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Project evaluation series

Mid-term evaluation of “Disposal of Persistent Organic Pollutants and Obsolete Pesticides and Strengthening Life-cycle Management of Pesticides in Benin”

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“Disposal of persistent organic
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GCP/BEN/056/GFF

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The evaluation team consists of the following members: Said Ghaout, Team Leader; Cyrille Ekoumou, Team Member; Tala Talae, Evaluation Manager from the FAO Office of Evaluation (OED).

Acronyms and abbreviations

BEA	Benin Environmental Agency
EMP	Environmental Management Plan
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer Field School
GEF	Global Environment Facility
IITA	International Institute of Tropical Agriculture
OBEPAB	Organisation Béninoise pour la Promotion de l'Agriculture Biologique (Benin Organization for the Promotion of Organic Agriculture)
POP	Persistent Organic Pollutant
PSMS	Pesticide Stock Management System

Executive summary

1. Stockpiles of obsolete pesticides and contaminated materials continue to accumulate in developing countries and transition economies. They are a threat not only to human health, but also to the environment and the sustainable development of the regions where they are stored. In Benin, some farmers often look for efficient and cheap pesticides without regard to health safety issues, risking food poisoning and environmental pollution. They use chemicals illegally supplied by neighbouring countries more than those recommended by the country's authorities.
2. Project GCP/BEN/051/GFF was launched to respond to this need, operating for a period of four years and financed by the Global Environment Facility (GEF). The project aims to support the Government of Benin in the disposal of persistent organic pollutants (POPs) and obsolete pesticides and to develop capacity at the community and institutional levels to manage current and future stocks. The total budget provided by GEF, and implemented by the Food and Agriculture Organization of the United Nations (FAO), is USD 1 830 000.
3. The Mid-term Evaluation of the project measures project progress in terms of results achieved and the overall performance of the project. It seeks to support the project team, FAO technical staff, relevant government departments and community level beneficiaries to understand the strengths and weaknesses of the project's approach and provide an evidence base for decision-making to reorient the project as needed.
4. The evaluation relied primarily on qualitative tools for data collection, conducting a field mission in February and March 2018. Interviews with key informants, document review and a survey of institutional partners provided data related to the project's performance. Data was triangulated using multiple sources to ensure the validity of findings. The triangulated findings formed the basis of the development of recommendations for project stakeholders to advise on the way forward.
5. The project works in partnership with the Ministries of Agriculture, Health and Environment. CropLife International provides technical support and co-financing for disposal. Other national agencies active in the project are DCAM Bethesda for waste recycling, the Benin Food Safety Agency (ABSSA) to develop the national regulatory framework, and the International Institute of Tropical Agriculture (IITA) and the Benin Organization for the Promotion of Organic Agriculture (OBEPAB) to develop alternatives to chemical pesticides.
6. A notable weakness of the project remains the lack of a targeted gender strategy. Women's involvement in activities is low, and the project does not take steps to contribute to gender equality. This represents a missed opportunity, as women constitute a key stakeholder at the community level regarding the use of pesticides and the management of empty pesticides containers. Future work should include a targeted strategy to improve their circumstances and generate impact in this area.
7. Management of the project could be streamlined. The implementation of the project, under guidance of the Project Management Unit, encountered a number of delays. The Project Management Unit meets once every four months but does not have a system to monitor and report on progress achieved. The project faced delays resulting from slow approval of technical reports, and encountered difficulties in the

identification and recruitment of consultants. Combined, these factors resulted in a slow implementation of activities and low disbursement rate of funds.

8. Despite delays, the improvement of the regulatory framework for pesticides management is on track. The project prepared documents related to the decree on the management and control of pesticides and bio-pesticides, as well as a draft decree to organize and record violations of the law. The project also supported drafting a decree on the responsibilities of the National Pesticide Management Committee (CNPG), as the document has been submitted and awaits adoption by the Council of Ministers.
9. In terms of technical contributions, the project identified four alternatives to chemical pesticides including pathogenic fungi, bacteria or virus-based pesticides, currently undergoing piloting in the field.
10. The project also succeeded in developing national capacities of trained individuals, capitalizing on gains made by a previous project funded by Japan and implemented by FAO. There are signs that national staff have appropriated learned techniques, and behaviour of farmers who participated in the Farmer Field Schools (FFS) show they are beginning to apply the triple rinsing technique and puncturing of empty containers, as well as adopting alternatives to chemical pesticides.
11. The project closely collaborated with partners, including associations of cotton producers, farmers and the private sector, all of which indicate a high level of involvement in the project. This collaboration with national partners, representing the project strategy of building upon links and gains established by a previous project, suggest the necessary conditions are in place to ensure project continuity and sustainability following closure.

Conclusions

Conclusion 1. The project deals with a subject of major interest for public health and the environment in Benin. It meets the country's need to solve the problem of obsolete pesticides, which is a matter of concern to the Beninese Government and its people. It is designed in a judicious and thoughtful way based on the lessons learned from previous projects. It involves the major actors in pesticide management in Benin. The project combines four complementary components to eliminate obsolete pesticides and associated risks while avoiding further stockpile rebuilding. The project activities are well defined, but their planning is sometimes ambitious. There have been substantial delays in the implementation of some activities, in particular Component 2 on the implementation of a system for empty pesticide container management.

Conclusion 2. The Mid-term Evaluation identified the main achievements of the project: the use of national skills with proven experience, particularly those involved in the previous Japan funded project, and the decontamination by bioremediation of Oganla site, which was heavily contaminated by pesticides. National staff appropriated the technique and should be able to replicate it at other contaminated sites with relative ease. Similarly, the important role of the FFS established by the project is highlighted through changes in the behaviour of farmers who are beginning to apply the triple rinsing and puncturing of empty containers and to adopt certain alternatives to chemical pesticides, particularly plant extracts such as Neem, for which demand is growing.

Conclusion 3. Members of the Project Management Unit are not fully involved in the project's implementation since they meet only once every four months without any report on the progress achieved since the previous meeting. The work plan is not respected due to delays in the approval of technical reports and difficulties in finding and hiring consultants, resulting in slow implementation of activities. Moreover, the absence of a real monitoring and evaluation system, as provided for in the project document, does not make it possible to monitor the progress of planned activities in real time.

Conclusion 4. The project closely collaborated with various partners including the associations and/or apex organizations of cotton producers, farmers and the private sector, involved in the main activities. These partners have the potential, including financially, to ensure the continuity of activities after the end of the project and representing a good exit strategy for the project.

Conclusion 5. The gender aspect is not sufficiently taken into account by the project since women's involvement in its implementation is low. The project must adopt a holistic gender strategy to implement remaining activities.

Conclusion 6. The visibility of the project is not sufficiently highlighted due to the lack of a communication strategy.

Recommendations

Recommendation 1. The Project Management Unit and FAO Benin should develop and implement a communication strategy to improve visibility and inform the public about the efforts being made to solve a public health and environmental problem.

Recommendation 2. The Project Management Unit and FAO Benin should hold regular weekly or at least monthly meetings of the Project Management Unit to enable members to monitor project implementation and effectively facilitate and accelerate the implementation of activities.

Recommendation 3. The Project Management Unit and FAO Benin should design and rapidly implement a monitoring and evaluation system to facilitate instant monitoring of the remaining activities' implementation.

Recommendation 4. FAO Benin should speed-up the implementation of activities that have been significantly delayed, in particular those related to the implementation of a system for empty pesticide container management.

Recommendation 5. FAO and the Government (BEA) should simplify procedures and avoid delays in the approval of prerequisite documents submitted to the FAO Pesticide Risk Reduction Group (AGPMC) and the Benin Environmental Agency.

Recommendation 6. The Project Management Unit, Project Coordination and FAO should involve women more in the implementation of project activities, particularly in Farmer Field Schools.

Recommendation 7. FAO and the Government (BEA) should design an exit strategy involving key partners to ensure the continuation of activities and the sustainability of achievements after the end of the project.

1 Introduction

1.1 Background information

1. The project covered by the Mid-term Evaluation is GCP/BEN/056/GEF, "Disposal of POPs and Obsolete Pesticides and Strengthening Life-cycle Management of Pesticides in Benin." The project benefits from financing from the Global Environment Facility (GEF) in the amount of USD 1 830 000 as well as co-financing from other donors. The project duration indicates a period of four years (June 2015 to May 2019). The Food and Agriculture Organization of the United Nations (FAO) assures implementation and supervision as the primary executing agency. The project launched on 15 July 2015 through a workshop attended by 52 participants, including relevant national stakeholders.
2. The project aims to support the Government in the disposal of persistent organic pollutants (POPs) and obsolete pesticides, while developing national capacity for their management at community and institutional level.
3. To meet food needs, increase agricultural production and improve incomes, farmers generally use pesticides. They are also used to controlling human and animal diseases. However, many of these chemicals can pose problems because of their impacts on human health and the environment.
4. In many countries in Africa, inadequate agricultural policies and limited availability of inputs combined with poorly enforced regulations lead to safety problems and the accumulation of unused pesticides and empty pesticide containers.
5. In Benin, some farmers look for efficient yet inexpensive products despite concerns of health safety issues, such as the risk of food poisoning and environmental pollution. Farmers may use chemicals illegally sold in neighbouring countries more often than those recommended by the country's official service, as approved products are not always available in a timely manner or at an accessible price (approved chemical products may reach as high as 150 percent the price of safe alternatives), keeping them out of the reach of average producers. This results in growing traffic of non-recommended chemicals by unapproved sellers in nearly all markets in Benin.
6. Large quantities of pesticides are also imported legally each year to meet farmers' demand, especially those of cotton farmers. Many times needs are overestimated, resulting in the accumulation of large quantities of obsolete pesticides across the country. Obsolete pesticide stocks remain a major concern for the Government of Benin, which sought assistance from FAO to dispose of these toxic chemicals. The project "Safeguarding and Disposal of Obsolete Pesticides in Benin (PSEPO) (GCP/BEN/055/JPN)" emerged from this concern and was successfully implemented in four years (January 2012 to July 2015). With Japanese funding, the project successfully eliminated much of the Endosulfan stock existing in the country.

1.2 Scope and objective of the evaluation

7. The Mid-term Evaluation aims to measure project progress, in terms of results achieved in relation to set objectives and overall performance. It seeks to support the project team, FAO technical staff, the involved government departments and

beneficiaries to identify the strengths and weaknesses of the project approach and make corrective actions as necessary.

8. The main questions of the evaluation are as follows:

EQ 1. Does the project strategy and resources meet the country needs?

EQ 2. How efficient was the project in achieving its objectives and how efficient was internal management, including its approach to monitoring and evaluating activities?

EQ 3. To what extent has the project developed the country's institutional and technical capacity (including that of national partners) in the management of pesticides and empty pesticide containers?

EQ 4. To what extent does the project contribute to the adoption of alternatives to chemical pesticides for main crops?

EQ 5. What intended or unintended impact, has the project had on marginalized groups, including women?

EQ 6. To what extent are project activities sustainable? Is there an exit strategy and an effective partnership strategy in place?

1.3 Methodology

9. The evaluation, conducted from February to March 2018, covered the first two years of the project implementation from July 2015 to the end of 2017. The evaluation adopted a qualitative methodology for data collection, as well as a consultative and transparent approach with internal and external stakeholders. The Project Management Unit, in coordination with the FAO Office of Evaluation (OED) made project documents available to the mission (Bibliography).

10. An evaluation matrix with key questions, indicators and investigation methods was developed (Appendix 2) to guide data collection. Three complementary tools were used to evaluate the project's performance: i) review of relevant project documents; ii) semi-structured interviews with key informants during field visits; and iii) observations made by the evaluation team during field visits. These techniques were used to gather and validate information collected.

11. From 19 to 28 February 2018, the evaluators met with project stakeholders and carried out field visits (list of people interviewed in Appendix 1).

12. Those not interviewed because of their absence or unavailability were sent the questionnaire electronically, providing an opportunity to get their feedback on the project (Appendix 3).

13. The mission visited the following places:

- i. Oganla site (decontaminated of Methyl parathion)
- ii. Djassin site in Porto Novo (contaminated with Dieldrin)
- iii. Malanville site (contaminated with acephate)
- iv. Djohountin site near Bohicon

14. At the end of the visit to Benin, the evaluation team held a debriefing session on the preliminary results of the mission at the FAO Representation headquarters. The

evaluation team presented a summary of key findings of the mission as well as the strengths and weaknesses identified.

1.4 Limitations

15. The main challenge encountered was the unavailability and the absence of some stakeholders for interview due to scheduling conflicts. To overcome this challenge, the evaluation team tried to collect information by emailing the questionnaire. Unfortunately, the team received no response to electronically shared questionnaires.
16. In addition, the evaluation team was not able to check the Pesticide Stock Management System (PSMS) to confirm whether it was updated.
17. The team requested national quantitative data on pesticide poisoning cases over the past two years from the Ministry of Health to assess the impact of awareness raising activities, but unfortunately no statistical database exists. Only a few indications of poisoning cases were provided by Banikoara Health Centre, Benin's largest cotton-growing municipality.
18. Given that it was the end of the cotton marketing year, the mission was not able to visit most of the cotton and maize Farmer Field Schools (FFS), nor the vegetable crop FFS composed of producers selected on the basis of typological studies in Alibori. The team was only able to discuss with the producers of a maize-cotton FFS in Padé, Alibori. Producers were already at the end of their field activities for the 2017/2018 season.

1.5 Structure of the report

19. Following this introduction, Chapter 2 presents a brief analysis of the project context, followed by an analysis of the key evaluation questions in Chapter 3. In Chapter 4 the report highlights the key points of the evaluation by identifying the main strengths and weaknesses of the project and makes recommendations for improving intervention based on the results collected.

2 Context

20. Benin has accumulated large stocks of obsolete pesticides in recent decades. These pesticides pose real risks to human health and the environment. Several factors contribute to the accumulation of obsolete pesticides in Benin, including:
 - i. an overestimation of the need for pesticides due to ambitious forecasts of the areas to be sown, especially for cotton;
 - ii. inappropriate pesticide formulations, particularly concentrations of active ingredients;
 - iii. inappropriate storage and poor management;
 - iv. insufficient resources to control and manage pesticides throughout their life cycle;
 - v. poor quality of containers;
 - vi. illegal introduction of pesticides from neighbouring countries.
21. Indeed, farmers' efforts to protect crops and farm products against pests and plant diseases at a lower cost leads them to buy and use the cheapest products available on the market, ignoring toxicity risks. The porous nature of borders between Benin and neighbouring countries and the low controls at entry points lead to the illegal introduction into the country of unregistered products. As a result, growing traffic in non-recommended chemicals led by many unapproved sellers flourishes in almost all Benin markets.
22. In addition, the quantity of legally imported pesticides often arrives late, which encourages farmers to use products that are immediately available and often not recommended. At the national level, it also results in the accumulation of large quantities of obsolete pesticides.
23. Moreover, empty pesticide containers are often collected by communities to store food. They can also be used in mosques for ablutions exposing congregations to contamination with pesticide residues.
24. The Government of Benin undertakes significant efforts to protect public health and the environment from the risks posed by hazardous chemicals. Among these measures, the Government ratified the Basel Convention (14 December 1997), the Stockholm Convention on Persistent Organic Pollutants (5 January 2004) and the Rotterdam Convention (4 January 2004). It presented its National Implementation Plan (NIP) to the Secretariat of the Stockholm Convention in June 2007. At the national level, Benin has established a supervisory body, the *Comité National d'Agrément et de Contrôle des Produits Phytopharmaceutiques* (CNAC – National Committee for the Approval and Control of Phytopharmaceutical Products) to remedy dysfunctions in the control, regulation and management of pesticides, (Decree No. 92-258 of 18 September 1992) outlining procedures for the implementation of Law No. 91-004 of 11 February 1991 on phytosanitary regulations in the Republic of Benin.
25. To support Benin in its efforts to dispose of POPs and obsolete pesticides, including Endosulfan, Japan provided a sum of USD 2 710 000 for the project "Safeguarding and Disposal of Obsolete Pesticides in Benin" (PSEPO) (GCP/BEN/055/JPN), a four-year project from January 2012 to July 2015. The project, implemented by FAO, eliminated 425 tonnes of POPs (Endosulfan). The project under evaluation

continues the work of the previous project while strengthening the country's capacity to manage pesticides throughout their life cycle.

2.1 Project description

26. The project aims to eliminate existing obsolete pesticides in Benin, including POPs and associated wastes, and strengthen capacities for the sound management of pesticides, while avoiding future accumulation. The objectives of each component are as follows:

Component 1: Safe disposal of POPs and other obsolete pesticides, and remediation of pesticide contaminated sites.

27. Based on the 500 tonnes of obsolete pesticides inventoried in 2012, the project projects to safely dispose of up to 200 tonnes of POPs and other pesticides in accordance with the Basel Convention. It also plans to implement strategies to remediate heavily polluted sites. The expected outcomes are:

- i. **Outcome 1.1** - Some 200 tonnes of POPs and other obsolete pesticides safely disposed of in accordance with the Basel Convention.
- ii. **Outcome 1.2** - Quantification of risks associated with heavily polluted sites; study and implementation of remediation strategies.

Component 2: Develop and implement a management system for empty pesticide containers.

28. The second component aims to develop a system for the collection, triple rinsing, safe storage and recycling of empty pesticide containers in cotton production areas. The expected outcomes are:

- i. **Outcome 2.1** - Design and validation of a management plan for empty pesticide containers.
- ii. **Outcome 2.2** - Implementation of the pilot plan for the management of empty pesticide containers in the regions of Alibori and Borgou.

Component 3: Strengthen the regulatory framework and institutional capacity for the sound management of pesticides.

29. Component 3 works to strengthen the institutional and legal framework for the sound management of pesticides throughout their life cycle. Legal texts will be updated to fully reflect the International Code of Conduct, in particular with regard to post-registration control, such as advertising and container management. They will also be revised in accordance with the Permanent Interstate Committee for Drought Control in the Sahel (CILSS)-Economic Community of West African States (ECOWAS)-West African Economic and Monetary Union (UEMOA) common regional system. The expected outcomes are:

- i. **Outcome 3.1** - Drafting and submitting to the Government for approval, legislation and regulations on pesticide registration and control in accordance with the CILSS-ECOWAS-UEMOA common regional system.
- ii. **Outcome 3.2** - Development of a National Strategy Action Plan (NSAP) and a budget for pesticide inspection and quality control.

- iii. **Outcome 3.3** - Increased national capacity for post-registration inspection and control.

Component 4: Promote alternatives to POPs and other conventional hazardous chemical pesticides.

- 30. This component sets out to reduce dependence on highly hazardous conventional chemical pesticides by promoting integrated pest management (IPM) alternatives. The expected outcomes are:
 - i. **Outcome 4.1** - Identification of potential alternatives to Endosulfan, POPs and other obsolete pesticides and adoption of an action plan for field testing, registration and promotion.
 - ii. **Outcome 4.2** - Identified alternatives to Endosulfan, POPs and other obsolete pesticides are tested to ensure their technical and economic feasibility at the farm level.
 - iii. **Outcome 4.3** - Promotion of viable alternatives to Endosulfan, POPs and other obsolete pesticides.
- 31. In addition, the project document indicates that these four components will be supported by the horizontal project components including monitoring and evaluation (Component 5), project management (Component 6) and communication strategies.

3 Results of the evaluation questions

32. To answer the Mid-term evaluation questions, the evaluation team developed sub-questions and indicators (see Evaluation Matrix Appendix 2). The questions are answered in the following paragraphs.

3.1 EQ 1. Does the project strategy and resources meet the country needs?

Key findings 1. The project is relevant, aligning with government policy and the needs of the population in terms of public health and environmental protection. The project was designed in a participatory manner with key stakeholders in the country, drawing from lessons learned of previous pesticide management projects in Benin and Africa. Existing resources are properly used for project implementation.

33. The project is in line with the government's and the population's needs in terms of pesticide management and the risks they pose to public health and the environment. It is consistent with the government policy expressed through the programmes of the Ministry of Environment, in particular the implementation of the Stockholm Convention on POPs identified as a priority in the national plan.
34. The project aligns with Sustainable Development Goal (SDG) 7 on the environment through the elimination of serious contaminants from the environment and the improvement of pesticide management to reduce negative environmental impacts. It also aligns with the achievement of SDG 1 on reducing hunger by reducing the use of pesticides and improving pest and pesticide management.
35. The project is coherent with GEF strategies in priority areas, contributing to the implementation of GEF Strategy 5 on chemicals. It focuses on CHEM-1, in particular the management, prevention and disposal of POP wastes, and on the sound environmental management of contaminated sites.
36. It is part of FAO Strategic Objective SO2 (Make agriculture, forestry and fisheries more productive and sustainable). The project aligns with all outcome areas of the FAO-Benin Country Programming Framework (CPF).
37. The project design involved key stakeholders active in pesticide life cycle management in Benin, namely the Government of Benin at the central and decentralized level, non-governmental organization (NGOs), the private sector, research institutions, universities and local communities. The design takes into account the experience of FAO and other organizations such as CropLife International who implemented sustainable container management programmes in other countries, including a pilot plan currently underway in two cotton production areas in Mali. It is also based on the International Code of Conduct on Pesticide Management (2013) and the manual "Guidelines on Management Options for Empty Pesticide Containers" (2008). Its relevance lies in its commitment to reduce POPs releases from obsolete pesticide stockpiles and contaminated sites and to build capacity for the sound management of pesticides.

38. After analysing the logical framework, the evaluators considered the tool appropriate and realistic to address the country's situation.
39. In addition, the direct beneficiaries targeted by this project are well-identified: policymakers in the Ministries of Agriculture, Environment and Health; national staff responsible for securing chemicals; and the staff of the Ministry of Agriculture involved in project management and the coordination of project activities. Agricultural communities also benefit from the project through a reduction of pesticide exposure following awareness activities. Cotton producers, particularly those in the regions of Alibori and Borgou, will also benefit from the piloting of less harmful alternatives, reducing their dependence on conventional hazardous pesticides. To this can be added indirect beneficiaries, including populations living near the rehabilitated obsolete pesticide stores and heavily contaminated sites.
40. The Ministries of Agriculture, Environment and Health provided human resources to support project implementation, including staff trained by the previous project funded by Japan. Existing tangible and intangible resources, including the facilities of the Central Laboratory of Food Safety Control (LCSSA) and existing pesticide storage facilities at the regional level, were also made available for use by the project.

3.2 EQ 2. How efficient was the project in achieving its objectives and how efficient was internal management, including its approach to monitoring and evaluating activities?

Key findings 2. Project Management Unit meetings are infrequent and risk demobilizing members. Project management does not effectively involve all Project Management Unit members. The planning of some activities does not realistically take into account the procedures and time required to implement them. This results in implementation delays. Financial resources are managed according to FAO procedures which has led to some delay. The disbursement rate is relatively low at 34.38 percent. The project does not have a monitoring and evaluation system to properly monitor the progress of project activities.

3.2.1 Project Management

41. The Project Management Unit, housed in the Directorate of Agriculture (DAGRI) in Porto Novo, manages the project. The project coordination team consists of a single staff, the National Technical Coordinator of the project, contracted by FAO. She was given the same premises, equipment and vehicle assigned to the previous project GCP/BEN/055/JP. The coordinator is responsible for the day-to-day management of the project and the implementation of work plans, as approved annually by the Steering Committee. To carry out the assigned tasks, the coordinator uses the services of an assistant at her own expense. The project Steering Committee, established by ministerial order, meets once a year.
42. In addition to the National Technical Coordinator, the Project Management Unit includes focal points from the Ministries of Agriculture, Health and Environment, and FAO Benin. Project Management Unit members meet once every four months to discuss the progress of activities, obstacles encountered and steps to address them. Meetings are infrequent, and do not ensure that Management members are able to closely monitor project achievements. In addition to the above members, the

National Technical Coordinator of the project receives support by a Chief Technical Adviser based in Rome from the Pesticide Risk Reduction Group (AGPMC) of the FAO Plant Production and Protection Division (AGP). The group has extensive experience managing projects similar to this one on a global scale. It provides technical assistance to a growing number of countries. This global work supports complementarity and synergy between the project and other related activities undertaken by AGPMC. Stakeholders met during the evaluation appreciated the technical assistance provided by this group through support and supervision missions, as well as exchanges via videoconference and email.

43. The coordinator provides updates on project progress through semi-annual and annual reports. These reports are disseminated in a timely manner to various stakeholders. They highlight progress made in the implementation of planned activities, difficulties encountered and measures taken to address them. They present the work plan and expected outputs as well as the financial disbursement situation. The evaluation team considers their quality to be satisfactory.
44. The project Steering Committee meets once a year, as provided for in the project document. It has met twice since project inception. During Steering Committee meetings, work and budget programmes are reviewed and approved. Upon review of meeting reports, the evaluation team identified a recommendation regarding the project's exit strategy: evaluate the costs of setting up and operating Farmer Field Schools as their sustainability can facilitate government ownership (by the Ministry of Agriculture, Livestock and Fisheries) at the end of the project.
45. In addition, the evaluation team notes that project visibility can be improved. The exchange of information between different stakeholders on the progress of project activities is sometimes lacking. This points to the need to develop a communication strategy.

3.2.2 Implementation of the work plan

46. The Project Coordinator, in collaboration with Project Management Unit members, develops an annual work plan defining the activities, timeline and budget to be carried out. The Steering Committee reviews the work plan during its annual meeting. The adopted plan becomes the dashboard to monitor the implementation of activities.
47. A review of the 2016 and 2017 plans indicates substantial delays in the implementation of several activities. This is generally caused by bureaucratic procedures, including approval of submitted documents, the lengthy recruitment procedures for consultants and an underestimation of the time necessary to draft technical documents. An example of the latter includes the preparation of an Environmental and Social Impact Assessment (ESIA) related to the elimination of up to 200 tonnes of pesticides. The activities of the 2016 work plan were ambitious, planning to carry out this activity during the second quarter of the year through three sub-activities: i) drafting the Terms of Reference (TORs) for the recruitment of the international and national consultant; ii) carrying out the ESIA; and iii) validating the study report.
48. The limited availability of consultants and the procedures for their recruitment are often cited to explain delays. Additional delays relate to the changing of the Lead

Technical Officer, housed in AGPMC, twice. The first Lead Technical Officer retired and the second changed positions.

49. Table 1 below summarizes progress in implementation of the work plan. A GEF-FAO evaluation matrix tracking progress achieving outcomes against end objectives is provided in Appendix 5.

Table 1: Summary of progress towards the achievement of outcomes

Component 1: Safe disposal of POPs and other obsolete pesticides, and remediation of pesticide contaminated sites		
Outcomes	Indicators	Progress achieved
Elimination of risks associated with existing obsolete pesticide stockpiles and reduction of risks from sites heavily contaminated with pesticides.	<p>Destruction of some 200 tonnes of POPs and other obsolete pesticides in an environmentally friendly manner.</p> <p>Reduction of the risk of exposure/level of contamination of at least two contaminated sites (50% reduction).</p>	<p>The Environmental Management Plan (EMP) for the safeguarding and disposal of obsolete pesticides was prepared and submitted in September 2017 to the FAO Technical Team in Rome and later on to the Benin Environmental Agency (BEA) for review and approval. However, at various stages, approval was delayed (for a total of three months), resulting in delays in the implementation of the activities programmed in the work plan.</p> <p>The project has signed a Memorandum of Understanding with Alterra University of Wageningen for the remediation/risk reduction of contaminated sites in Benin.</p> <p>One of the two selected priority sites has been decontaminated (Oganla Site). Environmental Management Plans for the Djassin, Malanville and Bohicon sites have been completed.</p> <p>The Mid-term Evaluation notes that the expected outputs have been partially achieved</p>

Component 2: Study and implement management systems for empty pesticide containers		
Outcomes	Indicators	Progress achieved
Reduction of risks to the environment and human health caused by the use of empty pesticide containers in cotton production.	<p>75 000 empty containers rinsed three times, collected and stored until they are recycled in the third year.</p> <p>150 000 planned for the fourth year.</p>	<p>An international consultant has collected information and data on pesticide management to develop an appropriate strategy. No decision has been taken so far on the strategy to be adopted.</p> <p>The project identified a national waste recycling unit called DCAM Bethesda (Cise Afrique Sarl).</p> <p>No output has been achieved and the level of activities carried out is low.</p>
Component 3: Strengthen the regulatory framework and institutional capacity for the sound management of pesticides		
Outcomes	Indicators	Progress achieved
Strengthening the regulatory framework and institutional capacity for the sound management of pesticides throughout their life cycle.	<p>Revision of national legislation in accordance with international and regional obligations to be adopted by the fourth year of the project.</p> <p>The National Pesticide Management Committee (NPMC) and Pesticide Inspection and Quality Control System are in place and expected to be operational by the third year of the project.</p>	<p>The project prepared documents relating to: i) the bill on the management and control of pesticides and biopesticides in the Republic of Benin; ii) the draft Decree to organize the recording of law violations on the management of pesticides and biopesticides; and iii) the draft Decree on the establishment, responsibilities and organization of the National Pesticide Management Committee.</p> <p>The process is at the submission stage for adoption by the Council of Ministers.</p> <p>The Mid-term Evaluation notes that Component 3 outputs are well on the way to being achieved.</p>

Component 4: Promote alternatives to POPs and other hazardous chemical pesticides		
Outcomes	Indicators	Progress achieved
Successful promotion of integrated management techniques as alternatives to conventional pesticides, and reduction of the use of chemical and extremely dangerous pesticides.	<p>Many farmers trained in integrated management alternatives through the Farmer Field Schools.</p> <p>Percentage reduction in the use of pesticides on cotton and other crops among trained farmers.</p>	<p>The project identified four types of alternatives, including biopesticides.</p> <p>Tests on potential alternatives are being conducted in the field by the International Institute of Tropical Agriculture, particularly on cotton with a fungus strain <i>Metarhizium anisopliae</i> and the nuclear polydrosis virus HaNPV.</p> <p>The project has set-up seven vegetable crop FFSs.</p> <p>Outputs of this component are partially achieved.</p>

Details and analysis of achievements per component

Safe disposal of POPs and other obsolete pesticides and remediation of contaminated sites (Component 1)

50. Following the inventory that revealed the existence of an unexpected large quantity of obsolete pesticides (1 631 184 tonnes), ten priority depots containing the most dangerous pesticides were selected based on risk factors produced by the PSMS and taking into account priority POPs for the GEF.
51. The Government provided a warehouse to be used as an Interim Storage Facility at the Alafiarou seed farm near Parakou, as well as a platform located within the General Directorate of the former SONAPRA to serve as a Final Storage Facility pending export.
52. The Environmental Management Plan (EMP) for the safeguarding and disposal of obsolete pesticides was developed and submitted to the FAO technical team in Rome and later to the Benin Environmental Agency (BEA) for review and approval. Although now approved, delays were encountered at various stages of approval process, further slowing implementation. The logical framework of the project document provides that the contract with the company in charge of pesticide disposal be signed in the first year of the project and that the safeguarding of the 200 tonnes be completed in the second year.
53. As for remediation of contaminated sites, the project signed a Memorandum of Understanding with Alterra, a Dutch research institute at the University of Wageningen specialized in the environment, for the remediation/risk reduction of contaminated sites in Benin. The remediation of the Oganla site, whose implementation started with the previous Japanese project, continued with the current GEF project. The site was treated with the "land-farming" method which uses

organic matter mixed with contaminated soil to stimulate the biodegradation of contaminants by microorganisms. In this case, the soil was mixed with clean soil and poultry manure on which two botanical species, *Vétuvier* sp. and *Jatropha*, were planted to accelerate the degradation of the active ingredient in pesticides. Monitoring of the aforementioned sites through chemical analyses of soil residues confirmed the total elimination of parathion-methyl by biodegradation, while traces of POPs remained although levels are decreasing. The evaluation team visited the site in question and spoke with the surrounding population who greatly appreciated the work done since the smell emanating from the site had completely disappeared.

54. For the polluted sites of Bohicon, Djassin and Malanville, technical options for decontamination have been proposed. A specific Environmental Management Plan has been developed for each site. At the time the evaluation mission was in Benin, the Specific Environmental Management Plan for the Bohicon site was validated, while that of Malanville site was being revised to take into account the feedback provided. On the other hand, the EMP for Djassin site was delayed due to the unavailability of the international consultant who fell ill.
55. The mission considers that the progress made on this point is satisfactory since, at mid-term, the project succeeded in remediating one of the two sites planned in the logical framework.

Empty container management system (Component 2)

56. Component 2 faced the most delays. A draft national strategy for empty pesticide container management was developed by a national consultant at the beginning of 2016. It outlines a pilot system for empty container management in the regions of Alibori and Borgou, an implementation strategy for this system, its logical framework and corresponding budget. However, no decision has been made so far on the strategy to be adopted.
57. An international consultant has been recruited for this component and has collected information and data on pesticide management to develop an appropriate strategy.
58. Of note is that the logical framework of the project provides for the setting up of collection and recycling centres during the first year of the project, and the launch of pilot collection plans in the regions of Alibori and Bourgou during the second year. No activity has been executed so far due to the lack of a clearly defined and appropriate strategy, which was to be provided by the international consultant.
59. However, it should be noted that the project identified a national waste-recycling unit, DCAM Bethesda (Cise Afrique Sarl), specializing in the recycling of empty pesticide plastic containers from vector control. Products resulting from such recycling are generally paving stones, flowerpots and electrical sheaths. The evaluation team observed examples of paving stones produced by the unit during a meeting with the executive director of the company at its premises.

Improve the regulatory framework for pesticides (Component 3)

60. The improvement of the regulatory framework for pesticides is on track. The project contributed to the preparation of documents relating to: i) the bill on the management and control of pesticides and biopesticides in the Republic of Benin; ii) the draft Decree to organize the recording of law violations on the management of pesticides and biopesticides in the Republic of Benin; and iii) the draft Decree on the establishment, responsibilities and organization of the National Pesticide

Management Committee (NPMC). The bill and draft decrees have been reviewed by the project. The process is at the submission stage for adoption by the Council of Ministers.

Promote alternatives to POPs and other hazardous chemical pesticides (Component 4)

61. The project identified four types of alternatives to POPs and synthetic chemical pesticides:
 - i. botanical pesticides (extracts, oilcake and neem oil) mostly on vegetable crops, cowpeas and organic cotton;
 - ii. parasitoids (natural enemies) for several crop pest controls;
 - iii. fungi, virus or bacteria-based biopesticides for cotton, maize, soya and vegetable crop pest control;
 - iv. agricultural practices (crop rotations or associations, cropping plan, amendments, etc.) to break the life cycle of a number of cereal and cotton crop pests or for weed management.
62. These alternative methods are being introduced in extension activities undertaken by the Ministry of Agriculture, particularly through Farmer Field Schools, using results of the Integrated Production and Pest Management (IPPM) Programme.
63. The identified biopesticides are mainly i) *Metarhizium anisopliae* (Green Muscle) developed by the International Institute of Tropical Agriculture (IITA - LUBILOSA programme, 1990-2006), approved by the CILSS Sahelian Pesticide Committee (CSP); ii) *Bacillus thuringiensis* (Batik), used against caterpillars and aphids (approved by the CILSS CSP); iii) *Beauveria bassiana* Bba 5653, developed by IITA.
64. Within the framework of a Memorandum of Understanding signed with IITA, tests on potential alternatives are being conducted in the field, particularly on cotton in Kassadou (Kandi) with a strain of *Metarhizium anisopliae* and the HaNPV nuclear polydrosis virus. Laboratory tests, led by IITA, are also being conducted with *Beauveria* to control aphids on cabbage. The results are conclusive, and negotiations are underway to conduct them in FFSs for testing on plots. According to the IITA trial manager, FAO's delay in approving the experimental protocol delayed the implementation of field experiments by about four months.
65. In addition, the delay in recruiting consultants to implement Component 4 on alternatives to pesticides had a negative impact on the planning of scheduled activities. As a result, it was not possible to set-up cotton FFSs in time for the 2016-2017 season.

3.2.3 Financial resource management/co-financing

66. The project has an overall budget of USD 12 410 625, of which USD 1 830 000 represents GEF funding and USD 10 580 625 in co-financing in the form of grants and in kind contributions, detailed in Table 2.

Table 2: Co-financing of the project

Financial plan: GEF allocation	USD 1 830 000
Co-financing:	
ABSSA (in kind)	USD 300 000
ABSSA (grant)	USD 4 250 000
DPV (former DAGRI) (in kind)	USD 500 000
OBEPAB (in kind)	USD 500 000
OBEPAB (grant)	USD 500 000
IITA (grant)	USD 300 000
CropLife (grant)	USD 868 500
CropLife (in kind)	USD 60 000
FAO (in kind)	USD 150 000
FAO (grant)	USD 3 152 125
Co-financing subtotal	USD 10 580 625
Total Budget	USD 12 410 625

Table 3: Status of GEF financing expenditure until December 2017

Nature of services	Budget (USD)	Commitments	Available
5011 Wage for professionals	103 584		103 584
5013 Consultants	549 800	313 434	236 366
5014 Contracts	773 500	112 771	660 729
5020 Locally contracted labour	0	845	845
5021 Travel	235 500	115 290	120 210
5023 Training	0	25 378	25 378
5024 Expendable procurement	45 700	35 676	10 024
5025 Non-expendable procurement	35 000	0	35 000
5026 General operating expenses	86 916	25 761	61 155
Total (USD)	1 830 000	629 155	1 200 845

67. The mid-term expenditure of USD 629 155 represents a relatively low disbursement rate of 34.38 percent as the contract for the disposal of obsolete pesticides, the project's largest expenditure, has yet to be awarded. The main expenses incurred thus far relate to the remuneration of international and national consultants (49.81 percent), travel expenses (18.32 percent) and contracts with the various partners (17.92 percent).
68. The evaluation requested a breakdown of the budget and expenditure per component for a more in-depth analysis. Unfortunately, these details were not available.
69. With regard to co-financing, the evaluation did not carry out detailed investigations to determine whether all the co-financing pledged was actually mobilized; though this information was requested it was not received. However, involvement of stakeholders in project implementation encouraged the provision of in kind co-financing.
70. The project is coherent with other projects or initiatives dealing with similar themes and managed by FAO, which should foster complementary actions and reduce duplication, maximizing the project's impact at reduced financial costs.

3.2.4 Monitoring and evaluation tools

71. Monitoring and evaluation of the project is missing. The decision contained in the project document to establish a monitoring and evaluation component six months after the start of activities did not materialize. The Project Management Unit carries out monitoring and evaluation during meetings, and the Steering Committee does so on an annual basis by consulting the work plan and budget agreed on by stakeholders. The coordinator prepares semi-annual Project Progress Reports and annual Project Implementation Review reports, in accordance with FAO and GEF guidelines. These reports present progress towards project objectives and expected results.

3.3 To what extent has the project developed the country's institutional and technical capacity (including that of national partners) in the management of pesticides and empty pesticide containers?

Key findings 3. The project trained master trainers, intending a cascading effect of skills transfer. The project relied on staff who had participated in the previous project on the same theme to carry out activities on which they had already been trained. The project contributed to strengthening the capacity of the Central Laboratory of Food Safety Control in soil pesticide residue analysis. The project does not have a communication strategy to inform the public about the efforts being made to solve a public health and environmental problem.

72. Developing national capacities in the area of pesticide management is a valuable contribution of the project. The project began by training master trainers through two trainer/facilitator training sessions: the first with 13 facilitators on cotton-maize crops and the second with 15 facilitators on vegetable crops. Each of the facilitators organized and led a 25-member FFS, i.e. six maize-cotton FFSs in each of Alibori/Borgou municipalities and seven vegetable crop FFSs in each of Alibori

municipalities. Through these FFSs, the project trains producers on the basics of agroecosystem analysis (AESA) to enable them to seek and find appropriate and effective ways to control pests present in their farms (biodiversity exploitation) This approach to pest control offers producers the opportunity to better manage farms, appreciate the relationship between pests and their natural enemies and develop the most appropriate pest control method. In total, nearly 560 people benefited from various training courses (see Table 4 below).

73. Individuals trained by the Japan project were targeted, in particular to carry out the complementary inventory of obsolete pesticides, site remediation operations, facilitator training and specific studies such as the preparation of EMPs. This allows them to consolidate previous knowledge and gain more experience. In doing so, the project thus implements a recommendation of the evaluation mission of the previous project funded by Japan *"R1. Prioritize the staff of the PSEPO project to implement the GCP/BEN/056/GEF project in order to benefit from their experience and enable them to consolidate their achievements and gain more experience and confidence in their field of expertise"*.
74. The project also contributed to the strengthening of the technical capacities of the Central Laboratory of Food Safety Control through expertise provided on research protocols for pesticide residues in contaminated soils, carried out in collaboration with the Alterra laboratory (Wageningen University, Netherlands). The Central Laboratory of Food Safety Control is accredited by BELAC in Belgium, which certifies that the laboratory meets the quality requirements described in ISO/IEC 17025 "General requirements for the competence of testing and calibration laboratories".
75. In addition, guidance provided during the supervision missions of the Pesticide Risk Reduction Group (AGPMC) and those of international experts also contributed to the capacity development of national staff, particularly in the implementation of FAO guidelines and the International Code of Conduct on Pesticide Management.

3.4 EQ 4. To what extent does the project contribute to the adoption of alternatives to chemical pesticides for main crops?

Key finding 4. The use of plant extracts, particularly Neem, as an alternative to chemical pesticides is becoming more and more common, following growing demand from farmers and the increase of local industries producing botanical extracts. This is, in particular, a key contribution of the project through the Farmer Field School approach.

76. The project organized training sessions for trainers (facilitators) on the promotion of alternatives to pesticides on vegetable crops (tomatoes and onions) through Farmer Field Schools, and opened seven vegetable crop FFSs. Each FFS included 25 market gardeners, resulting in 175 producers total who received training on the topic.
77. Following the creation of FFS, evaluators noted during field visits that some farmers already use Neem and chili extracts to control crop pests.
78. In addition, according to the NGO Benin Organization for the Promotion of Organic Agriculture (OBEPAB) with which the project has signed a Memorandum of Understanding to promote alternatives to pesticides, the demand for Neem extracts is growing, increasing from 100 litres in 2015 to about 10 000 litres in 2017. OBEPAB

is committed to promoting organic farming. Indeed, local industries producing Neem oil and aqueous botanical plant extracts are increasing in number. Small-scale units processing Neem seeds into Neem oil are gradually being set-up, including one in Allada. A unit processing aqueous extracts from the *Hyptis suaveolens* plant (an anti-mosquito plant used to protect cowpeas) has also been installed in Djidja. These alternatives to pesticide are available to producers for testing at FFSs.

3.5 EQ 5. What intended or unintended impact has the project had on marginalized groups, including women?

Key findings 5. The project did not sufficiently take into account gender in its implementation. Women's participation is low. The project's impact on communities is noticeable through the triple rinsing and puncturing of empty containers as well as soil remediation at the Oganla site

79. Women participate in all project activities on an equal basis with men, but their participation is low due to the social context of the country whose customs and religion relegate the role of women to household activities. The National Coordinator of the project as well as the Lead Technical Officer are female. Two of the six members of the Project Management Unit are women. The Steering Committee is composed of 18.18 percent of women (4 out of a total of 22 members).
80. At the field level, participants in the training of maize-cotton FFS facilitators include 5 women and 8 men while the vegetable crop FFS facilitators include 2 women and 13 men (15.3 percent). The male/female ratio in diagnostic activities within the focus groups was always in favour of men (93 in 460 or 16.8 percent of women). Producers who train in corn-cotton FFS include 13 women (8.6 percent) compared to 137 men, while in vegetable crop FFSs, there is a 41 in 209 ratio, or 16.4 percent women (see Table 4).

Table 4: Participation by gender in specified project activities/events

Name of activities / events	Number of women	Number of men	Total number	% of women
Coordination team	01	02	03	33.3
Project Management Unit	02	04	06	33.3
Project Steering Committee	04	18	22	18.8
Decontamination team for polluted sites	02	05	07	28.5
Awareness session on pesticide risks and complementary inventory of POPs and obsolete pesticides	-	-	90	-
Diagnostic activities within focus groups	93	460	553	16.8
Training trainers to lead FFS producers	05	13	18	27.7
Maize-cotton FFS facilitator team	06	10	15	40.0
Maize-cotton FFS facilitator team	05	08	13	38.4
Maize-cotton FFS member team	13	137	150	08.6
CUMAR FFS facilitator team	02	13	15	13.3
CUMAR FFS producer member team	41	209	250	16.4

81. Benin sees a high level of women involvement in agricultural activities where the use of pesticides is considered necessary to protect crops and ensure agricultural production. They work in fields treated with pesticides and sometimes store pesticides in their homes for security reasons. Women often collect empty pesticide containers, rinsing and reusing them to store food such as milk, honey, water, etc. Their role cannot be neglected in the application of good agricultural practices,

particularly in the adoption of integrated pest control techniques in allotment gardens where vegetables and other crops are grown for self-consumption and small income-generating activities. The project should encourage women's participation in these aspects.

82. In addition, and according to customs regulating the distribution of tasks at the household level, women are responsible for, among other things, the well-being and health of children and their family members, making them more sensitive to information on the risks associated with pesticides. Their involvement, particularly as concerns communication and awareness-raising, is therefore of major interest.
83. Halfway through the project, it is not possible to assess the impact of the project on communities, particularly on its most vulnerable members. However, during interviews with some farmers, the evaluation team noted some perceptible benefits of the project activities, in particular the triple rinsing and puncturing of empty containers, which farmers already started to put into practice following FFS activities. Farmers also adopted technical strategies related to spraying phytosanitary products including windrow spacing, wind direction and measures to protect applicators.
84. Communities surrounding the Oganla site, which has been remediated, have found a healthy and viable environment that offers better living conditions, given the disappearance of the smell that previously emanated from the site.

3.6 EQ 6. To what extent are project activities sustainable? Is there an exit strategy and an effective partnership strategy in place?

Key findings 6. Extension activities carried out by the African Peer Review Mechanism (APRM), particularly through FFSs, should contribute to the sustainability of project results. Partnerships developed are likely to contribute to the sustainability of activities and provide an exit strategy for the project.

SUSTAINABILITY

85. It is difficult to measure the sustainability of project activities at mid-term. However, the actions carried out so far through FFS are likely to empower local communities to maintain the changes achieved and influence future generations. The extension department of the Ministry of Agriculture, Livestock and Fisheries (APRM) will contribute to the sustainability of the achievements made so far through extension activities with farmers. These will include good practices based on the results of the project, in particular the triple rinsing and puncturing of empty pesticide containers and the use of alternatives to pesticides such as botanical plant extracts like Neem.

PARTNERSHIPS

86. The project brought together a range of partners from government institutions, NGOs, research institutions for the development and promotion of alternatives (IITA, OBEPAB), subregional organizations (CILSS), international organizations (FAO, GEF, Universities), international and national consultants and experts, etc. This partnership strategy is seen as being judicious and beneficial given its satisfactory and encouraging results.

87. At the national level, the project involved the following main partners to implement activities of the four components:

Component 1: Carried out by a national team composed of members from the Ministries of Agriculture, Health and Environment (BEA). CropLife provides technical support and co-financing for disposal.

Component 2: Not yet fully implemented, though a national team will lead implementation, in collaboration with consultants, relevant NGOs and representatives of waste treatment/recycling companies. The project has identified a national waste-recycling unit called DCAM Bethesda (Cise Afrique Sarl), with which a Letter of Agreement should be signed.

Component 3: Carried out under the supervision of the Benin Food Safety Agency (ABSSA), part of the Ministry of Agriculture, Livestock and Fisheries. The agency works in conjunction with the Ministry's Central Laboratory of Food Safety Control. The Ministry of Environment and the Ministry of Health are involved in the finalization of documents relating to pesticide regulations.

Component 4: The International Institute of Tropical Agriculture is responsible for the co-implementation of Component 4, Outcome 4.1. OBEPAB is involved in the implementation of Outcomes 4.2 and 4.3. The Ministry of Agriculture, Livestock and Fisheries extension department, farmers' associations and the Federal Union of Cotton Producers will facilitate the promotion of alternatives that have been proven to be effective.

88. Close collaboration has been developed with the associations and/or apex organizations of cotton producers, farmers and the private sector that have been involved in the main activities affecting them and acting as partners. However, this collaboration should be strengthened by involving local authorities as strategic and financial partners to help ensure the sustainability of actions at the end of the project.
89. At the subregional level, in partnership with the Secretariat of the Sahel Pesticide Committee, the project participated in the validation workshop of the GEF Regional Project Document under the "Pest and Pesticide Management in Sahel and West Africa" (PPM-SWA) Initiative in Lomé, Togo on 23 and 24 August 2016.
90. At the international level, the project benefited from the expertise of Alterra/Wageningen University in the Netherlands, with whom FAO has long developed a partnership in the field of soil remediation.
91. In short, the partnership developed between the Ministries of Agriculture, Health and Environment (BEA) and CropLife could contribute to ensuring the sustainability of activities and also serve as an exit strategy through the links established between the various partners. They represent a platform for cooperation that can support the sustainability of the achievements made so far, provided that the associations and/or apex organizations of cotton producers, farmers and the private sector fulfil their role as financial partners. This has not yet been achieved.

4 Conclusions and recommendations

4.1 Conclusions

Conclusion 1. The project deals with a subject of major interest for public health and the environment in Benin. It meets the country's need to solve the problem of obsolete pesticides, which is a matter of concern to the Beninese Government and its people. It is designed in a judicious and thoughtful way based on the lessons learned from previous projects. It involves the major actors in pesticide management in Benin. The project combines four complementary components to eliminate obsolete pesticides and associated risks while avoiding further stockpile rebuilding. The project activities are well defined, but their planning is sometimes ambitious. There have been substantial delays in the implementation of some activities, in particular Component 2 on the implementation of a system for empty pesticide container management.

Conclusion 2. The Mid-term Evaluation identified the main achievements of the project: the use of national skills with proven experience, particularly those involved in the previous Japan funded project, and the decontamination by bioremediation of Oganla site, which was heavily contaminated by pesticides. National staff appropriated the technique and should be able to replicate it at other contaminated sites with relative ease. Similarly, the important role of the FFS established by the project is highlighted through changes in the behaviour of farmers who are beginning to apply the triple rinsing and puncturing of empty containers and to adopt certain alternatives to chemical pesticides, particularly plant extracts such as Neem, for which demand is growing.

Conclusion 3. Members of the Project Management Unit are not fully involved in the project's implementation since they meet only once every four months without any report on the progress achieved since the previous meeting. The work plan is not respected due to delays in the approval of technical reports and difficulties in finding and hiring consultants, resulting in slow implementation of activities. Moreover, the absence of a real monitoring and evaluation system, as provided for in the project document, does not make it possible to monitor the progress of planned activities in real time.

Conclusion 4. The project closely collaborated with various partners including the associations and/or apex organizations of cotton producers, farmers and the private sector, involved in the main activities. These partners have the potential, including financially, to ensure the continuity of activities after the end of the project and representing a good exit strategy for the project.

Conclusion 5. The gender aspect is not sufficiently taken into account by the project since women's involvement in its implementation is low. The project must adopt a holistic gender strategy to implement remaining activities.

Conclusion 6. The visibility of the project is not sufficiently highlighted due to the lack of a communication strategy.

4.2 Recommendations

Recommendation 1. The Project Management Unit and FAO Benin should develop and implement a communication strategy to improve visibility and inform the public about the efforts being made to solve a public health and environmental problem.

92. To do this, the project can use the communication channels of partner ministries. A virtual platform accessible to all project partners and beneficiaries can also be set-up to share information. Events organized by the various partners should also be used to communicate, such as the celebration of World Food Day organized yearly by FAO.

Recommendation 2. The Project Management Unit and FAO Benin should hold regular weekly or at least monthly meetings of the Project Management Unit to enable members to monitor project implementation and effectively facilitate and accelerate the implementation of activities.

93. Each meeting should produce a summary note indicating progress made on the basis of the work plan established, problems encountered, actions to be taken to resolve them and the responsibilities of each member. This note should be shared with stakeholders, inviting each party to take the necessary steps to address the issues and facilitate the implementation of blocked activities.

Recommendation 3. The Project Management Unit and FAO Benin should design and rapidly implement a monitoring and evaluation system to facilitate instant monitoring of the remaining activities' implementation.

94. Given time constraints, FAO must explore the existing possibilities to quickly meet this need based on experience in managing similar projects in other countries. The project could thus use a monitoring and evaluation system that has proven its effectiveness in other similar situations.

Recommendation 4. FAO Benin should speed-up the implementation of activities that have been significantly delayed, in particular those related to the implementation of a system for empty pesticide container management.

95. Given the time remaining for the project and in the absence of any national strategy proposals other than the one developed by the national consultant since early 2016, FAO should work to implement the existing proposal.

Recommendation 5. FAO and the Government (BEA) should simplify procedures and avoid delays in the approval of prerequisite documents submitted to the FAO Pesticide Risk Reduction Group (AGPMC) and the Benin Environmental Agency.

96. The causes of delays in approving prerequisite documents submitted to FAO and BEA should also be analysed to draw lessons to avoid such delays in the future.

Recommendation 6. The Project Management Unit, Project Coordination and FAO should involve women more in the implementation of project activities, particularly in Farmer Field Schools.

97. This involvement should be at all levels, particularly in Farmer Field Schools. The project can rely on farmers' associations to identify women producers and vulnerable people in each area of action to invite them to participate in project activities.

Recommendation 7. FAO and the Government (BEA) should design an exit strategy involving key partners to ensure the continuation of activities and the sustainability of achievements after the end of the project.

98. Key partners are mainly associations and apex organizations of cotton producers, farmers, the private sector and the Government. These partnerships need to be further developed. A strategic plan defining the activities and responsibilities of each partner as well as the budget should be developed. The Ministry of Agriculture, Ministry of Environment and CropLife would be responsible for co-supervising activities and seeking necessary funding through advocacy activities.

Table 5: Summary of achievements with mid-term evaluation rating (GCP/BEN/056/GFF)

	Rating	Description of achievements
Project strategy	N/A	The project was designed in a participatory way with the various stakeholders to solve a public health and environmental problem. It proposes through four complementary components to eliminate obsolete pesticides and associated risks while setting up
Progress towards Outcomes	Objective: Moderately Satisfactory	Procedures for achieving this objective are underway. However, further efforts are still needed to address delays in the implementation of activities to achieve the set
	Outcome 1: Moderately Satisfactory	The Environmental Management Plan (EMP) for the safeguarding and disposal of 200 tonnes of obsolete pesticides is available to prepare an international call for tenders but was substantially delayed. One of the two heavily polluted sites, formulated as an indicator, has
	Outcome 2: Moderately Unsatisfactory	No decision has been taken so far on the strategy to be adopted, though a proposal had been made since early 2016. For Component 2, no output has been achieved and the level of activities carried out remains low.
	Outcome 3: Moderately Satisfactory	Despite the delay, the improvement of the regulatory framework for pesticides is on track. The project has prepared documents relating to: i) the bill on the management and control of pesticides and biopesticides in the Republic of Benin; ii) the draft Decree to organize the recording of law violations on the management of pesticides and biopesticides; and iii) the draft Decree on the establishment, responsibilities and organization of the National Pesticide Management Committee (NPMC). The
	Outcome 4: Moderately Satisfactory	The project identified four types of alternatives, including pathogenic fungi, bacteria or virus-based biopesticides, which are currently being tested in the field to popularize
Project implementation and Adaptive Management	Moderately Satisfactory	The implementation of activities is delayed due to bureaucratic procedures. The visibility of the project is not sufficiently highlighted. The project lacks a communication strategy. The Project Management Unit
Sustainability	Moderately likely	The partnerships developed are likely to contribute to ensuring the sustainability of activities and also serve as an exit strategy through links established between the various partners, providing a platform for collaboration to ensure the sustainability of the achievements made, provided that the associations and/or apex organizations of cotton producers, farmers and the private sector (involving local authorities) play their full role as financial partners.

Bibliography

- Douro Kpindou, Ouorou Kobi.** 2013. *Stratégie sur les alternatives aux pesticides chimiques Conventionnels pour la formulation du projet GCP/BEN/056/GFF au Bénin.* Rapport d'étude FAO. p.66
- FAO.** Document du projet GCP/BEN/056/GEF, *Elimination des POP et pesticides obsolètes et renforcement de la Gestion du Cycle de Vie des Pesticides au Bénin*
- FAO.** 2012. *Rapport de l'atelier de préparation du projet GCP/BEN/056/GEF sur l'élimination des pops et pesticides obsolètes; et le renforcement de la gestion du cycle de vie des pesticides.* p.32
- FAO.** GEF Project Implementation Review – 1 July 2015 to 30 June 2016
- FAO.** GEF Project Implementation Review – 1 July 2016 to June 2017
- FAO.** Rapport d'Etat d'avancement d'exécution du projet période Juillet-décembre 2015
- FAO.** Rapport d'Etat d'avancement d'exécution du projet période janvier-juin 2016
- FAO.** Rapport d'Etat d'avancement d'exécution du projet période juillet-décembre 2016
- FAO.** Rapport d'Etat d'avancement d'exécution du projet période janvier-juin 2017
- FAO.** Project document GCP/BEN/056/GEF Disposal of POPs and obsolete pesticides and strengthening life-cycle management of pesticides in Benin.
- FAO.** 2014. *Rapport de l'atelier national avec les parties prenantes dans le cadre de la décontamination des sites pollués par les pesticides.* Projet GCP/BEN/056/GEF. p.22
- FAO.** 2015. Rapport d'évaluation terminale du projet GCP/BEN/055/JP, Sécurisation et élimination des pesticides obsolètes au Bénin.
- Grenier, Béatrice.** 2016. Back to office report 20 to 28 July 2016
- Jacqueline, Sagbohan.** 2015. Rapport de l'atelier de lancement du projet GCP/BEN/056/GFF "*élimination des pesticides obsolètes et renforcement de la gestion du cycle de vie des pesticides au Bénin*"
- Jacqueline, Sagbohan.** 2015. Rapport de la première session du comité de pilotage du projet GCP/BEN/056/GFF "*élimination des pesticides obsolètes et renforcement de la gestion du cycle de vie des pesticides au Bénin*". Décembre 2015
- Jacqueline, Sagbohan.** 2016. Rapport de la deuxième session du comité de pilotage du projet GCP/BEN/056/GFF "*élimination des pesticides obsolètes et renforcement de la gestion du cycle de vie des pesticides au Bénin*". Juillet 2016
- Jacqueline, Sagbohan.** 2015. Rapport de la première réunion de l'Unité de Gestion du projet GCP/BEN/056/GFF "*élimination des pesticides obsolètes et renforcement de la gestion du cycle de vie des pesticides au Bénin*". Novembre 2015.
- Jacqueline, Sagbohan.** 2016. Rapport de la deuxième réunion de l'Unité de Gestion du projet GCP/BEN/056/GFF "*élimination des pesticides obsolètes et renforcement de la gestion du cycle de vie des pesticides au Bénin*"
- Jacqueline, Sagbohan.** 2016. Rapport de la troisième réunion de l'Unité de Gestion du projet GCP/BEN/056/GFF "*élimination des pesticides obsolètes et renforcement de la gestion du cycle de vie des pesticides au Bénin*". Décembre 2016.

Jacqueline, Sagbohan. 2017. Rapport de la quatrième réunion de l'Unité de Gestion UGP du projet GCP/BEN/056/GFF "*élimination des pesticides obsolètes et renforcement de la gestion du cycle de vie des pesticides au Bénin*". Juillet 2017

Jacqueline, Sagbohan. 2017. Rapport de réunion extra ordinaire de l'Unité de Gestion UGP du projet GCP/BEN/056/GFF "*élimination des pesticides obsolètes et renforcement de la gestion du cycle de vie des pesticides au Bénin*". Décembre 2017.

Noudoufnin, Maurice. 2013. *Consultation pour l'évaluation du système d'approvisionnement et de contrôle des pesticides en vue de la préparation d'un système de gestion et de contrôle des pesticides pour la formulation du projet GCP/BEN/056/GEF*, Rapport de consultation, p.93

Sylla Cheikh Hamallah et Harmsen Joop. 2013. *Mission d'investigation des sites pollués de Djassin et Oganla*, Rapport des consultants internationaux, 04 au 12 Octobre 2013

Tiamiyou, Ibouaïma. 2015. *Réduction des risques liés à la santé et l'environnement sur les sites contaminés par les pesticides obsolètes*. Rapport sur le site d'Oganla. p.35

Tiamiyou, Ibouaïma; Ligan, Désiré; Chodatou, Philomène; Dassi, Etienne. 2014. *Visites d'échange d'expériences au Mali dans le cadre de la réduction des risques aux sols contaminés par les pesticides obsolètes du 5 au 15 décembre 2015*. Rapport de mission. p.35

Zoglobossou, Roland. 2013. *Elaboration d'une stratégie de gestion des emballages vides de pesticides dans les départements du Borgou et de l'Alibori pour la formulation du projet GCP/BEN/056/GEF « élimination des polluants organiques persistants (pops) et renforcement du cycle de vie des pesticides au Bénin*. Rapport de consultation FAO. p.

Appendix 1. People interviewed

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Appendix 2. Evaluation matrix

Questions/sub-questions		Indicators	Sources	Method
1. Does the project strategy and resources meet the country needs?				
1.1	Are the design and implementation of the project adequate to achieve the expected effects?	-Adequacy of the project design to the objectives pursued -Degree of alignment of the project with national priorities and strategies in the sector	Project Document, Government National Strategy Documents (laws, regulations, policies, etc.) Interviewees	Interviews Questionnaire Literature review
1.2	Are the project resources adequate in relation to the set objectives?	The resources (means) available cover all programmed activities	FAO Reports	Interviews Questionnaire Reports
1.3	Is the work plan for the project implementation realistic?	Work plan executed without delay in accordance with the planning	Government Partners Progress reports	Interviews Questionnaire Reports
2. How efficient was the project in achieving these objectives and how efficient was internal management, including its approach to monitoring and evaluating activities?				
2.1	To what extent are the Government and implementing partners committed? How much support do they put in?	-The resources mobilized are in line with the commitments -Measures taken made it possible to support the project	FAO Government Partners Reports,	Interviews Questionnaire Reports
2.2	Has the disposal of POPs and obsolete pesticides been carried out in accordance with current standards?	-Environmental Assessment (EA) and Environmental Management Plan (EMP) requirements are met -No incident has been reported in the EA report	Government Partners FAO Reports Pesticide Stock Management System (PSMS) Data	Interviews PSMS Field visits

Questions/sub-questions		Indicators	Sources	Method
		-Absence/decrease of stockpiles in stores -Cleanliness of stores emptied of obsolete pesticides	-EA report -EMP -Notifications of Basel exports -Certificate of destruction	
	2.3 Have the risks associated with contaminated sites been identified?	-At least two priority sites have been remediated -Number of workshops or awareness days	Soil test results Progress reports	Interviews Literature review Field visits
	2.4 To what extent have the project tools raised public awareness of the impact of pesticides, their containers and contaminated sites on health and the environment?	-Number, types and quality of Communication Products/ -Awareness raising -Knowledge base of target audiences	Government NGOs FAO Partners Farmers	Interviews Questionnaires Literature review
	2.5 Were the financial and human resources mobilized used wisely?	Financial situation, disbursement rate	FAO Reports Financial statement	Interviews Questionnaire Reports
	2.6 To what extent do monitoring and evaluation tools ensure the successful implementation of the project?	-Monitoring period in line with the plan -Changes brought about by monitoring and evaluation	Monitoring and evaluation tools Monitoring and evaluation reports	Interviews Reports

Appendix 2. Evaluation matrix

Questions/sub-questions	Indicators	Sources	Method
3. To what extent has the project developed the country's institutional and technical capacity (including that of national partners) in the management of pesticides and empty pesticide containers?			
3.1 Has the project contributed to the improvement of the regulatory framework, the inspection and control of pesticides and their quality?	<ul style="list-style-type: none"> -New Draft Legislation and Regulatory Texts -National Pesticide Information Network (list of registered, re-registered and de-registered pesticides) -Reinforced analytical laboratory -Number of people trained 	<ul style="list-style-type: none"> Government FAO Partners Reports 	<ul style="list-style-type: none"> Interviews Questionnaires Literature review Field visits
3.2 Has the project succeeded in implementing an empty container management system?	<ul style="list-style-type: none"> -At least two pilot projects implemented 	<ul style="list-style-type: none"> Government FAO Partners 	<ul style="list-style-type: none"> Interviews Literature review Field visits
3.3 To what extent has the project contributed to reducing the adverse effects of pesticides on human health and the environment?	<ul style="list-style-type: none"> -Reduction of poisoning cases recorded in health centres -Number of containers rinsed properly and grouped together 	<ul style="list-style-type: none"> Statistics and reports from the Ministry of Health, Ministry of Environment 	<ul style="list-style-type: none"> Interviews Literature review
3.4 To what extent has the project contributed to national capacity building in obsolete pesticide and contaminated site management?	<ul style="list-style-type: none"> Capacity building: number of trained active persons with expertise in the different fields related to pesticide management 	<ul style="list-style-type: none"> Government FAO Partners Training documents Reports 	<ul style="list-style-type: none"> Interviews Questionnaire Reports
4. To what extent does the project contribute to the adoption of alternatives to chemical pesticides for main crops?			
4.1 Did the project identify alternatives to conventional chemical pesticides for agricultural use?	<ul style="list-style-type: none"> -Number of alternative or technical products identified -Number of network members using alternatives 	<ul style="list-style-type: none"> Typological study Seminar reports Project progress reports NGO reports 	<ul style="list-style-type: none"> Interviews Questionnaires Reports

Questions/sub-questions		Indicators	Sources	Method
	4.2 To what extent has the project contributed to promoting the use of biopesticides and integrated pest management?	-Number of training courses in Farmer Field Schools -Number of people trained	Training reports NGO reports	Reports Interviews
5. What intended or unintended impact has the project had on marginalized groups, including women				
	5.1 Has the gender aspect been taken into account by the project, particularly in awareness raising and training activities?	Degree of women's involvement in the different fields	Government NGO FAO Partners Farmers	Interviews Questionnaire Reports
	5.2 To what extent have marginalized groups benefited from the project?	-Number of community awareness actions -Number of remediated sites in the communities	Government FAO NGO Partners Villagers	Interviews Questionnaire Reports
6. To what extent are project activities sustainable? Is there an exit strategy and an effective partnership strategy in place?				
	6.1 Are the products generated by the project sustainable?	-Decree implementing the new legislation published and put into effect -Number of training courses on new techniques/skills held each year -Resources allocated to pesticide control and inspection structures registered in the financial law	Government FAO Field observations	Reports interviews
	6.2 To what extent are the developed partnerships complementary and synergistic?	-Number of developed partnerships -Mid-term co-financing status	FAO Project Team Stakeholders Project documents Reports	Literature review Interviews

Appendix 3. Questionnaire

Questionnaire for the Mid-term Evaluation of the project
**DISPOSAL OF POPS AND OBSOLETE PESTICIDES AND STRENGTHENING LIFE-CYCLE
MANAGEMENT OF PESTICIDES¹**

This questionnaire aims at collecting the basic information needed for the Mid-term Evaluation of the project according to the following criteria: relevance, efficiency, effectiveness, sustainability and impact. It also aims at identifying the strengths and weaknesses of the project, the opportunities to be seized and the challenges that may affect implementation. The questionnaire has been kept short and requires only about fifteen minutes to complete.

Name and surname	
Position	
Email address	

Relevance

- 1) To what extent does the project meet the country's needs?
- 2) Are the project objectives clear and realistic?
- 3) To what extent are the interventions appropriate to achieve the expected results?
- 4) To what extent do the project activities promote capacity building at individual, organizational and environmental levels?

Efficiency

- 5) To what extent is the government and implementing partners committed? How much support do they put in?
- 6) How do you rate FAO as the executing agency of the project? Do you think it has a comparative advantage?
- 7) Are the human and financial resources adequate to achieve the expected results?
- 8) Is the work plan for the project implementation realistic?
- 9) If the project has experienced delays, are the causes identified and corrective measures taken?

Efficiency

- 10) Are the tangible outputs achieved so far by the project useful and used?
- 11) What changes are observed that can be attributed to the project interventions (in terms of capacity and institutional organization)?
- 12) To what extent do these changes contribute to progress towards the project objectives?

Sustainability / Partnerships

- 13) Are the products generated by the project sustainable? Please specify.
- 14) To what extent are the developed partnerships complementary and synergistic?

Strengths and weaknesses of the project

- 15) What are the strengths and weaknesses of the project?

Opportunities

- 16) What are the (external) opportunities to be seized?

Challenges

- 17) What are the (external) challenges that could affect the implementation of the project?

¹ Answers to this questionnaire should be sent to Mr Ghaout Said (sghaout@gmail.com) and Mr Cyrille Ekoumou (ekoumoucyrille@gmail.com).

Appendix 4. Logical framework/Result matrix

Objective		Assumptions		
Dispose of existing obsolete pesticides, including persistent organic pollutants (POPs) and related wastes, and build capacity for the sound management of pesticides to prevent further stockpile.		Security conditions remain stable and allow project staff to operate in the country.		
Component 1: Safe disposal of POPs and other obsolete pesticides and remediation of heavily polluted sites				
Direct effect 1	Direct effect indicators and targets	Reference	Measures	Assumptions
Elimination of risks associated with existing obsolete pesticide stockpiles and reduction of risks from sites heavily contaminated with pesticides.	<ul style="list-style-type: none"> i. Destruction of some 200 tonnes of POPs and other obsolete pesticides in an environmentally friendly manner. ii. Reduction of the risk of exposure/level of contamination of at least two contaminated sites (50% reduction). 	<ul style="list-style-type: none"> i. 504 tonnes of obsolete pesticides and 150 tonnes of related waste inventoried in 2012. 380 tonnes of Endosulfan in the safeguarding and disposal phase at USD 4 500/tonne (funded by GCP/BEN/055/JPN). ii. 11 sites identified and inventoried with contaminated soil uploaded into Pesticide Stock Management System (PSMS). Five priority sites for investigation. Three surveys completed, EIA and Environmental Management Plan (EMP) drafted. Risk reduction at three sites will be undertaken (Bohicon, Djassin and Oganla) by GCP/BEN/055/JPN. New pesticide landfill sites reported in 2013. 	<p>Year 1: Development and approval of risk reduction strategies and completion of the safeguarding. Development and approval of risk reduction strategies for two contaminated sites and start of work.</p> <p>Year 2: Risk reduction on one newly prioritized contaminated site.</p> <p>Year 3: Assessment of risk reduction measures carried out.</p> <p>Year 4: Elimination of obsolete stockpiles completed. Risk reduction on one newly prioritized contaminated site.</p>	<p>The safeguarding and disposal price does not exceed USD 4 500/tonne.</p> <p>Support from key government institutions and co-financiers is maintained.</p>

Component 1: Safe disposal of POPs and other obsolete pesticides and remediation of heavily polluted sites								
Outcome	Indicator	Reference	Steps and objectives				Data collection and reporting	
			Year 1	Year 2	Year 3	Year 4	Control means	In charge of data collection
Outcome 1.1 Some 200 tonnes of POPs and other obsolete pesticides safely disposed of in accordance with the Basel Convention.	Number of tones destroyed.	504 tonnes of obsolete pesticides inventoried in 2012. 380 tonnes of Endosulfan removed.	Environmental management plan drafted and signing of the destruction contract between FAO and the waste treatment company.	Safeguarding of 200 tonnes completed.		A maximum of 200 tonnes exported and destroyed in accordance with the Basel Convention.	Interim report; PSMS register; EA and EMP report; Basel Convention certificates of destruction.	National project teams Project Coordinator
Outcome 1.2 Quantification of risks associated with heavily polluted sites; study and implementation of remediation strategies.	Quantification of risks on priority sites.	Eleven heavily contaminated sites registered in the PSMS; five prioritized; three sampled; and environmental management and assessment plans have been prepared.		Completion of the detailed survey of two additional heavily contaminated sites.	Remediation strategies developed and approved for priority sites.	Remediation of priority sites completed.	Interim report, detailed survey reports, remediation strategy documents.	Project Coordinator

Component 1: Safe disposal of POPs and other obsolete pesticides and remediation of heavily polluted sites									
Outcome	Indicator	Reference	Steps and objectives				Data collection and reporting		
			Year 1	Year 2	Year 3	Year 4	Control	In charge of data collection	
	Reduction of the contamination level/risk of exposure at sites that have been subject to mitigation measures compared to references.	To be determined during the rapid environmental assessment (Year 1).	Reference contamination levels analysed at the sites (Bohicon 2 and Malanville)				50% reduction in the level of contamination.	Analytical reports	

Component 2: Study and implement management systems for empty pesticide containers				
Direct effect 2	Direct effect indicators and targets	Reference	Measures	Assumptions
Reduction of risks to the environment and human health caused by the use of empty pesticide containers in cotton production.	75 000 empty containers rinsed three times, collected and stored until they are recycled in the third year; 150 000 planned for the fourth year.	3.9 million containers imported over the last five years; 0.5 million per year in cotton-growing areas, 8.8 tonnes of containers in the national inventory.	<p>Year 1: Development of the management plan for empty pesticide containers. Reviewing proposals for recycling options. Setting up collection and recycling centres.</p> <p>Year 2: Launching of pilot collection plans in the regions of Alibori and Borgou (including the triple rinse awareness programme)</p> <p>Year 3: Continuation of pilot collection plans in the regions of Alibori and Borgou. Evaluation of the pilot collection plan carried out in the two regions.</p> <p>Year 4: Review of a proposal to strengthen the pilot collection plan.</p>	<p>Assumptions: Extension services and NGOs adopt and implement a communication strategy.</p> <p>A national/regional facility for recycling collected empty containers will be identified (e. g. through the Permanent Interstate Committee for Drought Control in the Sahel (CILSS) project).</p>

Component 2: Study and implement management systems for empty pesticide containers								
Outcome	Indicator	Reference	Steps and objectives				Data collection and reporting	
			Year 1	Year 2	Year 3	Year 4	Control means	In charge of data collection
Outcome 2.1 Design and validation of a management plan for empty pesticide containers.	Container management plan review document and stakeholder approval report.	Availability of an evaluation report on empty container management. Data collection sheets relating to empty container management in Alibori and Borgou are being prepared.	Identification of a national or regional facility for the treatment and recycling of different types of empty containers. Container management plan designed and validated by stakeholders.				Interim project reports, mid-term and final evaluations.	National project coordinator SONAPRA CropLife
Outcome 2.2 Implementation of the pilot plan for empty pesticide container management in the regions of Alibori and Borgou.	Number of containers used in Alibori and Borgou out of which: <ul style="list-style-type: none"> • rinsed • collected • securely stored • recycled/disposed of 	500 000 containers imported yearly for cotton production: 58 percent for the use of pesticides in Alibori and Borgou, i.e. 290 000 containers. Currently, there is no room for empty container management system in the country.		208 farmers trained, collection mechanisms in place, role of different established parties and trained staff.	Collection and recycling system established. 75 000 containers rinsed three times, collected and recycled in the two regions.	150 000 containers rinsed three times, collected and recycled in the two regions.	Pilot project report Programme statistics	National project coordinator SONAPRA NGO CropLife

Component 3: Strengthen the regulatory framework and institutional capacity for the sound management of pesticides				
Direct effect 3	Direct effect indicators and targets	Reference	Measures	Assumptions
Strengthening the regulatory framework and institutional capacity for the sound management of pesticides throughout their life cycle.	<ul style="list-style-type: none"> i. Revision of national legislation in accordance with international and regional obligations adopted by the fourth year of the project. ii. The National Pesticide Management Committee (NPMC) and Pesticide Inspection and Quality Control System are in place and shall be operational by the third year of the project. 	<ul style="list-style-type: none"> i. Currently, Benin's legislation does not reflect the regional CILSS-ECOWAS-UEMOA harmonization which it has been a part of since 2012. ii. The competent agencies in pesticide control transferred to the Benin Food Safety Agency (ABSSA) are not yet operational. The Accreditation Committee, CNAC, does not have access to the official government budget, but is funded by accreditation fees. No national strategy or sustainable funding mechanism for pesticide control. 	<p>Year 1: Meetings to review existing laws and workshops in order to align them with Benin's regional and international commitments. Development of a national strategy/action plan. Setting up of the National Pesticide Management Committee.</p> <p>Year 2: Two main entry points well equipped for pesticide inspection and quality control. NPMC (responsibilities, staff, budget, etc.) made operational.</p> <p>Year 3: Finalization of the draft revised legislation and approval process. Evaluation of the effectiveness of the NPMC.</p> <p>Year 4: Approval of the revised legislation. The National system for pesticide inspection and quality control is operational.</p>	<p>Timely adoption of the revised legislation by Parliament.</p> <p>Beneficiaries are willing to participate in training seminars and apply the knowledge gained to the effective implementation of the revised legal framework for pesticide management.</p> <p>Political commitment to establish a pesticide inspection and control service.</p> <p>Effective adoption of reforms.</p> <p>Stability of staff appointment.</p>

Component 3: Strengthen the regulatory framework and institutional capacity for the sound management of pesticides								
Outcome	Indicator	Reference	Steps and objectives				Data collection and reporting	
			Year 1	Year 2	Year 3	Year 4	Control means	In charge of data collection
Outcome 3.1 Drafting and submitting to the Government for approval, legislation and regulations on pesticide registration and control in accordance with the CILSS-ECOWAS-UEMOA common regional system.	National legislation enabling harmonized regional pesticide regulations in accordance with international and regional instruments.	i. Benin is part of the CILSS-ECOWAS-UEMOA harmonized pesticide registration system set-up for West Africa in 2012. ii. Evaluation report on the legislative and regulatory framework (2012).		Drafting of bills, decrees and orders, including those related to the operation of the National Pesticide Management Committee.	Revised legislation submitted to the Government for approval.		Project progress reports. Finalized national legislation. Registration of the submission to national authorities.	National project coordinator. National legal expert. Competent government agencies responsible for approval.
Outcome 3.2 Development of a National Strategy Action Plan (NSAP) and a budget for pesticide inspection and quality control.	Publication of the national strategy for pesticide inspection and quality control.	No national strategy for plant protection or pesticide control. The competent staff and 20 plant protection inspectors were transferred to ABSSA, but without having set-up the procedures and policies to carry out pesticide inspections.	Development of the NSAP.		Implementation of the NSAP.		Project progress reports. Evaluation.	National project coordinator ABSSA NPMC members

Component 3: Strengthen the regulatory framework and institutional capacity for the sound management of pesticides								
Outcome	Indicator	Reference	Steps and objectives				Data collection and reporting	
			Year 1	Year 2	Year 3	Year 4	Control means	In charge of data collection
	Resources allocated to the implementation and monitoring of the national strategy.	National Committee for the Approval and Control of Phytopharmaceutical Products - no post-registration control or access to the State budget.		National Pesticide Management Committee operational and work plan provided with announced budget.	Funds for the implementation of the work plan provided by the Government or through a designated sustainable funding mechanism.	Report on the work plan and a 10% increase in the budget.	Reports in accordance with the requirements of the national strategy.	
Outcome 3.3 Increased national capacity for post-registration inspection and control.	Number of inspectors designated and trained.	Two trainers for the FAO Inspection Manual available at CNAC; Scheduled transfer to ABSSA of 20 phytosanitary inspectors; 77 municipal phytosanitary inspection and plant protection officers (ACIPV).		Pesticide control equipment and capacity at two main entry points.	Development of the training plan and material. Number of staff trained (M/F). Min 25% improvement observed.		Training modules Training reports Performance tests	
	Number, target and cost of quality control analyses.	Samples are sent to Europe and the United States at high cost.			Samples are sent to a national laboratory instead of abroad, at lower costs (to be determined).	Laboratory invoices		

Component 4: Promote alternatives to POPs and other hazardous chemical pesticides				
Direct effect 4	Direct effect indicators and targets	Reference	Measures	Assumptions
Successful promotion of integrated management techniques as alternatives to conventional pesticides, and reduction of the use of chemical and extremely dangerous pesticides.	<p>i. Many farmers trained in integrated management alternatives through the Farmer Field Schools.</p> <p>ii. Percentage reduction in the use of pesticides on cotton and other crops among trained farmers.</p> <p><i>(Objectives to be determined in Years 1 and 2)</i></p>	<p>i. Currently no biopesticides are registered (the biopesticide law is in the process of being adopted).</p> <p>ii. In total, alternatives have been identified, 37 of which are short-term and 15 long-term. Of the 37 short-term alternatives, 9 are cultivation methods already applied in vegetable production, 6 apply integrated management to cassava, maize, bananas and vegetables.</p> <p>iii. Successful experiences in cotton cultivation without the use of chemicals in OBEPAB projects.</p>	<p>Year 1: Completion of pest and pesticide management database and reference gap filling.</p> <p>Year 2: Identification and field testing of alternatives.</p> <p>Year 3: Completion of extension agents' training.</p> <p>Year 4: Completion of farmers' training.</p>	<p>Government institutions, NGOs and the private sector are willing to cooperate in integrated pest and pesticide management to reduce crop losses due to pests and diseases and the negative impact of pesticides on human health and the environment.</p> <p>Extension services are empowered (time and transport) to train and support farmers to apply alternative management practices.</p> <p>Stakeholder participation in demonstrations of selected alternatives.</p> <p>Participation of relevant institutions and structures in tests to confirm the results of alternatives.</p>

Component 4: Promote alternatives to POPs and other hazardous chemical pesticides								
Outcome	Indicator	Reference	Steps and objectives				Data collection and reporting	
			Year 1	Year 2	Year 3	Year 4	Control means	In charge of data collection
Outcome 4.1 Identification of potential alternatives to Endosulfan, POPs and other obsolete pesticides and adoption of an action plan for field testing, registration and promotion.	i. Number of good practices identified. ii. The extent to which the selected practices are used or tested will be known once the first-year typology data is published.	i. 55 identified alternatives - Evaluation report. ii. The International Institute of Tropical Agriculture's (IITA's) experience in biological control. iii. Proven integrated pest management practices and training of extension agents under the GIPD/GEF project. ² iv. Five biological pesticides authorized by the Sahelian Pesticide Committee (SPC).	Finalization of reference data on pesticide use and other pest control practices Identification of alternative management practices and plant protection products.	Approval of the Action Plan including alternatives suggested by Integrated Production and Pest Management (IPPM) and the training plan.			The Action Plan.	National project coordinator IITA Extension agents Farmer/producer associations

² EP/INT/606/GEF – Reduced dependence on persistent organic pollutants (POPs) and other agrochemicals in the Senegal and Niger river basins through integrated production, pest and pollution management.

Component 4: Promote alternatives to POPs and other hazardous chemical pesticides								
Outcome	Indicator	Reference	Steps and objectives				Data collection and reporting	
			Year 1	Year 2	Year 3	Year 4	Control means	In charge of data collection
Outcome 4.2 Identified alternatives to Endosulfan, POPs and other obsolete pesticides are tested to ensure their technical and economic feasibility at farm level.	Number of plant protection products tested in the field.	<ul style="list-style-type: none"> i. Establishment in 2012 of a network of 208 farmers representative of the profile of farms. ii. IITA and other research centres are testing different alternatives. 		Conducting field experiments on alternatives.	<ul style="list-style-type: none"> Field experiments on alternatives. Evaluation of data from the second year of field experience. 	Evaluation of the value chain (imports, local production, distribution, availability to farmers) of alternative plant protection products to make them accessible to farmers.	<ul style="list-style-type: none"> Scientific reports on field experiments. Workshop reports. 	<ul style="list-style-type: none"> National project coordinator IITA Extension agents and departments Farmer/producer associations
Outcome 4.3 Promotion of viable alternatives to Endosulfan, POPs and other obsolete pesticides.	Number of farmers trained in Farmer Field Schools.	<ul style="list-style-type: none"> i. FAO expertise in Farmer Field Schools of the region, to reduce pesticides and promote alternatives to them (GIPD/GEF Project). ii. OBEPAB project on organic cotton and Farmer Field Schools. 	Development of the training and promotion strategy.	Review of the training-of-trainers curriculum, including testing of plant protection products and new management practices.	<ul style="list-style-type: none"> Training of trainers. Establishment of Farmer Field Schools. 	Establishment of Farmer Field Schools	<ul style="list-style-type: none"> Project progress report. Training modules. Reports from Farmer Field Schools. 	<ul style="list-style-type: none"> National project coordinator Extension agents and departments OBEPAB NGO

Appendix 5. Matrix of progress in achieving outcomes against end objectives of the project

Green=Completed

Yellow=Under completion

Red= Not in the process of completion

OBJECTIVE OF THE PROJECT: Dispose of existing obsolete pesticides, including POPs and related wastes, and build capacity for the sound management of pesticides to prevent further stockpile.								
Project strategies	Indicators	Basic reference	Level at 1st PIR 2016	Mid-term target	End target of the project	Mid-term level and evaluation	Rating	Justification of Rating
<p>Outcome 1 Elimination of risks associated with existing obsolete pesticide stockpiles and reduction of risks from sites heavily contaminated with pesticides.</p>	<p>Destruction of 200 tonnes of POPs and other obsolete pesticides in an environmentally friendly manner.</p> <p>Reduction of the risk of exposure/level of contamination of at least two contaminated sites (50% reduction).</p>	<p>505 tonnes of obsolete pesticides and 150 tonnes of related waste inventoried in 2012.</p> <p>Disposal of 425 tonnes of Endosulfan (GCP/BEN/055/JPN).</p> <p>11 polluted sites identified, 5 priority sites for investigation. 3 surveys completed, EIA and EMP drafted. New pesticide landfill sites reported in 2013.</p>	<p>National inventory completed and confirmed. A total of 1251 tonnes of obsolete pesticides to be disposed of.</p> <p>Pesticide Stock Management System (PSMS) updated.</p> <p>Start of remediation work by Bioremediation in Oganla by planting Jatropha and Vétiver (in accordance with EMP developed by the GCP/BEN/055/JPN project). Follow-up in progress.</p> <p>Field mission to identify the exact</p>	200 tonnes to be disposed of	200 tonnes to be disposed of	<p>Ten (10) storage warehouses containing 202 tonnes of priority obsolete pesticides have been identified and selected according to risk factors.</p> <p>Draft environmental management plan ready for the preparation of an international call for tenders for the safeguarding and disposal of 200 tonnes of POPs and other obsolete pesticides.</p> <p>Oganla site: Site remediated by bio-remediation. Continued maintenance of the site.</p> <p>Evaluation of the site remediated in 2016 (Oganla): the results of the analysis showed a disappearance/biodegradation of parathion-methyl in the soil. Remaining traces of DDT (0.123 g/kg), DDD (0.015 g/kg) and DDE (4.448 mg/kg) (POP). Monitoring and maintenance of the land continues to allow the complete biodegradation of POP molecules.</p> <p>New site (Djohounta): Investigation mission, including sampling, for the rapid environmental assessment of this heavily contaminated site (e.g. Assantoun, Zou department, Bohicon commune)</p>	MS	<p>The 200 tonnes were to be eliminated at mid-term, but the elimination procedures are under completion despite the delay.</p> <p>One of the two sites planned to be decontaminated has been effectively remediated.</p> <p>The outputs expected from this component have been partially achieved.</p>

Appendix 5. Matrix of progress in achieving outcomes against end objectives of the project

Project strategies	Indicators	Basic reference	Level at 1st PIR 2016	Mid-term target	End target of the project	Mid-term level and evaluation	Rating	Justification of Rating
			location of the polluted site in Assantoun (previously assumed to be in Kassehlo), where the contamination was caused by the disposal and burning of more than 100 000 litres of pesticides, possibly including: Waly, Gammagrain, Fenitrothion, Endrin, DDT-MEP, Primagram, Thioral, Cypermethrin, Azordine.			(Alterra mission to Benin from 3 to 10 August 2016). Analyses confirm the presence of POPs. Proposals for technical options.		

Project strategies	Indicators	Basic reference	Level at 1st PIR 2016	Mid-term target	End target of the project	Mid-term level & evaluation	Rating	Justification of Rating
<p>Outcome 2 Reduction of risks to the environment and human health caused by the use of empty pesticide containers in cotton production.</p>	<p>75 000 empty containers rinsed three times, collected and stored until they are recycled. 150 000 planned for the fourth year.</p>	<p>3.9 million containers imported over the last five years; 0.5 million per year in cotton-growing areas, 8.8 tonnes of containers in the national inventory.</p>	<p>A draft EBV management strategy has been proposed by a national consultant. The NGO DCAM Bethesda has been identified as a partner for the recycling of empty container and will be involved in the development of the pilot phase of this project. It has recycled more than 1 500 containers from other public health vector control projects.</p>	<p>75 000 Year 3</p>	<p>150 000 Year 4</p>	<p>The project identified a national waste recycling unit called DCAM Bethesda (Cise Afrique Sarl). Collection of additional data on empty container management.</p>	<p>MU</p>	<p>No decision has been made so far on the strategy to be adopted, though a proposal had been made since early 2016 but the process is ongoing.</p>
<p>Outcome 3 Strengthening the regulatory framework and institutional capacity for the sound management of pesticides throughout their life cycle.</p>	<p>Revision of national legislation in accordance with international and regional obligations adopted by the fourth year of the project. The National Pesticide Management Committee (NPMC) and Pesticide Inspection and Quality Control System are in place and shall be operational by the third year of the project.</p>	<p>Currently, Benin's legislation does not reflect the regional CILSS-ECOWAS-UEMOA harmonization of which it has been a part since 2012. The competent agencies in pesticide control transferred to ABSSA are not yet operational. The Accreditation Committee, CNAC, does not have access the official</p>	<p>National meeting with CILSS experts (15 September 2015). Participation in the national workshop to approve the national law and the decree on biopesticides (January 2016), financed by the World Bank. Awareness raising workshop on Benin's pesticide management law (10 March 2016). Official recommendation for the inter-ministerial decree establishing</p>	<p>Establishment of the NPMC. Two entry points equipped.</p>	<p>Revised national legislation approved. Effectiveness of the NPMC assessed. The National system for pesticide inspection and quality control is</p>	<p>Regional Regulation C/REG.3/05/2008 harmonizing the rules governing the registration of pesticides in the ECOWAS region is already included in Benin's official gazette and acts as the law governing the rational use of pesticides in Benin. Study and review by national and international consultants of the draft laws and decrees in force on pesticides and biopesticides. Official recommendation for the inter-ministerial decree establishing the NPMC (September 2015) and start of drafting. Preparation of a memorandum on the weaknesses identified in the draft NPMC decree prepared by the PPD/PPS (Plan Production Division/Plant Protection Service) and the progress proposals made by the consultants.</p>	<p>S</p>	<p>The improvement of the regulatory framework for pesticides is on track. The process is at the submission stage for adoption by the Council of Ministers.</p>

Appendix 5. Matrix of progress in achieving outcomes against end objectives of the project

		government budget, but is funded by accreditation fees. No national strategy or sustainable funding mechanism for pesticide control.	the NPMC (September 2015) and start of drafting.		operational.	Transmission of the memorandum by the FAO Representative in Benin to the MAEP for consideration.		
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Project strategies	Indicators	Basic reference	Level at 1st PIR 2016	Mid-term target	End target of the project	Mid-term level & evaluation	Rating	Justification of Rating
Outcome 4 Successful promotion of integrated management techniques as alternatives to conventional pesticides, and reduction of the use of chemical and extremely dangerous pesticides.	Many farmers trained in integrated management alternatives through the Farmer Field Schools. Percentage reduction in the use of pesticides on cotton and other crops among trained farmers.	No biopesticides are registered (the biopesticide law is in the process of being adopted). In total, 55 alternatives have been identified, 37 of which are short-term and 15 long-term. Of the 37 short-term alternatives, 9 are cultivation methods already applied in vegetable production, 6 apply integrated management to cassava, maize, bananas and vegetables.	Strategy to identify potential alternatives developed with IITA and FFS national experts. Ongoing field surveys and data collection to identify potential alternatives.	Alternatives identified and tested in the field.	Training of farmers.	Overall strategy established to identify potential alternatives with national IITA and FFS experts (and associated IPM/FFS project team including various expertise). Field surveys/focus groups (553 producers, including 460 men and 93 women, involving 20 villages) and data collection to identify potential alternatives as well as current practices and problems (in the Alibori/Borgou regions). At the same time, IITA has implemented an inventory of alternatives to POPs and other hazardous synthetic chemical pesticides used in rice, cotton, maize, soybeans and major vegetable crops in Benin. The alternatives identified are essentially of four types: i) botanical pesticides (extracts, oil) much more commonly used in vegetable crops, cowpeas and organic cotton; ii) parasitoids used in the control of multi-crop pests; iii) fungi, virus or bacteria-based biopesticides used against cotton, maize, soya and vegetable crop pests; iv) agricultural practices (crop rotation or combination, amendment, etc.) used to break the	MS	Four types of alternatives have been identified and field tests of potential alternatives are underway, but substantially behind schedule.

Project strategies	Indicators	Basic reference	Level at 1st PIR 2016	Mid-term target	End target of the project	Mid-term level & evaluation	Rating	Justification of Rating
		Successful experiences in cotton cultivation without the use of chemicals in OBEPAB.				<p>life cycle of a number of cereal crop and cotton or weed pests.</p> <p>Organization of a stakeholder workshop at IITA (September 2016) to agree on the identified potential alternatives and develop a strategy for field testing, certification and promotion of alternatives in FFSs.</p> <p>Validation of a list of alternatives to be tested at IITA with farmers and promoted in FFSs</p> <p>Validation of training-of-trainers' courses (ToT) for the implementation of vegetable (onion, tomato) crop FFS.</p> <p>Four (04) FFS training-of-trainers (ToT) sessions were held from September 2016 to February 2017 in Malanville on the promotion of alternatives to hazardous chemical pesticides on vegetable crops (tomatoes and onions)</p> <p>A total of one FFS in Monkassa (Malanville) and seven FFSs for vegetable crops have been set-up. Each FFS included 25 market gardeners.</p> <p>Development by IITA of protocols and test plans on alternatives validated by the stakeholder workshop.</p> <p>Field testing of potential alternatives conducted by IITA: production of spores of <i>Beauveria bassiana</i> isolates, prospecting for aphid collection and breeding tests.</p>		

¹ **Rating:** Highly Satisfactory (HS), Satisfactory (S), Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U), Highly Unsatisfactory (HU), Unable to rate (UR)

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