to see how they wash and handle empty plastic containers;
 - ii. requested that guidelines be presented to them before Ministerial signature;
 - iii. stipulated that a formal request is required before Project staff provide support to teams in other countries.
108. In last PSC meeting held in June 2015, the committee approved the reallocation of funding from component 2 to component 1, specifically for the disposal of obsolete pesticides, contaminated soil and empty plastic containers. The NPC said that the PSC Chair felt that not enough had happened to call a PSC meeting after 2015.
109. Ownership of the Project by government staff involved in implementing it grew from Phase 1 to Phase III spanning the period 2003 to 2008.⁵ Implementation included carrying out an inventory of obsolete pesticides and contaminated sites, safeguarding hazardous material

⁵ Confirmed by participants at the evaluation inception workshop

and culminated in the shipment of 354 tonnes of pesticide waste to Germany. Through the work, FAO was able to help build the capacity of a well-motivated national safeguarding and disposal team, whereas previously the norm was to use expensive international consultants to lead the work.

110. This started to change in Phase IV when the NPC for Phases I to III was employed by FAO to effectively play the roles of both Chief Technical Advisor and NPC.⁶ In hindsight, it would have been better to keep the roles separate and maintain an NPC employed by the Pesticide Registrar's Office. Without the anchor to MASA, the Project became seen as an FAO project, despite the incumbent's best effort to bridge between MASA and FAO while playing both roles.
111. The Project included the NGO Livaningo in the PSC to give the NGO a supervisory role. This was because Livaningo represent Green Peace in Mozambique and Green Peace had blocked the activities of a previous DANIDA project who attempted to upgrade a cement kiln to function as an incinerator for obsolete pesticides. Livaningo were given a role in establishing the Project baseline and in Project M&E. All monitoring data was made accessible to the NGO.

Finding 11 on co-financing: All of the co-financing in cash for implementing the Project came from the UTF co-financing project (USD 1.8. million), which was not in the original Project budget. Nearly all the co-financing in the original budget was for funds that had already been spent implementing Phases I to III (USD 3.9. million). The Project ran on UTF co-financing, without drawing down on GEF funds, for more than three years because it was administratively easier to do so. The evaluation team has not been able to ascertain what the UTF funds were spent on (EQ 3.2).

112. According to the Project proposal, more than two-thirds of the POPs Project budget was to come from co-financing (Table 4). The Government of Mozambique and FAO committed to make in kind contributions to the value of USD 400 000 (e.g., office space, services, vehicle). The rest of the co-financing budget represented the funds already contributed and spent on Phases I to III of the Project. Hence, the disposable budget at the start of this Project (Phase IV) was USD 2 350 000.
113. Funding for Phase IV work increased by USD 1 819 000 through the setting up of the project "Prevention and Disposal of Obsolete Pesticides and Associated Wastes in Mozambique" (UTF/MOZ/107/MOZ). Funding came from a Unilateral Trust Fund (UTF) generated by two Japanese Government projects: KR1 and KR2. The projects provided agricultural inputs, including pesticides, to Mozambique. The Government sold these on at subsidized price and the proceeds were put into the UTF, available to the Government of Mozambique to spend, with the approval of the Government of Japan. FAO Mozambique was the budget holder, responsible for implementing the UTF project. The UTF project started in April 2013 and finished in September 2018. Its main objectives and funding were for safeguarding and disposal of obsolete pesticides and it contributed most of the budget for Component 1 of the Project.
114. GEF made the first payment to the Project, after which further funding was delayed awaiting additional storage facilities to be made available. In the meantime, the Project ran on the

⁶ The ET's interpretation that the NPC also played the CTA role has been validated with the CTO. The fact is that the CTA was never hired.

UTF funding. The MTE in 2016 was critical of this arrangement and made two recommendations:

- i. Recommendation 1: FAO Representation in Mozambique, the PMU in cooperation with FAO HQ to draft an integrated budget revision of the two projects (the UTF and GEF projects) to understand which project activities intended to be carried out with GEF funds were in the end covered by the UTF funds, and what are the budgetary needs until project completion.
- ii. Recommendation 2: FAO AGP, as Budget Holder of the GEF grant, to urgently verify if it is true that GEF grant were not disbursed to the project since late 2012, and if that was the case, to solve urgently the situation of funding blockage.

115. According to the 2015-2016 PIR, by June 2016, USD 400 000 out of USD 1 800 000 was left of the UTF funding while USD 1 150 000 remained of the USD 1 950 000 GEF funding. Most of this was earmarked by the PSC to be used for disposal.

116. The Government of Mozambique's in-kind contribution was for the previous and current phases and covered staff salaries, office space, provision of two vehicles and drivers, medical surveillance of project staff and use of major collection centres. FAO's contribution included administrative costs. The ET found no reporting on the delivery of these contributions but expect them to be higher than the amounts stated given the length of the project resulting from no-cost extensions.

Table 4. Project financing and co-financing by component at start and at mid-term

Components	At start			
	GEF	Co-financing	Total	GEF
1. Remediation and disposal	1 297 000			
2. Lifecycle management	311 000			
3. M&E and project management	342 000			
Total	1 950 000			

Table 5: Project financing and co-financing by donor at start and at completion

Name of the Co-financer	Co-financer type ⁷	Type of co-financing ⁸	Co-financing at project start (Amount confirmed at GEF CEO endorsement/approval by the project design team) (in USD)			Materialized Co-financing at project completion* (in USD)		
			In-kind	Cash ⁹	Total	In-kind	Cash	Total
GEF	Multilateral organization	Grant		1 950 000	1 950 000	0	912 000	912 000 ¹⁰
Gov. of Japan	Bi-lateral donor	Grant		3 480 000	3 480 000	0	3 480 000	3 480 000
Gov. of Mozambique	National government	Grant (UTF) and in-kind	350 000	1 819 000	2 169 000	120 000	1 400 000	1 520 000
USAID	Bi-lateral donor	Grant		197 000	197 000	0	197 000	197 000
Gov. of Netherlands	Bi-lateral donor	Grant		175 000	175 000	0	175 000	175 000
FAO	GEF Agency	In-kind	50 000	0	50 000	20 000	0	20 000
Grand Total (in USD)			400 000	7 621 000	8 021 000	140 000	6 164 000	6 304 000

Finding 12 on Project execution: The quality of project execution was satisfactory. The NPC was able to operate without support of a Chief Technical Advisor, in continuing to lead a competent safeguarding team built up in Phases I to III. This has been in spite of security problems and implementation issues (EQ 3.3).

117. GEF places an important distinction on project execution and implementation (Box 4). For this Project, execution refers to the day-to-day management which is the responsibility of the FAO Budget Holder (BH) and the Project Management Unit (PMU). Project implementation refers to technical oversight, project supervision, and evaluation which are the responsibilities of the FAO technical officers assigned to this Project, FAO GEF Coordination Unit as Funding Liaison Unit, and the FAO Office of Evaluation (OED), respectively. Maintaining a separation between execution and implementation is a requirement to meet GEF Minimum Fiduciary Requirements.
118. In the Project document, the PMU, led by a full-time national project coordinator (NPC), is responsible for the "overall planning and coordination of the implementation of project activities." This includes: preparing and following up on annual project work plans and

⁷ Examples of categories include: local, provincial or national government; semi-government autonomous institutions; private sector; multilateral or bilateral organizations; educational and research institutions; Non-Profit organizations; Civil Society Organizations; foundations; beneficiaries; GEF agencies; and others (please explain).

⁸ Grants; loans; equity participation by beneficiaries (individuals) in form of cash; guarantees; in-kind or material contributions; and others (please explain).

⁹ Values presented in the table were taken from those reported in the PIR and terminal report. Issues in the co-financing are detailed in the report's finding's section.

¹⁰ Delivery at the time of the evaluation.

budgets; meeting reporting requirements; and, acting as a secretary to the Project Steering Committee (PSC).

119. The PMU is housed in an office in MASA and is under the supervision of the Director of Agrarian Services. However, the NPC was employed by FAO and administratively reported to the FAO-R. As described under Finding 10, this led to a fall-off in government ownership of the Project.
120. Unlike in Botswana and Eritrea, this Project did not envisage task teams working on different components and subcomponents. The national safeguarding and disposal team, formed under Phases I to III, continued to operate, led in the field by the NPC. The field work was made difficult by security problems in some areas that required long road detours through Zimbabwe and made planning difficult.
121. Despite the difficulties, by all accounts the team achieved good results. The MTE complemented the quality of safeguarding and competency of the team, and the management and technical expertise of the NPC. The ET formed a similar impression. The PMU was able to operate without the support of a Chief Technical Advisor envisaged in the Project proposal, and found to be necessary in Botswana and Eritrea. The safeguarding team had no accidents and the endline health checks were all clear.
122. Despite the priority and budget given to Component 1, and good progress on safeguarding, targets relating to disposal of obsolete pesticides and contaminated soil and EPCs had not been made by November 2018 and the Project had received another no-cost extension in September 2019 to use still-unspent GEF funding to meet the targets. The reasons for delay related to project implementation and are explored under the next finding.

Finding 13 on Project implementation: The quality of project implementation was less than satisfactory. The main issue is that the Project has had to request five no-cost extensions: a project that was supposed to finish in August 2014 will now finish in September 2019. The implementation shortcomings that have contributed are a long delay in floating the first tender and then a lack of support from the LTU that may have avoided or solved issues that emerged with the tender, such that part of it has had to be refloated. A second issue is that a situation was allowed to continue for three years, in which there was no drawing down on the GEF funds for the Project. Thirdly, as with Eritrea and Botswana, there was no written management response to the recommendations of the MTE (EQ 3.4).

123. The PSC is part of Project implementation, supposedly providing among other things guidance and oversight to the day to day management of the Project, advice on Project budget and workplan and advice and raising awareness within government of the risks posed by pesticides. While well attended, the expectations for the PSC were somewhat ambitious, partly because the meetings were too infrequent and member changes too great for the PSC to gain much ownership of, and commitment to, the issue of pesticide risk. As a former National Director of Agriculture said "obsolete pesticides are a secondary priority in Mozambique" indicating that the first priority was ensuring good harvests. The concern about the priority given to pesticide risk was shared by the FAO-R and the NPC. Nevertheless, the PSC did advise on budget and work plans and allowed for reallocation of funding from pesticide lifecycle work to disposal.

124. The Project's biggest shortcoming to date has been the delay in disposal. The Project has received five no-cost extensions for the following reasons:
- i. until October 2015 because of: 14 months delay to the start of the UTF co-financing project which was supposed to run in parallel with the Project;
 - ii. until December 2016 because of: delays in procurement required for remediation strategy; delay in the start of the UTF co-financing project;
 - iii. until December 2017 because of: Delay in UTF project; that the UTF project found an additional 100 tonnes of obsolete pesticides for disposal; ill-health of the Budget Holder resulting in delay in budget revision;
 - iv. until December 2018 because of: delayed in issuing tender documents because of LTO being inundated with similar requests from other projects; delay in the extension of UTF project.
125. Until August 2019 because of: cancellation and need to retender Lot B (disposal of 760 tonnes of contaminated soil); delay in completing export of contaminated containers for disposal (Lot A). Reasons given for the cancellation of Lot B include poor communication between the Project, Ministry of Environment, Ministry of Agriculture and authorities in charge of the Mavoco Landfill where the contaminated soil was supposed to go and complications related to levels of contamination permitted for local disposal by the Basel, Rotterdam and Stockholm Convention, Conference of the Parties.
126. Work on pesticide lifecycle management was clearly of secondary importance to safeguarding and disposal. This is reflected in the budget allocation to lifecycle work of just 10 percent of the disposable budget, and in the subsequent implementation decisions to drop lifecycle work and transfer funding to disposal. Eritrea was similar in prioritising disposal work, and in having a competent safeguarding and disposal team led by the NPC who spent a lot of time (and funding) in the field. The difference was that the Eritrea MTE recommended a rebalancing towards lifecycle work, and in so doing the Eritrea project was able to have an important influence on the institutionalization of integrated pest management (IPM) in Eritrea. No such recommendation was made in the Mozambique MTE, and no lifecycle outcome, with a potential to reduce future risk, was forthcoming. Given that lifecycle work was written into the Project, for good reason, **it is the view of the ET that more emphasis and funding should have been given to working improving the management of the pesticide lifecycle.**
127. During the evaluation inception workshop, the NPC said that the Project would have benefited from more back stopping missions from AGPM. The last mission was in June 2014. The NPC said that had been left to run the project with very few 'checks.'
128. An issue highlighted in the MTE the Project ran solely on funding from the UTF co-financing Project from 2012 to 2016. **According to discussion with FAO Country Office staff, the Project found it much easier to spend the UTF funding, because they were the Budget Holder, whereas the FAO AGP was the Budget Holder for the GEF grant and were slow in responding.** An unsuccessful request was made by the FAO Country Office to become the Budget Holder for the GEF grant as well. A similar request was granted in the case of Eritrea. It is not clear to the evaluation team why the Mozambique request was unsuccessful, other than it came at a time when FAO AGP were inundated with work at

same time as key staff were leaving. It is also not clear why delays in starting the UTF project was given as a reason for three no cost extensions when GEF funding could have been used instead.

129. The evaluation team were unable to see copies of the proposal or final report of the UTF co-financing project.
130. The MTE produced eleven recommendations. As with projects in Eritrea and Botswana, there was no written management response to them, as required by the GEF Coordination Unit.

Finding 14 on the design of the Project M&E system: The design of the Project M&E system was satisfactory although the requirement for quarterly reporting and the number of different types of report suggest this part of the M&E system was burdensome to comply with in full (EQ 3.5).

131. There was a clear and well-designed M&E plan described in the Project document, based on a results framework laying out indicators, baselines and targets for project objectives and outcomes. The indicators were generally specific, measurable, attributable, realistic and time-bound (SMART). The M&E plan stipulated roles and responsibilities and reporting requirements.
132. Table 6 shows that the Project has or was supposed to produce 15 different types of report, two required quarterly, four required semi-annually and three every year. Over the eight-year life of the Project, full compliance would have resulted in the writing of over 145 reports, about 18 per year. This level of reporting appears to the Evaluation Team to be burdensome to comply with in full. It is also quite unrealistic for the GEF budget assigned to M&E of USD 60 000 or 3 percent of GEF Project budget.

Table 6: Types, frequencies and description of reports required by the M&E system

Type of report	Description	Notes
1. Project Inception workshop and report	Workshop held in August 2011.	
Initial starting values and baseline were due immediately after the workshop	No workshop nor record of initial starting values and baseline entered into (FPMIS) the Field Programme Management System.	
2. Back to Office Reports (BTORs)	Prepared after supervisory and consultancy visits to the Project.	Six seen by ET, ten uploaded into FPMIS.
3. Quarterly Project Progress Reports (PPRs)	Prepared by NPC with support from the PMU and FAO LTU.	Replaced by semi-annual PPRs.
4. Quarterly Project Implementation Report (QPIR)	Required the Budget Holder to review approved work plans against actual performance and take and report on corrective action, copied to the GEF Coordination Unit.	Replaced by annual PIRs.
5. Semi-annual Project Progress Reports	Prepared by the NPC and CTA to be sent to LTU, Budget Holder and FAO GEF Unit.	Fourteen uploaded to FPMIS, eight seen.
6. Semi-annual report on co-financing	Prepared by the NPC and TA as an attachment to the PPRs.	

Type of report	Description	Notes
7. Semi-annual Project Steering Committee minutes	Prepared by the NPC under the responsibility of the Chair of the PSC.	Six meetings held; minutes taken.
8. Annual Work Plan and (annualized) Budget	Prepared by PMU and submitted to PSC, LTU and Budget Holder for approval.	Work Plan for 2012 uploaded to FPMIS; 2015 Work Plan seen for this and UTF project.
9. Annual Project Implementation Review (PIR)	Prepared by the LTU, with inputs from PMU and with reference to BTORs and semi-annual reporting, sent to the GEF Coordination Unit.	Seven seen, 2012 to 2018
10. Annual Monitoring Review of FAO-GEF Portfolio	Prepared by GEF Coordination Unit based on PIRs from all projects in the FAO-GEF Portfolio.	None seen.
11. Request for project extension	Requires a budget revision.	Five in total (2015; 2016; 2017; 2018; 2019). Reasons given in annual PIR.
12. Mid-Term Evaluation (MTE)	Prepared by independent consultant contracted by GEF Coordination Unit.	Completed in December 2016. No follow up of recommendations.
13. Terminal Evaluation and Report	Prepared by independent consultants contracted by FAO-OED.	This Report, to be completed in April 2019.
14. Terminal Workshop and Report	Led by PSC, NPC and Environmental Coordinator.	Not carried out as of November 2018.
15. Annual lessons learned and best practice dissemination	Carried out by Project team, FAO GEF Unit and partners.	No reports seen.

Finding 15 on the operation of the Project M&E system: The quality of operation of the M&E was moderately satisfactory. The M&E system proved able to flag issues but less able to follow up on measures to deal with them, for example the fall off in government ownership of the Project. Annual PIRs and bi-annual PPRs were written and were clear, informative and useful. The Project attempted to engage an environmental NGO representing Green Peace in Project supervision and monitoring which was innovative. The PSC reviewed work plans and engaged in discussion of budget. The MTE and final evaluation were carried out as planned. Shortcomings were a lack of detailed reporting on co-finance expenditure and no written response by Project management to MTE recommendations (EQ 3.6).

133. Some aspects of the M&E system were implemented satisfactorily. Table 6 shows the types of M&E activities and reports the Project was expected to carry out and generate. The Project immediately went from quarterly to six-monthly reporting. The evaluation team found evidence that five types of report were produced: semi-annual PPRs, annual PIRs, annual work plans and budget, and BTORs. The reports not produced include detailed semi-annual reporting on co-financing and annual lesson learned and best practice. The former was identified as an issue in the MTR, together with a failure to provide information on disbursement of this and the UTF co-financing projects. The MTR was complementary of the quality of the PPRs and PIRs saying that they were "clear, concise and useful."

134. The Project took the innovative approach of sub-contracting the establishment of the Project baseline to the NGO Livaningo who represent Greenpeace in Mozambique. Livaningo drafted a report in 2012 which focused on the problems of pesticide use in Mozambique rather than establishing a baseline that would help understand and quantify the impact of the Project. The MTE concluded that the NGO had missed an opportunity “to play a more proactive role in the monitoring and supervision of the Project.”

3.4 Gender and environmental and social safeguards

EQ 4: To what extent and how did the Project include gender, and environmental and social safeguards in project design and implementation?

Finding 16 on gender mainstreaming: The Project did little to address gender in its design and implementation. The Project was written before FAO and GEF requirements to explicitly include gender mainstreaming. The project was gender blind and did little to change after MTE recommended that gender mainstreaming be ensured (EQ 4.1).

135. The Project started in August 2011, before there was a requirement from GEF or FAO to include gender mainstreaming¹¹ or environmental and social safeguarding in project design. Gender is not mentioned at all in the project document. Not surprisingly then, the 2016 mid-term evaluation (MTE) found “little evidence of the adoption of gender mainstreaming policies in project implementation”.

Box 6. Minimum standards for gender mainstreaming

1. Gender analysis is incorporated in the formulation of all field programmes and projects, and gender-related issues are considered in project approval and implementation processes.
2. All programme reviews and evaluations fully integrate gender analysis and report on gender-related impacts in the areas they are reviewing (FAO, 2013).

136. The GEF developed a gender policy around the same time that the POPs Project was being developed. This policy was adopted by the GEF council and entered effect in May 2011, the POPs Project started in August of the same year. The Project would not have had the opportunity to incorporate the policy in its design, although it could have been considered in project implementation.
137. One of the requirements of the 2011 GEF gender policy was “the inclusion of gender aspects in the design of projects and the monitoring and evaluation of gender dimensions in the context of its projects (FAO Gender Mainstreaming Policy, 2012)”. The mid-term evaluator found that no attempt had been made to include gender aspects in project implementation. The Project’s terminal evaluation also found that gender analysis was not included in routine M and E project reports. In fact, the annual Project Implementation

¹¹ According to FAO OED Guidelines, gender mainstreaming is “the process of assessing the implications for women and men of any planned action, including legislation, policies and programmes in all areas and at all levels.”

Report for the period July 2017 to June 2018 indicated that a gender sensitive approach was “not applicable” for the Project. This was the first project report template that had a section requiring information on gender. No reference is made to gender in any of the other project six monthly or annual reports.¹² A recommendation was made by the mid-term evaluator for gender mainstreaming to be included in remaining project activities. The Project’s terminal evaluation found that this recommendation had not been followed through, and that little had changed in terms of addressing gender after the mid-term evaluation. During discussions with the ET, the NPC indicated that the nature of some project activities made it difficult for women to be fully involved and suggested that gender guidelines should be included in the regional pesticide guidelines under development. The GEF revised its policy on gender equality in 2017. The new policy document provides guidance for mainstreaming gender in all programmes and projects submitted on or after the date of effectiveness of the policy (1 July 2018). Guidance from the GEF office would have assisted Project staff to incorporate gender into Project implementation.

138. The FAO developed a policy document in 2013 which provides a framework to guide efforts to achieve gender equality in its work. The policy document states that all FAO programmes, projects and technical interventions are required to include gender mainstreaming, and it lays out thirteen minimum standards to be adhered to. The standards applicable for this Project are minimum standards 7 and 8, which provide guidance on the incorporation of gender analysis in the formulation, implementation and evaluation of all field programmes and projects. Although the FAO gender policy could not have been incorporated in the Project design, but it could have been considered during implementation, after 2013. The OED (FAO Office of Evaluation) and OSP (FAO Office of strategy, planning and resource management) are the technical units responsible for ensuring that minimum standard 8, in particular, is met.¹ The Project would have benefited from guidance for specific actions from these units, such as the collection of sex disaggregated data by the NGO contracted to carry out independent monitoring of the project and ensuring equal participation of women in the training that was provided on safe use of pesticides.

Finding 17 on environmental and social issues: Although the Project design does not refer to minimum standards required by GEF and FAO for social and environmental safeguarding, the project addressed protection of public health and the environment by prioritizing sites that represented the greatest immediate risks for clean-up. Minimum GEF and FAO standards for environmental safeguarding were addressed through carrying out risk assessment using the FAO Rapid Environmental Impact assessment (REA) process, and development of risk-based Environmental Management Plans. Reference was also made to the United States Environmental Protection Agency (US EPA) limits for residential contamination, and the Stockholm Convention threshold for low POPs contamination, in efforts to determine if populations around contaminated sites were exposed to unacceptable levels of contamination (EQ 4.2).

139. The global objective of the project “to eliminate risks from POPs and pesticide residues in Mozambique through the use of environmentally sound management methods that prevent the creation of additional POPs or other environmental contaminants” is geared

¹² Word search of all PIRs, and PPRs for 2018

directly towards environmental protection and improving living conditions of the population, particularly people living in or near high risk locations.

140. In order to mitigate possible reputational risk for project donors and partners, design and implementation of projects should ensure that environmental and social safeguards are rigorously enforced, and responsibilities of stakeholders made clear. GEF and FAO provide guidelines to ensure that there are negligible negative environmental impacts associated with implementation of project activities. The criteria and minimum requirements on environmental and social safeguards that are to be applied to all GEF-funded projects are presented in the GEF 2015 policy document. The criteria relevant for this project include:

Minimum standard 1: Environmental and social impact assessment.

Minimum standard 2: Protection of natural habitats.

Minimum standard 4: Pest management.

Minimum standard 8: Accountability and grievance systems.

141. Assessments were done by the pesticide and environmental expert to determine the most appropriate options for disposal and site remediation that would not have negative impacts on the population, and the environment and natural habitats. Disposal of contaminated soil from Nacala Port at some unknown location and burying of Brodifacoum pesticide at a municipal waste landfill could potentially have negative impacts on the environment and natural habitats. The Project planned to support efforts to limit the use of highly hazardous pesticides for pest management through promotion of safer alternatives such as integrated pest management practices. This would contribute towards minimum standard 4 on pest management. Residents and community leaders near the contaminated Muziva site expressed frustration at the lack of progress in cleaning up the site. During interviews with the evaluation team they indicated that they had expressed the same concern to visiting Project staff and government officials over the years, but no action had been taken. Had the Project established an accountability and grievance system, as per GEF Minimum standard 8, it would have served to facilitate a more efficient response to the issue.
142. In 2015, FAO also published revised environmental and social guidelines for the management of risk in its strategies, policies and field projects. Minimum Environmental and Social Standards (ESS) that are required for all projects supported by FAO are presented in these guidelines. The components of the POPs Project were linked directly to ESS1: Natural Resource Management; ESS2: Biodiversity, ecosystems and natural habitats and ESS5: Pest and pesticide management. Ideally environmental and social safeguards should be detailed during the project design process, with the LTO screening and classifying the project, and where required ensuring that the relevant standards are triggered. The Project did not have opportunity to do this.
143. Disposal of obsolete pesticides is a complex and highly risky operation with risks being present along the whole chain from inventory, repackaging, transport through to final disposal. Repackaging, transport and final disposal pose highest environmental risk, and the safeguarding team is at particularly high risk due to possible contact with the chemicals or waste. Although the Project was designed before it was a requirement to incorporate minimum standards required by GEF and FAO, precautions and best practices were

included in its design and implementation that mitigated risks addressed by these standards. No accidents or incidents that may have resulted in significant risk of contamination of the environment or public health were reported. Detailed environmental assessments were carried out, and risk-based Environmental Management Plans (EMPs) were developed to guide selection and implementation of remediation activities.

144. Earlier attempts to dispose of pesticide waste through an upgraded cement kiln at Matola had been cancelled following objections by the independent environmental NGO, Greenpeace. This Project was cognizant of risks involved in disposal of obsolete pesticides and waste, and an expert in pesticide management engaged by the Project was required to consider environmental impacts and social upheaval of nearby residents when evaluating alternatives for treatment.
145. A major component of the Project involved investigation of contaminated sites, and selection of appropriate risk-based strategies for remediation. The pesticide management expert was tasked to carry out detailed site investigations, referring to international guidelines provided by the US EPA and the Stockholm Convention, for determination of risk based on levels of contamination. Sites identified as posing risk to public health and the environment were prioritized for clean-up. Sites located within or close to residential areas, and those which posed risk to environmental receptors were prioritized for immediate action.
146. Approval by the SC to reallocate budget from other project components to cater for increased costs of safeguarding and disposing of large quantities of obsolete pesticides and contaminated soil, demonstrated the importance attached to safeguarding the population and the environment by the Project. Safeguarding of obsolete pesticides and contaminated containers demonstrated immediate benefits to the living conditions of people around contaminated sites. Little progress was made in activities aimed at improving pesticide lifecycle management, which would result in reduced risk of future contamination of the environment and the population from pesticides.
147. The local NGO, Livaningo, was contracted to carry out independent project monitoring and impact assessment. The NGO would have been more effective in assessing the Projects adherence to required social and environmental safeguards if the training provided to them by the Project had included information on gender mainstreaming, and minimum social and environmental safeguards required by GEF and FAO.
148. There is no mention of social or environmental safeguarding in the Project document, the mid-term evaluation report, or in any of the Project six monthly or annual reports. The FAO Office of strategy, planning and resource management should have provided guidance to the Project management team, including the preparation of an Environmental and Social Commitment Plan (ESCP) that would detail specific actions that the Project could take in order to achieve compliance with the minimum standards in remaining project activities.

3.5 Sustainability and scaling

EQ 5: How can Project results be sustained and scaled to achieve the Project goal?

Finding 18 on sustaining and scaling Project results: The Project has generated results that require different approaches to be sustained and scaled. All require some degree of

continuing government or donor support. Some results, e.g., safeguarding and disposal will require support indefinitely; some, e.g., development and use of guidelines that support implementation of the 2009 decree on the regulation of pesticides management, have a clear end-point after which work can stop; and, and one result, the safe recycling of EPCs, could potentially become self-sustaining. Continuing government and donor support require their ongoing recognition that dealing with risks from pesticides is a high priority that requires public funding. Given this, there is an ongoing need for a body, such as the PSC, to continue after the end of the Project to lobby to maintain and move pesticides up the political agenda (EQ5.1).

149. The main project achievements to be sustained and scaled were derived from the Project theory of change and validated by project staff and stakeholders in the evaluation inception workshop (see Section 1.3). The evaluation team validated the selection during their field trips and review of Project documentation. The achievements are shown in the first column Table 7 together with the actions and underlying causal mechanisms necessary to sustain and scale them to achieve real impact.
150. In the fourth column, the evaluation team indicate the type of result in terms of the future support required. The team consider that there are three types of result (see Methodology Section for more details):
- i. self-sustaining - a result that can be sustained and achieve wider impact with little or no further public sector funding;
 - ii. stepwise - a result that still requires further defined investment to become self-sustaining or completed (stepwise);
 - iii. contiguous – a result that requires continuous subsidy by the public sector.
151. The analysis shows that the Project’s main results of 1) safeguarding and disposing of contaminated soil and obsolete pesticides; and, 2) disposing of a stockpile of contaminated UPCs is contiguous in that achieving both depends on government or donor funding. The need to continue to dispose of obsolete pesticides and EPCs will continue indefinitely, although at a reducing level depending on achievement of other Project results in strengthening the pesticide lifecycle in Mozambique.

Table 7: Expected project results, further actions, impact pathways and their underlying mechanisms

Expected project result	Further action required to achieve the result	Impact pathways for the results (from ToC) and the underlying mechanisms needed to drive them	Type of support required
Operation of a capacitated national safeguarding and disposal team	The team is kept together and continue their work.	Pathway a: Acceptance that safeguarding and disposal of pesticides and pesticide waste (incl. UPCs) is a public good to be funded, at least in part, by the government.	Contiguous until all stockpiles eliminated.
Obsolete pesticides and contaminated soils safeguarded and disposed of (1.1)	Agreeing whether disposal in a landfill in Mozambique is an option; tenders for disposal abroad are floated and completed.	Ditto.	Ditto.

Expected project result	Further action required to achieve the result	Impact pathways for the results (from ToC) and the underlying mechanisms needed to drive them	Type of support required
Existing empty containers decontaminated and recycled (1.2)	None - assuming the contract for overseas disposal is completed.	Ditto.	Ditto.
Empty containers are sustainably managed in Mozambique on an on-going basis (2.1)	Finalizing and adoption of revised pesticide legislation including empty containers; agreement and implementation of a national strategy for recycling UPCs, based on draft produced by the Project.	Pathway c: Incentives and legislation in place to motivate and sustain recycling of UPCs in Mozambique.	Stepwise until becomes self-sustaining.
Capacity strengthened to implement the 2009 decree on the regulation of pesticide management (2.2)	Guidance and strategy documents developed by the Project need to be adopted by government, and used.	Pathway d: The guidance and strategy documents make implementing the policy easier and more practical.	Stepwise until institutionalized.
A pesticide stock management system is used and institutionalized (2.3)	Reasons why FAO PSMS has not been fully adopted in Mozambique and other African countries to be identified before designing a PSMS that is fit for purpose	Pathway e: Acceptance that a PSMS is necessary as part of pesticide lifecycle management and incentives are in place to motivate use of a workable PSMS	Depends on understanding why a PSMS has not been successfully institutionalized in other African countries

152. The other Project results are stepwise. The recycling of UPCs has the potential to be self-sustaining once the (stepwise) process of putting in place the right incentive and legislative system is complete. The guidelines and strategies developed by the Project to support the implementation of the 2009 decree (No. 6/2009) on the regulation of pesticide management can expect to be institutionalized after further targeted support. PSMS could also be institutionalized, once the lessons have been learned as to why such a system has not been successfully employed in other countries despite FAO's efforts to do so.

Finding 19 on Project impact: The Project has made some progress towards its goal. Analysis of the Project's theory of change finds that the Project has made real progress along 1 out of its 4 impact pathways. The Project has reduced existing risk from pesticides by safeguarding of obsolete pesticides, contaminated soils and empty containers. Progress to strengthen pesticide lifecycle management stopped when funding was stopped. Further work is required to sustain and amplify all pathways, in particular the pesticide lifecycle ones (EQ 5.2).

153. The diagrammatic depiction of the Project theory of change (Figure 3) shows how project results are expected to achieve outcomes and impact through impact pathways (the arrows). The third column of Table 7 indicates the impact pathways and the underlying causal mechanisms needed to translate the results into impact. The evaluators found evidence that the Project has made substantive progress on 1 out of the 4 pathways

identified in the theory of change. The narrative for the successful pathway can be written out as follows based on the if-then logic shown in Table 1 The Project's safeguarding work has reduced risk to human and environmental health from existing stocks of obsolete pesticides and related contaminated material. The conclusion comes with the caveat that the 700 tonnes of contaminated soil from the Muziva site has not yet been safeguarded: this will be done as part of the removal and disposal contract which still must be completed.

154. The sustainability of the impact pathway 1 depends on the priority given by the Government of Mozambique to reducing the risk from pesticides. The evaluation team were told that ensuring farmers are protected against pests and diseases was a higher priority. There is a need, therefore, for a body such as the PSC, to continue to emphasize the risks to human and environmental health from pesticides.
155. Progress along the pesticide lifecycle management pathways stopped when funding was transferred to pay for disposal of greater quantities of obsolete pesticides and associated material than planned for. Further work is required to sustain and amplify all pathways, in particular the pesticide lifecycle ones.

Conclusions and recommendations

Conclusions

Conclusion 1 - The Project is relevant to global and national efforts for reducing risks to human health and the environment due to POPs and pesticide residues.¹³

156. The Project objective - to eliminate the risk to public health and the environment from POPs and pesticide residues using environmentally sound management - is consistent with the GEF4 strategic objective. The objective is to reduce and eliminate the production, use and release of POPs, and to assist countries to develop capacity for the sound management of chemicals. The Project objective is also consistent with FAO's strategic objectives to achieve a world without hunger, malnutrition and poverty in a sustainable manner; and, with the UN Sustainable Development Goals SDG2 and SDG12. The Project is directly relevant to objectives of the Basel, Stockholm and Rotterdam Conventions. It is relevant to Mozambique's national policies relating to POPs and protection of the environment, and it addressed priorities identified in the National Implementation Plan (NIP) for the Stockholm Convention and FAO's Country Programming Framework (CPF).

Conclusion 2 - The Project reduced immediate risk from POPs, pesticide waste and contaminated containers by safeguarding them and initiating arrangements for disposal. The Project dealt with a much larger quantity of contaminated soil and obsolete pesticides than originally planned for.¹⁴

157. The Project met its target for safeguarding obsolete pesticides except for those located at the store in Beira. Arrangements for the export of obsolete pesticides were under way by the time of the terminal project evaluation in December 2018.

158. The Project sought to safeguard 190 tonnes of obsolete pesticides, a higher quantity than the 70 tonnes that had been estimated when the project was designed. The Project also had to dispose of a much higher quantity of contaminated soil than earlier estimated - 783 tonnes compared to an initial estimate of 100 tonnes. These higher quantities led to escalations in safeguarding and disposal costs.

Conclusion 3 - The Project made limited progress with regards to reducing risk from buried pesticides and contaminated sites, and from existing contaminated containers, in part because of the project steering committee decision to reprioritize funding to disposal.¹⁵

159. A tender that had been awarded for the excavation and remediation of contaminated sites was cancelled due to concerns regarding the feasibility of the selected local disposal option, and the Project planned to re-float the tender in 2019. Three sites were prioritized for remediation based on level of risk posed to public health and the environment, however due to budgetary constraints the SC decided that only 2 sites would be remediated. After two no-cost extensions disposal and remediation activities had still not been completed

¹³ Findings 1 to 3

¹⁴ Finding 4

¹⁵ Findings 4 and 5

and the Project was awarded an additional extension to September 2019 to allow for completion of these activities.

160. The Project planned to decontaminate an estimated 6000 existing plastic pesticide containers and dispose of them locally or introduce them into local recycling chains. High levels of contamination of the containers, combined with the large volumes of contaminated water that would have to be dealt with after triple rinsing, made local disposal non-viable therefore alternative plans were made to include the containers in the tender for disposal by HTI. All activities related to the local treatment of contaminated containers, including training a local team to operate the decontamination and crushing equipment, were therefore cancelled.

Conclusion 4 - Work stopped to reduce future risk from pesticides when budget was transferred to fund disposal. Further efforts are needed to restart work on: the development of a sustainable system for future container management; strengthening and supporting the implementation of the 2009 decree on the regulation of pesticides management; and, establishing a system for national pesticide stock management.¹⁶

161. In efforts to reduce future risk from POPs and pesticide residues, the Project sought to establish a sustainable system for management of pesticide containers. The Project also planned to support review of regulations guiding container management and waste management as part of the review of the national pesticide legislation. A decision was made to incorporate container and waste management regulations under the broader pesticide legislation. A strategy document for container management was developed, and eight guidelines for pesticide lifecycle management were developed and translated into Portuguese. No progress was made beyond this due to budgetary constraints and the decision to await harmonized pesticide regulations that had been initiated by the regional body, SAPReF. By the time of the final project evaluation in December 2018 the proposed regional pesticide regulations had not been finalized.
162. The Project developed national capacity to investigate contaminated sites, and to safeguard obsolete pesticides and associated waste through training, and experience gained by the safeguarding team while carrying out project activities. The project also planned to develop national capacity to deal with future pesticide risks by training customs authorities and plant protection officers in pesticide management, including enforcing of new container and waste regulations and use of a national pesticide stock management system. This training did not take place since the new pesticide legislation was not adopted and the FAO pesticide stock management system was not institutionalized.
163. No progress was made in facilitating the adoption of IPM or biological agricultural techniques although the project had been expected to contribute towards this.
164. The FAO Pesticide Stock Management System was not institutionalized due to poor internet and because the system was being reviewed by FAO. A lack of human resources was cited as hindering progress on an alternative system developed by the Universidade Eduardo Mondlane. The country did not have an established system for managing national pesticide stock by the time of the Projects terminal evaluation in December 2018.

¹⁶ Findings 6 to 9

Conclusion 5 -The quality of project execution was satisfactory while the quality of project implementation at times fell short of expectation, evidenced in the need for five no-cost extensions. Worryingly, as of April 2019, the tender to dispose of over 700 tonnes of contaminated soil has still not been floated.¹⁷

165. The NPC was able to operate without support of a Chief Technical Assistant, in continuing to lead a competent safeguarding team built up in Phases I to III. However, security and implementation issues contributed to the need for five no-cost extensions. Since 2015, the Project has been extended largely to complete disposal tenders. The delays identified in PPRs include: delay in starting the UTF co-financing project; delay in procurement of safeguarding material; and, delay in tendering. It is not clear to the evaluation team why a delay in co-financing delayed the Project when funding from GEF was available to do the work. It also not clear why spending GEF funds was apparently so much more difficult such that there was no drawing down of GEF funds for three years while the Project ran on co-financing. However, the fact that this happened does not seem to have affected execution. As with Eritrea and Botswana, there was no written management response to the recommendations of the MTE (EQ 3.4).

Conclusion 6 - The design of the M&E system was fit for purpose. The system proved effective at raising issues but less able to follow up on measures to deal with them.¹⁸

166. The design of the Project M&E system was satisfactory except for the large number of reports specified in the Project proposal that would have been burdensome if all had been produced. The quality of the PIRs was high. Two shortcomings were: 1) the lack of a management response to the MTE and subsequent supervisory follow up; and, 2) the absence of detailed reporting on co-financing. The Project was unable to deal with a falling sense of government ownership even though the structural reasons for it were well known.

Conclusion 7 - The Project was designed before FAO requirements for gender mainstreaming, and before FAO and GEF minimum standards for environmental and social safeguarding had been developed. The Project did little to address gender in its design and implementation. However, it contributed towards protection of public health and the environment through risk-based site assessments, and by prioritizing for remediation those sites that posed highest risk to the population and environmental receptors.¹⁹

167. Although the Project did not have opportunity to incorporate FAO guidelines on the inclusion of gender in its design, it could have referred to the 2011 GEF policy and incorporated gender in project implementation, particularly after this was recommended by the mid-term evaluation. Opportunities for mainstreaming gender could have included specifically targeting women in training events, engaging local women's groups or NGO's in communication or awareness raising activities, and ensuring that the local NGO that was engaged to carry out independent monitoring of the project had personnel qualified to guide gender mainstreaming and collect sex-disaggregated data where possible.

168. The Project addressed minimum standards for environmental and social protection required by FAO and GEF by carrying out detailed environmental assessments, developing EMPs, and selecting the most appropriate options for disposal and remediation. The

¹⁷ Finding 12 & 13

¹⁸ Findings 14 & 15

¹⁹ Findings 16 & 17

pesticide management expert engaged by the project was specifically required to consider environmental impacts and social upheaval of nearby residents when evaluating alternatives for treatment. The project's steering committee demonstrated the importance that the project attached to protecting the population by reallocating budget to meet increased costs for safeguarding and disposal activities. However, delays in remediating contaminated sites, particularly the Muziva site, posed a reputational risk to the FAO.

Conclusion 8 - The Project has produced different types of results for which the approach to sustainability and scaling differ. In delivering the results, the Project has made tangible progress along the safeguarding and disposal pathway that reduces immediate risk from pesticides. Little progress was made on three impact pathways relating to pesticide lifecycle management and reducing future risk because funding was diverted to deal with discoveries of more obsolete pesticides and contaminated soil than originally planned for.²⁰ Work needs to continue along all four pathways if Mozambique is to reduce risk from pesticides.

169. The Project has produced two types of result: one in which public sector and donor funding will be required indefinitely; and, one that requires reducing levels of public sector and donor support to reach a desired goal. The latter is the work on pesticide lifecycle management which stopped to pay for the former. The former is the safeguarding and overseas disposal of obsolete pesticides.
170. The evaluation team judge that the Project has made substantial progress only along the safeguarding and disposal pathway out of the four impact pathways that constitute the Project theory of change. The successful pathway is that safeguarding work has reduced risk to human and environmental health from existing stocks of obsolete pesticides, contaminated soils and EPCs.
171. To further reduce risk from pesticides in Mozambique work needs to continue to progress further along all four pathways.

Recommendations

Recommendation 1. To FAO and Project Steering Committee (PSC) members to empower the PSC to continue to keep the issue of risk from pesticides as a government priority and to lobby for continued efforts to reduce risk from pesticides in Mozambique (based on Conclusion 2 & 6).

172. Progress along the Project's impact pathways should continue to retain and build on progress already made. The PSC has a crucial role to play to build the government commitment to reduce risks from pesticides such that it is translated into actions, in particular continuing with actions required to achieve the Project's objectives.
173. Specifically, the recommendation is that the PSC to hold an extraordinary meeting to:
- i. identify an institutional home and strategy for itself;
 - ii. plan how to maintain work on project results after the end of the Project, as far as possible retaining existing staff who know what is still needed to be done.

²⁰ Finding 18 & 19

Recommendation 2. To FAO and the PSC to ensure that Project activities are completed (based on Conclusions 2 to 4, and 7).

174. **Remediation of highly contaminated sites:** It is recommended that contaminated soil at the Muziva site is excavated and removed, and the site is remediated as a matter of urgency. It is further recommended that additional funding is sourced to complete remediation of remaining highly contaminated sites that were not dealt with by the project due to budgetary constraints.
175. **Management of pesticide containers:** It is recommended that renewed efforts are made to establish a sustainable system for managing empty pesticide containers using the strategy document that was developed by the project, and drawing from the experiences of systems that are operating in other countries such as South Africa. This should be approached as a stand-alone project/activity that will not have other activities competing for the same budget.
176. **Establishment of a national pesticide stock management system:** It is recommended that a decision is made to either ensure that the FAO PSMS is made available and internet access is upgraded to run the system without further delay, or that the stock management system that was developed by the Universidade Eduardo Mondlane is revisited, and if appropriate, adopted and put into use.

Recommendation 3. To FAO on harmonized regional pesticide regulations: It is recommended that FAO facilitates completion of processes necessary for adoption of harmonized pesticide regulations by the SADC council of ministers and individual countries as the delay is negatively affecting progress in reviewing pesticide legislation, and thereby affecting pesticide management, in countries within the sub-region.

Recommendation 4. To FAO and GEF on gender mainstreaming, and environmental and social safeguarding: It is recommended that all future projects on POPs and obsolete pesticides include at least one person in the project management team with enough knowledge about gender mainstreaming to guide the project team. Alternatively, FAO should facilitate completion of a basic gender course by the NPC (e.g. <https://trainingcentre.unwomen.org>).

177. It is also recommended that the submission of Environmental and Social Commitment Plans (ESCP) for all future projects on POPs and obsolete pesticides is incorporated into the project design and approval process. Gender, and environmental and social protection should be included in the regular M and E report templates, such as the PIR's.

Recommendation 5. To the PSC on sustaining capacity in safeguarding: It is recommended that the government makes efforts to sustain capacity developed for safeguarding obsolete pesticides by allocating budget to enable the national safeguarding team to carry out future safeguarding activities in the country, and by drawing on the team's expertise to supervise similar activities in future projects.

Recommendation 6. To GEF and FAO on maintaining activities to reduce future risk from pesticides: It is recommended that in future projects budget is not reallocated from work to reduce future risk (i.e., to better manage the pesticide lifecycle) to work to reduce current risk (i.e. safeguarding and disposal) even if the latter may appear more immediately urgent.

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Appendix 1. People interviewed

	First Name	Last Name	Organization
1.			
2.	Olga		FAO
3.	Sodji		Japanese Embassy
4.	Chicuate		MITADER
5.	Eight men and two women		Muziva site
6.	Marla	Abigail	Livaningo
7.	Jabula	Arlindo Zibia	MASA
8.	Egidio	Beuaman	MITADER
9.	Khalid	Cassam	FAO
10.	Osvaldo	Catine,	OLAM
11.	Zaques	Chicuate	MASA
12.	Albertina	Chihale	Entomologist working on Malaria Program for the Ministry of Health
13.	Samson	Cuamba	MITADER
14.	Domingus	Cugala	Universidad Eduardo Mondlane, Department of Plant Production and Protection
15.	Anastacio	Dais	MASA
16.	Antonio	Fagilde	CEO, TECAP
17.	Daniel	Goncalves	Muziva site
18.	Ken	Hasson	Senior Agriculture and Food Security Officer, USAID
19.	Pascoal	Linda	MASA
20.	Lizi	Marrengula	Agrifocus
21.	Momade	Nemane	GEF Focal Point, CEO of FMDS – Mozambique Sustainable Development Fund
22.	Paula	Pimentel	USAID
23.	Humberto	Poio	MISAU
24.	Mahhomed	Ratik Vala	Director of Cereals Insitute
25.	Florinda	Rosse	MASA
26.	Amisse	Sabao Nabuela	
27.	Lucas	Uamusse	DSV/ RRCA
28.	Katsuki	Urashima,	Third Secretary, Japanese Embassy

Appendix 2. GEF ratings table

GEF - FAO criteria/sub criteria	Rating ²¹	Summary Comments
A. ASSESSMENT OF PROJECT RESULTS		
1. Overall quality of project outcomes	MS	
1.1. Relevance	HS	Project objectives are well aligned with FAO and GEF strategic objectives as stated in section 3.1. The Project is fully aligned with national policies & strategic objectives on POPs, and with main international chemical conventions to which the country is party.
1.2. Effectiveness	MS	The Project was successful in safeguarding POPs, pesticide waste and contaminated containers, and had to deal with a much larger quantity of contaminated soil and obsolete pesticides than originally planned for. Despite extensions to the Project it was not able to dispose of safeguarded materials during its lifetime, although processes to achieve this were initiated. Limited progress was made with regards to establishing systems to reduce future risks from pesticides.
1.3. Efficiency	MS	Compared to some previous projects, this Project was able to carry out safeguarding work using a national team, rather than a more expensive international team. The NPC was able to fill the position of Chief Technical Advisor, which also saved money. Efficiency has been reduced by long delays and failures in tendering and disposing of contaminated soil. During the last three years the Project did not carry out any activities and the PSC was not active.
B. PROJECT IMPLEMENTATION AND EXECUTION RATING		
2. Quality of project implementation	MU	The quality of project implementation at times fell short of expectation, evidenced in the need for five no-cost extensions, prolonging the length of the Project from three to eight years. Worryingly, as of April 2019, the tender to dispose of over 700 tonnes of contaminated soil has still not been floated. The decision to effectively combine the NPC and CTA roles and move the NPC position from the Pesticide Registrar's Office to FAO reduced government ownership of the Project. GEF funding ceased for three years. The last recorded visit (for which a BTOR exists) from the LTU was 2014.
3. Quality of project execution	S	The quality of project execution was satisfactory. The safeguarding team carried out good work under difficult security conditions.
C. MONITORING AND EVALUATION (M&E) RATING		
4. Overall quality of M&E	MS	
4.1. M&E Design	S	The design of the M&E system was fit for purpose, although proposed number of reports and short reporting periods was originally impractical, in particular taking out the very low budget assigned to the function
4.2. M&E Plan Implementation	MS	The system proved effective at raising issues but less able to follow up on measures to deal with them. Lack of detailed reporting on co-financing was also a major shortcoming. There was no written response to the MTE recommendations. Some reports were not completed and some were missing from FPMIS.
D. SUSTAINABILITY OF PROJECT OUTCOMES		

²¹ Please refer to the TOR for the GEF rating scheme used

GEF - FAO criteria/sub criteria	Rating ²¹	Summary Comments
5. Overall likelihood of risks to sustainability	M	
5.1. Financial risk	ML	Continuing government and donor support will be required for future disposal activities. Continued lobbying will be needed to keep pesticides high on the political agenda, which may be difficult after termination of the Project. Improving the management of the pesticide lifecycle to avoid buildup of obsolete stocks and related waste was said not to be a government priority.
5.2. Socio-political risk	ML	Apparent lack of ownership of the Project by government staff will affect follow up actions and incorporation of activities to reduce pesticide risk in government planning beyond the life of the project.
5.3. Institutional risk	ML	The Project negatively affected capacity within the pesticide registration office, which is key to management of pesticides and reducing associated risk.
5.4. Environmental risk	ML	The Project had limited success in establishing systems to reduce future contamination of the environment from pesticides and associated waste. Accumulation of obsolete pesticides and contamination of the environment will likely continue. Remaining tender might not be done.

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