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IMPLEMENTATION COMPLETION AND RESULTS REPORT
ON A
GLOBAL ENVIRONMENT FACILITY GRANT
IN THE AMOUNT OF US\$7 MILLION
TO THE
REPUBLIC OF CÔTE D'IVOIRE
FOR THE
OBSOLETE PESTICIDE MANAGEMENT PROJECT

December 24, 2021

Environment, Natural Resources, and the Blue Economy Global Practice
Africa West Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective December 10, 2021)

Currency Unit = West African CFA Franc (CFAF)

CFAF 579.47 = US\$1

SDR 0.714 = US\$1

FISCAL YEAR

July 1 – June 30

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ABBREVIATIONS AND ACRONYMS

BEERA	Office of Research, Production Equipment and Management (<i>Bureau d'Etude, d'Equipment de Realisation et d'Amenagement</i>)
C2D	Development and Debt Contract (<i>Contrat Dette Développement</i>)
CDLPI	Departmental Committee for the Fight against Illegal Pesticides (<i>Comités départementaux de lutte contre les pesticides illégaux</i>)
CEA-CCBAD	Center of Excellence for the Development of Biopesticides (<i>Centre d'Excellence pour le Développement des Biopesticides</i>)
CIAPOL	Ivorian Anti-pollution Center (<i>Centre Ivoirien Antipollution</i>)
COVID-19	Coronavirus Disease 19
CPF	Country Partnership Framework
CW	Chemicals and Wastes
DPVCQ	Directorate for Crop Protection and Quality Control (of MINADER) (<i>Direction de la Protection des Végétaux et du Contrôle de la Qualité</i>)
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FAO	Food and Agriculture Organization
FCPF REDD+	Forest Carbon Partnership Facility Reduced Emissions from Deforestation and Degradation+
FIP	Forest Investment Program
FM	Financial Management
FMS	Financial Management Specialist
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIZ	German International Development Agency (<i>Gesellschaft für Internationale Zusammenarbeit</i>)
ICR	Implementation Completion and Results Report
IERR	Internal Economic Rate of Return
IO	Intermediate Outcome
IPM	Integrated Pest Management
IPMU	Integrated Projects Administration Unit
IRR	Internal Rate of Return
LANADA	National Laboratory for Agricultural Development Support
MCI	Ministry of Communications and Information
M&E	Monitoring and Evaluation
MEF	Ministry of Economy and Finance (<i>Ministère de l'Économie et des Finances</i>)
MINADER	Ministry of Agriculture and Rural Development (<i>Ministère de l'Agriculture et Développement Rural</i>)
MINEDD	Ministry of Environment and Sustainable Development (<i>Ministère de l'Environnement et du Développement Durable</i>)
MIRAH	Ministry of Animal Resources and Fisheries
MSHP	Ministry of Health and Public Hygiene
NPV	Net Present Value
OP	Obsolete Pesticides
PAD	Project Appraisal Document

PC	Pesticides Committee
PDO	Project Development Objective
PIU	Project Implementation Unit
PMIS	Pesticides Management Information System
PMP	Pest Management Plan
POP	Persistent Organic Pollutant
PPE	Personal Protective Equipment
PROGEP-CI	Côte d'Ivoire Obsolete Pesticides Management Project (<i>Projet pour la gestion de pesticides obsolètes en Côte d'Ivoire</i>)
PSMS	Pesticides Stock Management System
REDD+	Reducing Emissions from Deforestation and Degradation
RMG	Ruegg Matray Group Côte d'Ivoire
TTL	Task Team Leader
U-POP	Unintended Persistent Organic Pollutant

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P131778	Obsolete Pesticides Management Project
Country	Financing Instrument
Cote d'Ivoire	Investment Project Financing
Original EA Category	Revised EA Category
Full Assessment (A)	Full Assessment (A)

Organizations

Borrower	Implementing Agency
Ministry of Economy and Finance	Ministry of Environment, Urban Health and Sustainable Development

Project Development Objective (PDO)

Original PDO

The Project Development Objective (PDO) is to improve the management of obsolete pesticides and associated wastes in Cote d'Ivoire by the Government and other stakeholders.



FINANCING

	Original Amount (US\$)	Revised Amount (US\$)	Actual Disbursed (US\$)
World Bank Financing			
TF-A0742	7,000,000	7,000,000	6,994,437
Total	7,000,000	7,000,000	6,994,437
Non-World Bank Financing			
Borrower/Recipient	3,800,000	0	0
Total	3,800,000	0	0
Total Project Cost	10,800,000	7,000,000	6,994,437

KEY DATES

Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
25-Aug-2015	19-Jan-2016	13-May-2019	30-Oct-2020	30-Jun-2021

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US\$M)	Key Revisions
10-Sep-2020	5.88	Change in Components and Cost Change in Loan Closing Date(s)

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Satisfactory	Satisfactory	Substantial

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US\$M)
01	04-Dec-2015	Satisfactory	Satisfactory	.15
02	07-Jun-2016	Satisfactory	Moderately Satisfactory	.57



03	28-Dec-2016	Satisfactory	Moderately Satisfactory	.94
04	20-Jun-2017	Moderately Satisfactory	Moderately Satisfactory	1.41
05	28-Dec-2017	Moderately Satisfactory	Moderately Satisfactory	2.19
06	03-May-2018	Moderately Satisfactory	Moderately Satisfactory	2.96
07	06-Nov-2018	Moderately Satisfactory	Moderately Satisfactory	4.24
08	10-Jun-2019	Moderately Unsatisfactory	Moderately Unsatisfactory	5.15
09	26-Dec-2019	Moderately Satisfactory	Moderately Satisfactory	5.83
10	14-Sep-2020	Moderately Satisfactory	Moderately Satisfactory	6.02
11	08-Jun-2021	Satisfactory	Satisfactory	7.09

SECTORS AND THEMES

Sectors

Major Sector/Sector (%)

Agriculture, Fishing and Forestry 100

Public Administration - Agriculture, Fishing & Forestry 10

Other Agriculture, Fishing and Forestry 90

Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3) (%)

Environment and Natural Resource Management 0

Environmental Health and Pollution Management 99

Air quality management 33

Water Pollution 33

Soil Pollution 33

Private Sector Development 100

Jobs 100



ADM STAFF

Role	At Approval	At ICR
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I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

Context

1. Côte d'Ivoire is a coastal country located in the west of Africa with a total surface area of 322,463 km². It is bordered by Liberia and Guinea to the west, Mali and Burkina Faso to the north, and Ghana to the east. To the south, the country's long coastline of 550 km runs along the Gulf of Guinea. Côte d'Ivoire is divided into two main geographic regions: a forest zone in the south and a savanna zone in the north. Between 1999 and 2011, the Republic of Côte d'Ivoire experienced a series of political and economic crises. The upheavals, combined with poor governance, led to a significant deterioration of living standards, following several decades of strong growth. The economy grew at an average of 9.7 percent from 2012 to 2013 before moderating in the years following the immediate post-crisis period with growth rates ranging from approximately 6 percent to 8 percent (6.2 percent gross domestic product [GDP] growth in 2019).¹ Côte d'Ivoire has enjoyed vibrant, robust, and stable economic growth since 2012, but it experienced a severe slowdown in 2020 owing to the coronavirus disease 2019 (COVID-19) crisis with growth rates dropping to just under 2 percent. The country nonetheless remains Francophone West Africa's economic hub and exerts significant influence in the region.²

2. Côte d'Ivoire has a large, rapidly growing population. At the time the Obsolete Pesticides Management Project in Côte d'Ivoire (PROGEP-CI)³ (P131778) was being prepared (2014), the country had a population of approximately 22.67 million, growing to 26.38 million in 2020. Despite enjoying a stable economic growth in the recent years, poverty remains a serious issue in Côte d'Ivoire. In 2018, Côte d'Ivoire ranked 170 out of 189 countries on the United Nations Human Development Index. The poverty headcount ratio, which stood at 46 percent in 2015, fell to 39.4 percent in 2020. However, the decline was confined to urban areas as rural poverty levels rose by 2.4 percent over the same period. Poverty continues to be overwhelmingly concentrated in rural areas, which are home to 70 percent of poor households, with pronounced differences between the north and the south.

3. In the past 10 years, agriculture has been dropping as a contributor to the country's GDP—from about 26.7 percent of GDP in 2011 to about 20.6 percent in 2019.⁴ Despite the drop as a contributor to GDP, agriculture is still the primary income earner for more than half the population of the country.⁵ The

¹ The World Bank Data Bank. "World Bank National Accounts Data and OECD National Accounts Data Files." (<https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=CI> - Accessed October 2021).

² World Bank. "Côte d'Ivoire: Overview." (<https://www.worldbank.org/en/country/cotedivoire/overview#1> - Accessed October 2021).

³ The French acronym for the project—*Projet de Gestion des Pesticides Obsoletes en Côte d'Ivoire*—PROGEP-CI—is used throughout the document for consistency with the project documents over its implementation.

⁴ Statista. "Ivory Coast: Share of Economic Sectors in the Gross Domestic Product (GDP) from 2009 to 2019." (<https://www.statista.com/statistics/452068/share-of-economic-sectors-in-the-gdp-in-ivory-coast/> - Accessed October 2021).

⁵ World Bank. 2019. "Côte d'Ivoire Economic Outlook: Why the Time Has Come to Produce Cocoa in a Fully Inclusive and Responsible Manner." (July 2019).



country is the world's largest producer of cocoa (40 percent) and among the most important producers of cashews, bananas, pineapples, copra, palm oil, and rubber.

4. Intensive and widespread use of pesticides has been a significant driver of the intensification of agriculture in Côte d'Ivoire. During appraisal of the project in 2014, the Ministry of Environment and Sustainable Development (*Ministère de l'Environnement et du Développement Durable*, MINEDD) and the Ministry of Agriculture and Rural Development (*Ministère de l'Agriculture et Développement Rural*, MINADER) noted that 9,983 tonnes of pesticides were commercialized by CropLife-CI for a value of CFAF 48.3 billion (about US\$81 million) in that year alone. It was also estimated that CropLife-CI members accounted for only about 75 percent of the total quantity of legally commercialized pesticides in the country, giving an overall total of about 13,300 tonnes per year. The estimates did not include illegal importations, which at the time of appraisal were estimated to represent a total pesticide use of about 20,000 tonnes per year. Pesticides are principally used for cotton and cocoa.

5. While agricultural intensification through the use of synthetic pesticides can result in increased yields, the use of large quantities of pesticides, especially if inappropriately managed, can result in serious adverse impacts, including (a) the accumulation of obsolete pesticides and associated wastes, (b) high economic costs to farmers, (c) dispersal of pesticides into the natural environment (soil, water, and air) causing negative impacts on fauna and flora, and (d) negative impact on human health due to residual pesticides in the environment and food crops as well as from direct contact with pesticides during their use. Many cases of deaths or illnesses due to pesticides have been anecdotally reported in Côte d'Ivoire, but detailed data on health impacts have not been compiled for the country. Detailed information on pesticide poisonings (both fatal and non-fatal) is difficult to find as few studies have been conducted. However, a recent review of the World Health Organization's Mortality Database, estimated "that about 385 million cases of unintentional acute pesticide poisonings (UAPP) occur annually world-wide including around 11,000 fatalities. Based on a worldwide farming population of approximately 860 million this means that about 44% of farmers are poisoned by pesticides every year."⁶

6. Obsolete pesticides and their associated wastes,⁷ the principal focus of PROGEP-CI, represent a particular challenge since, in the absence of adequate storage or disposal options, they can have disproportionate impacts on the environment and on human health over long periods. In some cases, they may include persistent organic pollutants (POPs) which have long-range, global impacts or are particularly toxic chemicals, such as POPs now banned for use in the country and governed under the country's commitment to the Stockholm Convention. Lack of satisfactory data on obsolete pesticide stocks is a fundamental difficulty. At appraisal, preliminary inventories were taken pointing to major quantities in uncontrolled public and private storage sites, highlighting the need for a more complete and adequate national inventory. Legal and regulatory challenges exist due to inadequate or outdated regulations in importation, use, storage, transport, and disposal. Finally, there are economic barriers to controlling obsolete pesticides as storage and disposal are expensive, such costs are not reflected in

⁶ Boedeker, W., M. Watts, P. Clausing, & E. Marquez. 2020 "The Global Distribution of Acute Unintentional Pesticide Poisoning: Estimations Based on a Systematic Review." *BMC Public Health* 20, 1875. <https://doi.org/10.1186/s12889-020-09939-0>.

⁷ The Food and Agriculture Organization (FAO) defines obsolete pesticides as "stocked pesticides that can no longer be used for their original purpose or any other purpose and therefore require disposal." This can have a range of reasons, including, among others, degradation of the pesticides from poor storage, manufacturer's expiration date of the product, or banning of the chemical/product. 'Associated wastes' refer to used packaging and containers and materials which may have become contaminated during storage.



product pricing, and little attention has been paid to finding long-term financial models and partnerships with the private sector to help cover storage or disposal costs.

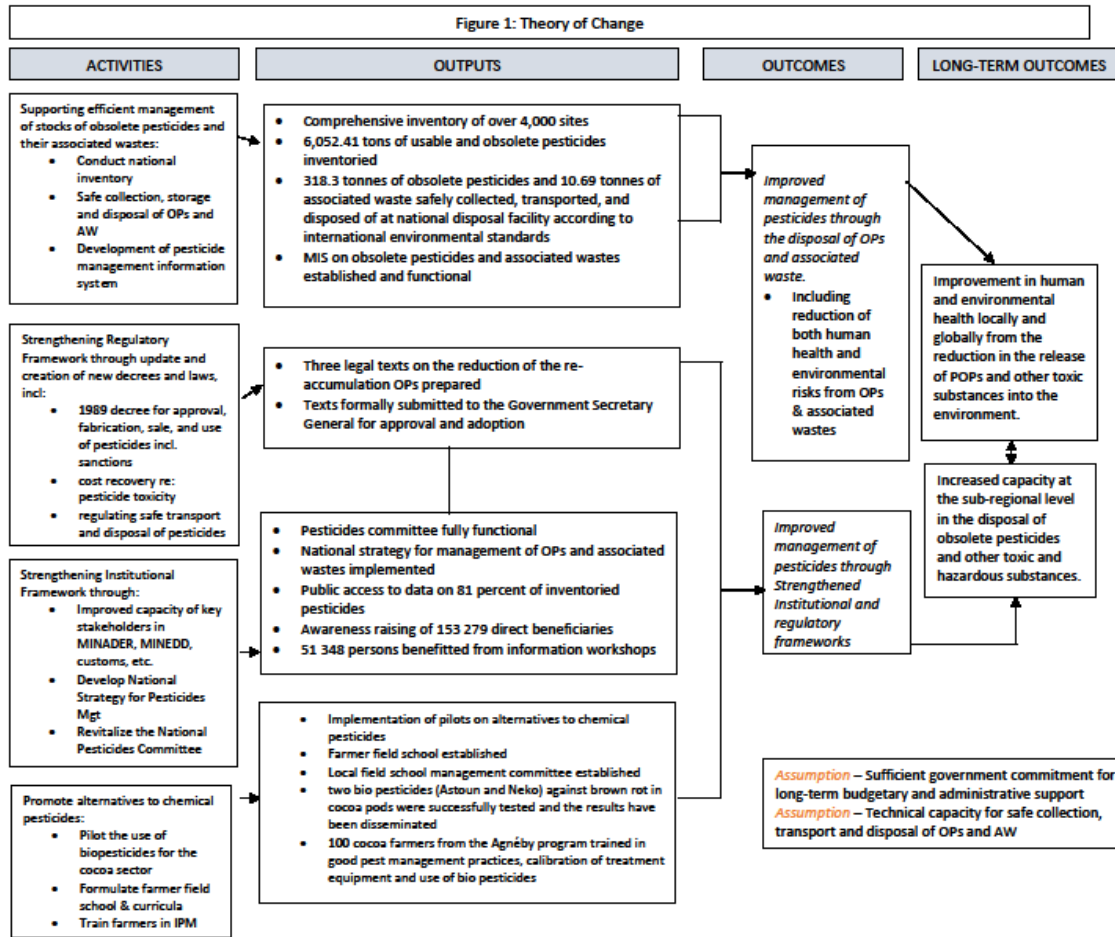
7. Côte d'Ivoire is a member of several West African interstate initiatives which have produced regulations or created institutional arrangements for the management of pesticides. At the time of appraisal, the role of Côte d'Ivoire in these initiatives was minor. The project was designed to complement these activities, many of which were cited as parallel financing for PROGEP-CI.

Theory of Change (Results Chain)

8. While a Theory of Change was not developed at the time of the project, the Project Development Objective (PDO) and project design allow for a clear picture of the desired chain of actions and results. These were analyzed to develop the Theory of Change for this Implementation Completion and Results Report (ICR), as in figure 1. The PDO focuses on improved management of obsolete pesticides and associated waste which encompasses both the cleanup and disposal and the prevention of future accumulations of the obsolete pesticides and waste. To achieve this, the project focuses on two main areas: (a) strengthening the regulatory, institutional, and technical systems in place to support proper management of pesticides on a larger scale and (b) getting a clear picture of the scope of the problem in the country through a comprehensive inventory and then proceeding with a cleanup of the obsolete pesticides to ensure long-term protection of human and environmental health at the local and global levels. Figure 1 illustrates the necessary chain of results to achieve the long-term objective of improved management of obsolete pesticides and associated waste, along with the assumptions needed for the outcomes to be fully achieved.



Figure 1. Theory of Change



Project Development Objectives (PDOs)

9. The PDO aims to improve the management of obsolete pesticides and associated wastes in Côte d’Ivoire by the Government and other stakeholders. (Other stakeholders are understood to be key actors of nongovernmental organizations and from the private sector involved in importation, fabrication, use, storage, and disposal of pesticides.)

Key Expected Outcomes and Outcome Indicators

10. The key indicators linked to measure the outcomes specified in the PDO statement were the following:

- Data on OPs and associated waste publicly accessible
- OPs and OPs waste destroyed, disposed, or contained in an environmentally sound manner
- Direct project beneficiaries (number) (World Bank Core Indicator)



- Female beneficiaries (percentage) (World Bank Core Indicator).

Components

11. The project was designed around the following three components:

Component 1. Strengthening the regulatory and institutional framework (Estimated: Global Environment Facility [GEF]: US\$1.5 million; Government: US\$0.4 million; Actual: GEF: US\$1.858 million; Government: US\$0.309⁸)

12. Component 1 was focused on strengthening the regulatory and institutional frameworks for sound management of pesticides in the country. The component was implemented through activities under two subcomponents: the first on strengthening the regulatory framework governing the management of pesticides by assisting the Government with new regulatory instruments and updating existing regulations and laws and the second on strengthening the institutional capacity of key stakeholders, including those in Government and in the private sector, to play a role in the management of obsolete pesticides. Specific training activities in technical areas and of local beneficiaries would be included in other components, as pertinent.

Subcomponent 1.1. Strengthening the regulatory framework

13. Several weaknesses in the regulatory framework were identified during appraisal that are necessary for the proper management of obsolete pesticides and associated wastes. The updating and creation of new decrees and laws included, among others, (a) the overarching law governing pesticides—the January 1989 decree relative to the approval, fabrication, sale, and use of pesticides was updated with an effective sanctions regime and specific reference to obsolete pesticides and associated wastes introduced; (b) a decree imposing a cost recovery structure in relation to the toxicity level of the pesticide; and (c) a law regulating the transportation, storage, and disposal of obsolete pesticides which allowed for the imposition of sanctions by MINADER. The project financed the writing of drafts, supported necessary consultations with all key stakeholders, and supported the Government as needed for their passage and approval. The subcomponent also supported the country in harmonizing national commitments with regional commitments.

Subcomponent 1.2. Strengthening the institutional framework

14. This subcomponent aimed to strengthen the institutional framework and the technical capacity of key actors and stakeholders with a critical role in the management of pesticides. Activities focused on strengthening the technical capacity of principal national actors in the management of pesticides and hazardous waste, including MINADER, MINEDD, customs, laboratories, professional agricultural organizations, and the private sector.

15. The subcomponent also supported the elaboration of a national strategy for the management of obsolete pesticides and their associated wastes. This required clear up-front definition of the roles of each

⁸ To adjust for exchange rate fluctuations during the life of the project, the actual values for GEF and Government financing are calculated based on the actual West African CFA franc amounts divided by the grant to yield an average exchange rate valuation of CFAF 533 per dollar.



actor in the preparation of the strategy, public consultations, and institutionalization of the strategy to ensure its sustainability. In addition, a sensitization and information campaign about good management of obsolete pesticides was developed and implemented.

Component 2. Management of obsolete pesticides and associated wastes (Estimated: GEF: US\$4.2 million; Government: US\$2.3 million; Actual: GEF: US\$3.897 million; Government: US\$0.312)

16. Component 2 supported the efficient management of stocks of obsolete pesticides and their associated wastes through the following three subcomponents. Full-time technical specialists were hired by the project to work with MINEEDD and MINADER to support the work of the ministries' staff in overseeing the inventory, collection, and disposal processes.

Subcomponent 2.1. Pesticides inventory

17. To effectively remove the threat of obsolete pesticides, a clear picture of the extent of the issue within the country was essential. This lack of information (type/substances, quantity, and location) on obsolete pesticides in the country was addressed through conducting a comprehensive national inventory, building on a preliminary survey carried out during the preparation phase and taking advantage of an existing international inventory system, the Pesticides Stock Management System (PSMS), supported by the FAO. The PSMS inventoried both privately held and publicly held obsolete stocks.

18. Subcomponent 2.1 also supported the following actions: (a) a study tour to Mali to provide insights from other regional inventory and disposal initiatives, (b) contracting of an international expert to provide oversight on the inventory, (c) purchase of necessary data collection and safety equipment, and (d) work on updating information on the pesticides market (and the relative prevalence of illegal pesticides). The data from the inventory were linked to the updated pesticide management information system (MIS) to support long-term management and prevention of accumulation of future OP stocks.

Subcomponent 2.2. Storage and disposal of obsolete pesticides and associated wastes

19. Subcomponent 2.2 focused on the elimination or safe storage of inventoried obsolete pesticides and their associated wastes in accordance with international standards and regulations. Given the necessity of clear data on locations, types, and amounts of obsolete pesticides and associated waste, no activities were planned under this subcomponent for the first year of the project, pending results of the inventory.

Subcomponent 2.3. Pesticides management information system

20. Subcomponent 2.3 supported the development of a pesticides MIS, its validation, use, and administration. The MIS was designed to provide information on the following: (a) the quantity and location of obsolete pesticides within the country, (b) progress made in safely storing and disposing of pesticides, and (c) the importation and trade of pesticides. The subcomponent supported consultants and studies, data collection, consultations, training, some equipment, and connectivity costs on a declining cost-sharing basis. The updated MIS was designed to be in line with the PSMS in use at the time of the national inventory and also to be linked to the national environmental information system then under development by MINEEDD.



Component 3. Promotion of alternatives to chemical pesticides (Estimated: GEF: US\$0.6 million; Government: US\$0.1 million; Actual: GEF: US\$0.286 million; Government: US\$0.0)

21. A key aspect to prevent the continued accumulation of obsolete pesticide stocks is the reduction in overall use of chemical pesticides. Thus, Component 3 focused on supporting an upstream reduction in the use of synthetic and potentially dangerous pesticides through promotion of integrated pest management (IPM). IPM can be an effective tool for reducing the use of chemical pesticides by promoting biological pesticides and instituting changes in agricultural practices while at the same time achieving additional benefits related to the health of rural communities and the quality of the natural resources (soil, water, natural habitats, and wildlife species) and, potentially, crop yields.

22. Component 3 focused on investments in design and implementation of IPM alternatives on a selection of pilot areas in existing farms in the cotton and cocoa zones where pesticide use is high and supported the inclusion of IPM in educational curricula. As part of training and capacity building for key actors and stakeholders who play a critical role in the management of pesticides and as guidance for field demonstrations in select pilot areas, a Pest Management Plan (PMP) was developed which focused on IPM alternatives. IPM research and training efforts were enhanced through (a) formation of a management committee for the pilot demonstrations, (b) development of an IPM communication program, and (c) curricula development on IPM for agricultural schools.

Component 4. Project management (Estimated: GEF: US\$0.7 million; Government: US\$1.0 million; Actual: GEF: US\$0.957 million; Government: US\$1.47 million)

23. Component 4 supported the overall daily administration of the project to ensure that regular monitoring and evaluation (M&E), financial management (FM), procurement, and audits were carried out and that results fed back into decision-making on project implementation. The project was managed by the Integrated Projects Administration Unit (IPMU), which was responsible for management of World Bank-financed projects executed by MINEDD.

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION (IF APPLICABLE)

Revised PDOs and Outcome Targets

24. Not applicable.

Revised PDO Indicators

25. Not applicable.

Revised Components

26. Not applicable.

Other Changes

27. The project closing date was extended by eight months from October 30, 2020, to June 30, 2021. A reallocation of funds among components (less than 10 percent) took place in September 2019 with the



agreement of the GEF coordinator (within the Environment and Corporate Responsibility Unit), the Country Management Unit, task team leader (TTL), and the IPMU based on the need to account for the higher-than-projected cost of the inventory process and the difficulties in obtaining part of the Government counterpart financing.

Rationale for Changes and Their Implication on the Original Theory of Change

28. The project experienced delays due to issues with the availability and allocation of Government budget for key activities, unexpectedly high cost of inventory, and difficulties in undertaking workshops and other activities in the midst of the implementation of public health measures in place to safeguard the community during the height of the COVID-19 pandemic. Thus, it was necessary to extend the project closing date to complete the necessary activities to ensure achievement of the PDO. The changes had no significant impact on the Theory of Change.

II. OUTCOME

A. RELEVANCE OF PDOs

Rating: High

29. The relevance of the PDO remains High and in line with national, regional, and global issues with regard to addressing issues of improving and protecting environmental and human health; improving pesticide management; and reducing the impact of hazardous chemicals, particularly those with a global environmental dimension such as POPs. Given the challenges of developing a new Country Partnership Framework (CPF) in the context of the COVID-19 pandemic, the FY16–19/20 CPF (Report No. 96) has been extended through FY21. The project is in line with the objectives of the current CPF which is developed around three main pillars: (a) accelerating sustainable, private sector-led growth, (b) building human capital for economic development and social cohesion, and (c) strengthening public financial management and accountability. With its emphasis on improving human and environmental health and improving the capacity of the public and private sector to better manage pesticides and reduce negative impacts within the agriculture sector and beyond, the project supports efforts under Pillars 1 and 2 of the CPF. In particular, the project supports Pillar 1, Objective 1 in improving the overall sustainability and health of the agricultural sector and works to minimize unintended negative impacts and optimize agricultural production. In addition, the project’s focus on creating a healthier and safer environment for beneficiary communities is in line with Pillar 2 which looks to build human capital over the longer term.

30. At the global level, the project is closely aligned with the programming directions of the GEF with regard to its focal area strategy on chemicals and waste. The project objective for “to improve the management of obsolete pesticides and associated waste” supports the GEF’s efforts to help countries meet their obligations under the Stockholm Convention on Persistent Organic Pollutants and other global environmental agreements. In addition, the project supports the GEF’s focus on assisting countries in their efforts to “facilitate the sound management of chemicals and waste.”⁹ Finally, the project objective focuses on both public and private sector actors in recognizing their roles in supporting better management of obsolete pesticides and associated waste which is directly in line with the strategic

⁹ Global Environment Facility. “GEF 7 Programming Directions” April 2018, page 67.



approach of GEF 7¹⁰ which recognizes the important role of the private sector for sound management of chemicals and waste. The project also supports the Government of Côte d'Ivoire in complying with obligations under a range of international conventions and treaties to which it is a party, and which concern the management of chemicals, including pesticides and POPs (for example, Stockholm, Rotterdam, Basel, and Bamako Conventions).

Assessment of Relevance of PDOs and Rating

B. ACHIEVEMENT OF PDOs (EFFICACY)

Rating: Substantial

Assessment of Achievement of Each Objective/Outcome

31. The overall PDO is to “improve the management of obsolete pesticides and associated wastes in Côte d'Ivoire by the Government and other stakeholders.” Inherent in the overall ‘management’ objective are two key outcomes: (a) focusing on the identification, cleanup, and disposal of the existing obsolete pesticides and associated wastes and (b) focusing on strengthening the institutional, regulatory, and technology systems needed to both manage obsolete pesticides and prevent their future accumulation. Both outcomes were essential to achieving the PDO and their results were measured according to the project components, activities, and indicators, as discussed below. While the project experienced some issues during implementation with regard to budgetary constraints, financial reporting, and monitoring issues at the level of the IPMU, the project restructuring and other interventions, for example, increased supervision between missions, and small reallocation of component budgets helped the project to substantially achieve its overall PDO of improved management of obsolete pesticides and associated wastes.

Outcome 1: Improved management of obsolete pesticides and associated wastes through the identification, cleanup and disposal of OPs and associated wastes (Fully achieved)

32. Outcome 1 was primarily supported through activities undertaken in Component 2: Management of Obsolete Pesticides and Associated Wastes and measured through the following PDO-level indicators:

- PDO 1: Data on OPs and Associated Wastes publicly accessible (Target: 80 percent; Actual: 81 percent)
- PDO 2: POPs & POPs waste destroyed, disposed or contained in an environmentally sound manner (Target: 250 tonnes; Actual; 329 tonnes)
 - PDO 2a: OPs and associated waste safely contained at targeted sites (Target: 100 tonnes; Actual: 329 tonnes)
 - PDO 2b: OPs and associated waste safely disposed of (Target: 150 tonnes; Actual: 329 tonnes)

¹⁰ While the project was approved under GEF 6, it completed implementation under GEF 7 and the ICR bases relevancy of the PDO on policies and strategies pertinent at the time of closure.



33. Outcome 1 was also supported by the following intermediate indicator:

- Inventory of obsolete pesticides and associated wastes (Target: 3 = inventory substantially completed and data incorporated into OPs databases; Actual: 3)

PDO 1: Data on OPs and Associated Wastes publicly accessible

34. **PDO 1 was fully achieved.** Data on obsolete pesticides and associated wastes were obtained through the national inventory process (see description below). All data were included in the integrated pesticide MIS available to government staff concerned with pesticide management, and access to all publicly disclosable data (81 percent) was provided on the project’s website (confirmed operational at the time of project closure). To ensure continued access to the data after project closure, the pesticide MIS was transferred to the Directorate of Plant Protection and Quality Control in MINADER at the end of the project and a request for inclusion of maintenance costs within the directorate’s budget.

35. While the inventory process included a seven-month delay due to difficulty in obtaining necessary funds from the Government contribution, it was successfully completed within a nine-month period (from training to completion in the field) ending in September 2018. The use of digital tablets for recording of data during the inventory process facilitated the upgrading of the pesticide MIS and accessibility of data for use in management of obsolete stocks. This was a substantial improvement over the PSMS previously established and supported by the FAO which utilized paper forms for recording data creating potential issues around ongoing tracking and data entry. The PROGEP-CI established web-accessible pesticide MIS is the first of its kind in the region and can be used as a model for future projects. (A table with a detailed breakdown of information included in the database can be found in annex 6a.)

Intermediate Outcome (IO) 4: Inventory of obsolete pesticides and associated wastes

36. A comprehensive inventory is an essential first step for the safe consolidation, storage, and/or disposal of obsolete stocks and associated wastes. Despite some issues with timing and cost overruns due to difficulties in obtaining the Government funding apportioned to the activity and the size of the operation,¹¹ the inventory process was carried out successfully and safely within a 12-month period from December 2017 to September 2018. Given that pesticide use increased in the post-conflict push to obtain higher agricultural yields, the effort necessary to carry out the inventory was extensive—180 field agents of the regional directorates of MINADER were fully equipped and trained to undertake the inventory throughout the 108 departments of the country. Teams were provided with all essential training, including sound practices for work with hazardous chemicals and data collection with digital equipment. The project also provided all necessary equipment, including personal protective equipment (PPE), digital tablets, mobile phones, and transportation (motorbikes). During the inventory operation, the field agents visited 4,071 storage facilities and inventoried 6,052.41 tonnes of pesticides, of which 128.56 tonnes were obsolete pesticides, and 10.69 tonnes were associated waste/empty packaging. In addition to the on-the-ground national inventory process, the project undertook a ‘voluntary declarations’ operation which enabled the identification of an additional 189.75 tonnes of obsolete pesticides for a total of 318.31 tonnes of obsolete pesticides and 10.69 tonnes of associated wastes. The voluntary declaration process

¹¹ As noted in a third-party audit of costs/disbursement, the maximum number of sites typically covered by pesticide inventories in other countries is 400, whereas the PROGEP-CI inventory included over 4,000 warehouses and storage facilities.



proved to be an efficient way to gather additional data on obsolete pesticides and associated wastes. The inventory team sent out declaration forms to a list of certified pesticide distributors based on information provided by MINADER. Information received on stored pesticides was then included in the database; obsolete pesticides were identified and included in the collection and disposal process.

37. The inventory’s use of state-of-the-art technology, such as cloud-enabled web servers and analytics software capable of providing correction and validation of data inputs, not only meant that the data was more accurate, accessible, and easily integrated into the pesticide MIS but that the field agents now have on-the-ground experience in using this more advanced technology, allowing for the potential to provide insights to other countries in the region. The use of digitized data meant that results from all agents could be uploaded via the internet to the server installed by the firm Office of Research, Production Equipment and Management (*Bureau d’Etude, d’Equipment de Realisation et d’Amenagement*, BEERA), which developed the software at its headquarters in Abidjan. The use of this data-rich technology also allows the inventory to make projections as to the amount of associated pesticide waste that will be generated each year providing key information for ongoing management. A corps of national experts was forged, with 180 inventory agents, 33 supervisors, and 10 computer engineers capable of conducting data entry, correction, validation, data processing, and system maintenance. While it was costlier than anticipated, the resulting inventory was more comprehensive and more sustainable than envisaged, particularly in terms of strengthened institutional and technical capacity.

Table 1. Obsolete Pesticides and Associated Wastes from Inventory and Voluntary Reporting

Obsolete Pesticides and Associated Wastes	Obsolete Pesticides Inventoried	Obsolete Pesticides Declared in Voluntary Declaration Process	Total
Obsolete Pesticides	128.56 tonnes	189.75 tonnes	318.31 tonnes
Associated waste	10.69 tonnes	0	10.69 tonnes
	TOTAL OPs and associated wastes		329 tonnes

PDO 2: OPs & OPs waste destroyed, disposed or contained in an environmentally sound manner (Revised to include all OPs and associated wastes)

38. **PDO 2 was fully achieved.** With a comprehensive inventory in place, the country was able to carry out the disposal of all obsolete pesticides and associated wastes in the country, including POP pesticides. As with the inventory process, agents carrying out the collection of obsolete pesticides and associated waste were trained in handling and provided PPE and other essential equipment. Baseline cholinesterase testing of field agents and post-collection testing were completed to ensure any exposure to hazardous chemicals could be addressed. Post-collection cholinesterase tests on field agents were conducted in two phases (in October 2020 and January 2021) and no cases of hazardous levels/intoxication were detected. Given that the collection process was undertaken during the COVID-19 pandemic, the collection activities were also undertaken keeping in mind the necessary precautions to ensure the health of all involved in the collection and transport process, including social distancing measures, wearing of face coverings, and increased sanitary practices, for example, handwashing.



PDO 2a: OPs and associated waste safely contained at targeted sites

39. **Obsolete pesticides and associated wastes were safely collected from 52 target sites** and either transported or repackaged as needed based on the state of degradation of the product and packaging. The collection and transport were conducted in accordance with the environmental and social safeguards management strategy/plans developed under the project and included the use of secured trucks and escort by inspectors from the Ivorian Anti-Pollution Center (CIAPOL). The initial assessment made during appraisal had assumed that it would not be possible to dispose of approximately 100 tonnes of obsolete pesticides and associated waste before the completion of the project and this would need to be stored in temporary storage facilities. However, given that the disposal contractor, Ruegg Matray Group (RMG CI), had internationally compliant storage capacity,¹² all collected obsolete pesticides and associated waste could be stored at the RMG site before disposal before the end of the project. Physical and chemical measurements were carried out by the RMG laboratory as soon as the OP stocks arrived on site to ensure (a) compliance with the characteristics indicated on the waste packaging and their chemical characteristics; (b) conformity of the characteristics of obsolete pesticides with the technical specifications of incinerators; (c) the possibility of neutralizing ash, wastewater, and smoke in accordance with the national and international standards; (d) the safety and health of operators and neighboring populations; and (e) the preservation of environmental matrices (water, air, and soil).

PDO 2b: OPs and associated waste safely disposed of

40. **The disposal of all 329 tonnes of collected obsolete pesticides and associated wastes was carried out from May to December 2020.** The disposal process was notable in that it was the first disposal operation conducted with a national firm (RMG CI) rather than a disposal firm located in Europe. The disposal operation was carried out in two phases in accordance with international standards for the incineration of hazardous chemicals, that is, double combustion at high temperature (850–1200°C) (in this case utilizing an ATI HP 1250 incinerator) and purification and neutralization of fumes, wastewater, and ash to ensure environmentally sound disposal. The entire incineration operation was carried out under the control of CIAPOL with the assistance of the internationally recruited pesticides specialist and the project safeguard unit.¹³

Outcome 2: Improved management of obsolete pesticides and associated wastes through strengthening key institutional, regulatory and technology systems needed to prevent future accumulations (Mostly achieved)

41. Outcome 2 was supported through activities undertaken primarily under Components 1: Strengthening the Regulatory and institutional framework and 3: Promotion of alternatives to chemical pesticides and by the formation of the pesticide MIS undertaken in Subcomponent 2.3. The PDO indicator on beneficiaries is linked to this outcome as well as Outcome 1 and is discussed separately below. Otherwise, intermediate outcomes have been assessed to measure this outcome. Three out of five of these indicators were fully achieved and two were partially achieved (Scores: 2 out of 3.)

¹² These standard requirements included waterproof floors, fire-fighting equipment, and appropriate ventilation.

¹³ The RMG disposal report is available on the project site.



42. **Outcome 2 is measured through the following intermediate outcome indicators (IOs):**

- IO1: National strategy for management of OPs and associated wastes implemented (Target: 3 = strategy budgeted and implementation in progress; Actual: 2 = strategy designed and validated)
- IO2: Pesticides Committee functional (Target 3 = PC is fully functional and adequately exercising its responsibilities; Actual: 3)
- IO3: Effective regulatory framework for obsolete pesticides and associated wastes (Target: 3 = legislative/regulatory measures implemented/enforced with the corresponding budget; Actual: 2 = legislative/regulatory measures drafted or revised)
- IO5: MIS on obsolete pesticides and associated wastes established and functional (Target: 3 = MIS functional, durable, in use, and data available to the public; Actual: 3)
- IO6: Implementation of pilots on alternatives to chemical pesticides (Target: 3 = results available and sufficiently disseminated; Actual: 3)

43. The indicators above have been highlighted as key to the achievement of Outcome 2 as they are all essential in moving the country toward the ability to manage pesticides in the longer term and to prevent the future accumulation of obsolete pesticides and associated wastes. As such, the indicator on the pesticide MIS is included as a key indicator of the success of this outcome. Outcome 2 was partially successfully in achieving results and supporting the overall objective of improved management of pesticides. The project fully achieved three of the five indicators focused on strengthening the regulatory, institutional, and technical capacity of the country in managing pesticides and partially achieved the other two indicators.

IO1: National strategy for management of OPs and associated wastes implemented

44. The National Strategy for Management of OPs and associated wastes was validated by key stakeholders and adopted in April 2021. To fully implement the strategy, the Government will need to ensure that the key actors responsible for different aspects of management (MINADER, Ministry of Health and Public Hygiene [MSHP], Ministry of Animal Resources and Fisheries [MIRAH], MINEDD, and Ministry of Communication and Information [MCI]) translate the strategy's recommendations into action plans that can be implemented as part of their role in managing the elements of the pesticide life cycle. Strategy implementation will also require strengthening of the technical capacities of the existing pesticide analysis laboratories, as well as the provision of vehicles and control equipment to the Departmental Committees for the Fight against Illegal Pesticides (CDLPis) in the markets and at the border posts and fully equipping the National Laboratory for the Support of Agricultural Development (*Laboratoire National d'Appui au Développement Agricole*, LANADA) with sampling equipment to enable it to fully play its role in the process of monitoring pesticides in environmental matrices.

IO2: Pesticides Committee functional

45. The PC was deemed fully functional by December 2017 and remained so throughout the life of the project. The project helped strengthen the capacity of the committee through provision of training and support in the first two years of the project such that it was able to carry out its responsibilities



effectively by 2017. The committee was responsible for the review of pesticide issues in the country and specifically responsible for approving the sale and use of specific products for specific uses. Members include the ministries responsible for agriculture, public health, education, scientific research, industry and private sector development, economy and finance, commerce, transportation, defense, internal security, and environment. The chairmanship of the committee is assured by MINADER and the Permanent Secretariat by the Directorate of Plant Protection and Quality Control (*Direction de la Protection des Végétaux et du Contrôle de la Qualité*, DPVCQ). The PC sometimes lacks adequate capacity to collect and analyze pertinent information and make decisions about pesticide approvals.

IO3: Effective regulatory framework for obsolete pesticides and associated wastes

46. Strengthening the regulatory and institutional framework governing pesticides management was achieved through preparation of four draft regulations: (a) a law strengthening punishments for offenses related to obsolete pesticides and associated waste management; (b) a decree regulating the possession, transport, storage, and disposal of pesticides; (c) a decree establishing and operationalizing an Anti-Poison and Toxicology-Vigilance Center; and (d) an interministerial decree establishing a procedure for the management of seized pesticides. The legislation was developed with both expert guidance and input from key stakeholders. All legislation was fully validated through stakeholder consultations and workshops and officially submitted to the General Secretariat of the Government for consideration and adoption in February 2020 by MINEDD. Adoption of such decrees by the Government is a lengthy process, which can take up to two years. Despite project closure, the task team supported by the Country Management Unit is closely following up with the Government to ensure adoption of the decrees by the end of 2021 or first quarter of 2022, to ensure sustainability of project achievements.

IO5: MIS on obsolete pesticides and associated wastes established and functional

47. The MIS on obsolete pesticides is fully established and functional. The information system is cloud based, and the majority of the information is publicly accessible. This internet-based digital information system is the first of its kind in the West Africa subregion and maintains and provides the following information: (a) mapping of pesticide sites; (b) details of stocks and associated wastes, including manufacture and expiration dates; (c) physicochemical characteristics and potential environmental impacts; and (d) information on pesticide value chains and tracking traceability. The pesticide MIS serves as a cornerstone for long-term integrated pesticide management in the country. The MIS initially set up at BEERA's offices, has been fully transferred from the project to Government partners, and is now co-managed by MINADER and MINEDD through DPVCQ. Annual operational costs estimated of CFAF 60 million per year has been transferred to the national budget.

IO6: Implementation of pilots on alternatives to chemical pesticides

48. The project successfully completed this activity which has the potential to contribute substantially to both improved pesticide management and the sustainability of results. In 2019, the project undertook the following: (a) prepared a document on the technical plan for demonstration fields in cotton, cocoa, and food products; (b) established national design and supervision committees for field schools; (c) selected the Ivorian Association of Agronomic Sciences (*Association Ivoirienne des Sciences Agronomiques*), LANADA, and the Center of Excellence for the Development of Biopesticides (*le Centre d'Excellence pour le Développement des Biopesticides*, CEA-CCBAD) to establish and monitor the fields schools; and (d)



identified a cocoa-growing area in the town of Azaguié, located in the Agnéby-Tiassa Region, southeast of the country, as a site for activities on studying and testing possible natural alternatives to chemical pesticides. Key steps were undertaken before carrying out the testing, including baseline sampling of soil, water, and cocoa pods for the environmental monitoring of the plot and the local management committee was established. Three treatments with two biopesticides (Trade names: NECO and ASTOU[N]) against brown rot of cocoa pods (*phytophthora palmivora*) were carried out in the pilot sites. In addition, 100 cocoa farmers of the Agnéby farmers association were trained in good pest management practices, calibration of treatment equipment, and the use of biopesticides and the results of the analysis of matrices taken from the field, available in the LANADA report, showed very low concentrations of pesticide molecules (values below the quantification threshold), effective treatment of brown pod rot, and even increased yields in certain cases. A guide on the use of biopesticides for the cocoa sector was also developed and disseminated under the project with the aim of creating long-term environmental sustainability of the sector.

49. The project held a validation workshop in December 2020 where results were fully disseminated to stakeholders. Participants expressed their appreciation for the activities and training received under the component and indicated their interest in continued support for further dissemination of results and the adoption of results by cocoa producers. This will be supported further by MINADER through DPVCQ based on handover protocol.

50. The final PDO-level indicator(s) can be seen as an overarching measure of success as it reflects on both Outcomes 1 and 2 with the aim of measuring whether the benefits of improved management accrue to all stakeholders.

- PDO 3: Direct project beneficiaries (Target: 100,000; Actual: 153,279.00)
 - PDO 3a: Of which are women (Target: 50 percent; Actual: 51 percent)

51. **PDO 3 was fully achieved.** The project exceeded its goal of reaching direct beneficiaries by over 50 percent and slightly exceeded its goal of reaching 50 percent of women. Direct beneficiaries are those whose health and environmental risks have been reduced as a result of protection from or elimination of obsolete pesticides and associated wastes or whose income has increased (or expenses decreased) as a result of improved pesticide use. The data used to inform this indicator were obtained from (a) information meetings and workshops that enabled beneficiaries to derive economic and health benefits from the responsible use of pesticides; (b) information and awareness-raising sessions conducted by inventory agents for pesticide holders during the identification of depots and the inventory, which enabled people close to pesticide depots to strengthen practical measures for their protection; and (c) the collection of obsolete pesticides and associated wastes that enabled holders and their neighbors to be preserved from health hazards and the contamination of their immediate environment. A total of 153,279 direct beneficiaries were reached, thus exceeding the target value (153 percent). (See a breakdown of beneficiaries in annex 6b.)

Justification of Overall Efficacy Rating

52. Despite some delays, higher-than-expected inventory costs, and some FM issues, the project was able to take the necessary steps to get back on track and achieve the important goals of Outcome 1. Not only did the project successfully and safely complete an inventory of over 4,000 sites, but it did so using



state-of-the-art digital technology and cloud-based programs serving as a model for future inventory and MIS development in the region. This comprehensive survey allowed for 329 tonnes of obsolete stocks and associated wastes (over 150 percent of the estimated target) to be permanently eliminated thus no longer causing harm to human and environmental health. The appropriate disposal of obsolete pesticides and associated wastes also eliminated the threat of release of unintended persistent organic pollutants (U-POPs) such as dioxins and furans through potential improper disposal, thus eliminating their persistent threat to global health. In addition, the entire operation, including the final disposal, was conducted using national expertise with a national disposal company meeting international standards—the first operation of its kind in West Africa.

53. With regard to Outcome 2, the project succeeded in establishing a fully functional Pesticide Committee (PC); created an impressive and, as much as possible, transparent pesticide MIS relying on state-of-the-art digital technology; and successfully completed pilots to test the effectiveness of biopesticides in the cocoa sector with the possibility of transformational results. The project successfully drafted and submitted four key pieces of legislation for the improvement of pesticide management in the country and formulated a national pesticide strategy, but they are not yet fully adopted.

54. The project activities positively affected over 150,000 direct beneficiaries with more than 50 percent being women (exceeding both targets), thus helping to safeguard a wide range of beneficiaries (for example, farmers, community members, women using empty pesticide containers, workers, and so on) from the direct and indirect health impacts of poorly stored and obsolete pesticides and associated waste. Given the above impacts and the fact that the project met or surpassed all six of its PDO-level indicators, the efficacy of the project is considered Substantial.

C. EFFICIENCY

Assessment of Efficiency and Rating

Rating: Substantial

Summary

55. Typically, project economic analysis should include the cost of obsolete stock creation, management, and disposal, in addition to quantification of the externalities. However, due to the absence of reliable data on dose response and the impact of obsolete pesticides, accurate cost-benefit estimates are not feasible in this case. The analysis is also complicated by the use of illegally imported pesticides, which are estimated to represent 40 percent of the total market for pesticides in Côte d'Ivoire, suggesting a rough estimate of total pesticide use of about 20,000 tonnes per year.

56. Given the above limitations, the project economic assessment at this stage focuses primarily on a cost-effectiveness analysis (cost per unit). The FAO cost estimates for the disposal of obsolete pesticides serve as a reference value—between US\$3 and US\$5 per kilogram or liter of pesticide or contaminated material.¹⁴ The cost varies with the location, condition, and type of waste and the methods used for its destruction.

¹⁴ FAO (Food and Agriculture Organization). 2001. *Baseline Study on The Problem of Obsolete Pesticide Stocks*.



57. As a result of the project, 329 tonnes of obsolete pesticides and associated wastes were disposed of, with a total cost of US\$1,184,070. The cost of disposing of obsolete pesticides and associated waste was estimated at the same level as at the appraisal or US\$3,599 per ton, at the lower end of the FAO estimates and compatible to the relative disposal cost in similar projects (see table 4.1 in annex 4). Cost-effectiveness was affected by the larger-than-usual number of sites visited in the field—over 10 times that of Mali, for example.

58. While an accurate assessment of the ex-post cost-benefit analysis at this stage is not feasible, there is a potential to conduct this exercise after the pesticides Management Information System becomes fully operational and includes a complete set of data covering country wide facilities and agricultural producers.

59. Based on existing literature on the costs of pesticide use in Mali¹⁵ and in the absence of specific data on the economic, health, and environmental damage costs associated with obsolete pesticides, rough estimates of the cost-benefit analysis demonstrate the overall project efficiency. Assuming a discount rate of 12 percent and a project life of 20 years and considering that the Government will continue disposal of obsolete pesticides at the same level, the project net present value (NPV) is estimated at US\$80.47 million, the internal rate of return (IRR) at 14 percent, and the benefit-cost ratio at 4.5 percent.

60. The assessment of IPM established by the project and practical application of the biopesticides use in cocoa production can also be applied to the analysis. For example, rough estimates made under the Côte d'Ivoire Forest Investment Project 2, for mixed application of cocoa agroforestry and biopesticides demonstrate significant NPV and internal economic rate of return (IERR) of 43 percent with a discount rate of 12 percent. Environmental benefits valued at market price and sensitivity analysis indicate that results remain robust under various stress-test scenarios (price variations from 10 percent to 25 percent and discount rates 6 percent and 12 percent).¹⁶

Implementation Efficiency

61. The project was approved on August 25, 2015 and planned to be closed in October 2020. Due to delays in implementation and the COVID-19 pandemic, the actual closing date was on June 30, 2021. The implementation of the project was affected by two factors: (a) a six-month delay in the annual budget allocation by the Government to the project for the implementation of the 2020 annual work plan—this delay was due to the setting up of a new budget allocation system at the national level and (b) the restrictions of movements due to COVID-19 which further slowed down the project implementation pace. The extension enabled the Project Implementation Unit (PIU) to finalize the sustainability instruments of the project aiming to prevent new accumulation of obsolete pesticides and associated wastes through (a) development (although not yet adopted) of a series of decrees on safe transportation, storage, and

¹⁵ Bourguet, Denis, and Thomas Guillemaud. 2016. "The Hidden and External Costs of Pesticide Use." In *Sustainable Agriculture Reviews*, edited by Eric Lichtfouse, 35–120. Springer International Publishing.

¹⁶ In addition, preliminary Economic and Financial Analysis for the Côte D'Ivoire Cocoa Integrated Value Chain Project (in a pipeline) demonstrated that combination of these applications could result in significant positive project NPV and IRR (48 percent), under the discount rate of 12 percent.



elimination of pesticides and management of non-homologated pesticides¹⁷ and (b) deployment at the national level of a web-based PSMS which will enable MINADER and its 29 regional directorates to better manage entry of pesticides in the country and take timely actions to prevent accumulation of new obsolete pesticides. Though higher than in similar projects, project management costs can be explained by the expanded, unexpected scope of inventory and the need to monitor the entire disposal process as it was nationally based, both of which created an increased need for M&E.

62. Given (a) the cost-effectiveness of the disposal of obsolete pesticides under the project compared to other countries (table 4), (b) the high NPV and IRR of the disposal investment when using a cost-benefit analysis (paragraph 59), and (c) the higher-than-projected inventory outputs (paragraph 60), the project efficiency is rated Substantial.

D. JUSTIFICATION OF OVERALL OUTCOME RATING

Rating: Satisfactory

63. While the project struggled with administrative and financing issues and delays during the life of the project, the World Bank team and the PIU were able to work together to overcome most of these challenges and yield satisfactory, even commendable, results. The project undertook a comprehensive inventory that was about 10 times larger than most project inventories, visiting over 4,000 sites versus a more typical 400 sites or fewer. Teams were trained in and utilized new digital tools and technology to create a 'living' inventory, the data of which could be easily fed into the new pesticide MIS and capable of creating projections with regard to expected associated waste in the future, among others. Capacity was built among teams for utilizing new data tools and updating and validating data, and for the first time, transparency of information was built into the system, allowing the public to view over 80 percent of the gathered data. This digital inventory utilizing cloud-based tools was the first of its kind in the subregion and may serve as a model for future programs in the region. In addition, the project undertook the first fully nationally based collection and disposal of obsolete pesticides and safely disposed of 329 tonnes of obsolete pesticides and associated wastes (153 percent of the initial target). While the legislation drawn up under the project is yet to be adopted, the overall project results are excellent with all six of the PDO indicators being met or exceeded.

64. **The project's efficiency was also Substantial.** Despite the higher-than-normal project management costs (implementation efficiency), the overall cost-effectiveness was in line with similar projects and the cost-benefit estimates for the disposal (and avoided costs of obsolete pesticides) are both high. Given the positive outcomes for both effectiveness and efficiency and the continued high relevance of the PDO, the project is rated Satisfactory.

E. OTHER OUTCOMES AND IMPACTS (IF ANY)

Gender

65. Along with the dangers of obsolete pesticides and associated wastes for the health of soil and water to communities living in their proximity, empty pesticide containers also pose a significant threat

¹⁷ (From the project efficacy assessment section) - Four draft regulations: (a) a law strengthening punishments for offenses related to obsolete pesticides and associated waste management; (b) a decree regulating the possession, transport, storage, and disposal of pesticides; (c) a decree establishing and operationalizing an Anti-Poison and Toxicology-Vigilance Center; and (d) an interministerial decree establishing a procedure for the management of seized pesticides.



to health, particularly to women who are most apt to use them for food storage and in market settings. The project was able to successfully support women's participation in mitigating health and environmental risks posed by pesticide residues by incentivizing them to abstain from using old pesticide containers for water or food storage and ultimately reducing their exposure and that of their families to dangerous chemicals. Project activities, such as awareness raising through information meetings and workshops conducted by inventory officers for pesticide holders during the identification of pesticides and the inventory, were particularly successful in working with female stakeholders.

Institutional Strengthening

66. The project was highly innovative in its inventory methodology, pesticide MIS, and disposal process (the use of a national team and disposal contractor), all of which had a positive effect on strengthening of the institutions involved in the process. In addition to project activities particularly aimed at institutional strengthening, these innovative approaches meant that staff from a range of agencies and ministries have gained on-the-ground experience in use of the latest digital and cloud-based systems as well as monitoring of the safe and effective disposal of hazardous chemicals. This experience improves the potential for sustainability of results of the project given the increased capacity of teams and also has the added benefit of possible regional and subregional exchange of experience to inform other countries' future operations.

67. Through establishing committees for the control of illegal pesticides and developing a national pesticide management strategy, the project also significantly improved institutional capacity for the ongoing management of pesticides. Under the project, 108 CDLPs were set up in February 2017 by the interministerial decree and are fully functional. This has led to the significant reduction of fraud in pesticide commerce and will in turn benefit future projects of similar nature, both from the World Bank and/or from other donors once adopted.

Mobilizing Private Sector Financing

68. Not applicable.

Poverty Reduction and Shared Prosperity

69. Not applicable.

Other Unintended Outcomes and Impacts

70. Through its pilot activities under Component 3: Promotion of alternatives to chemical pesticides, the project not only succeeded in successfully testing alternatives to chemical pesticides, but in certain cases, the use of biopesticides also resulted in higher yields. This could have transformational impact on the cocoa sector and the cocoa value chain as, if proven effective on a larger scale, producers could see both a drop in expenditures for costly chemical pesticides and an increase in income from higher yields. (See the Efficiency Analysis for additional information.)

71. While not 'unintended', a particularly positive aspect of the project was its ability to leverage substantial parallel co-financing and effectively collaborate with a range of development partners in both



the public and private sector, including (a) initiatives supported by CropLife CI totaling US\$2 million; Promotion of Agricultural Value Chains and Biodiversity Project of the German International Development Agency (*Gesellschaft für Internationale Zusammenarbeit, GIZ*) totaling US\$6 million; the Development and Debt Contract (*Contrat Dette Développement, C2D*) Project of the French government totaling US\$6 million; and the World Bank-financed 'Agriculture Sector Support Project' totaling US\$14 million. These partners provided key inputs throughout project implementation, particularly with regard to technical support and assistance. CropLife-CI joined the technical committee supporting the project, attending all its meetings throughout the life of the project. In addition, CropLife-CI provided technical assistance through conducting workshops for key agency staff and stakeholders on best practice for pesticide use and the safe management of pesticides and associated waste. The World Bank's Agriculture Sector Support Project also provided technical assistance through workshops conducted for farmers in the project intervention area and through establishing and training community committees for the safe collection of associated waste.

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

75. **Realistic objectives.** The PDO was clear, not unreasonably ambitious given the funding available, and reflected the need for management tools and capacity building that could lead to improved and more comprehensive efforts related to integrated pesticide management. The PDO was broad enough to encompass this capacity and strengthening elements of the work as well as the need to inventory, collect, and dispose of obsolete pesticides and associated waste.

76. **Simple design.** The design focused on a few clearly defined components with recognition of the need for prevention and disposal activities for sustainable management of pesticides. The chain of actions and results was clear and straightforward, enhancing the ability to monitor results.

77. **Level of commitment and stakeholder engagement during project preparation.** Evidence from early Implementation Status and Results Reports and Aide Memoires during the preparation phase demonstrated a significant involvement of stakeholders early in the design and preparation process. The PDO was also designed to reflect the broad need for improved pesticide management to meet the needs of all relevant stakeholders.

78. **Adequacy of risk and mitigation measures.** Initially, the overall project risk was rated Substantial due to risks mainly seen in a lack of capacity to meet the project objectives and in safeguards due to the high-risk nature of the collection and disposal operation. The preparation phase adequately assessed the risks and put mitigation measures in place, in particular structuring the project so that capacity was strengthened early through training and by placing the project's administration in an existing Project Coordination Unit with ongoing experience in managing a World Bank project (FCPF REDD+ Project¹⁸). The project also anticipated that extensive training to be financed under the project will build up the capacity of key actors in both MINEDD and MINADER. Finally, project design ensures that an international expert was in place to oversee the disposal operations along with the Project Coordination Unit staff and

¹⁸ Forest Carbon Partnership Facility Reduced Emissions from Deforestation and Degradation+.



safeguards experts. With consistent effort, particularly on the part of the World Bank’s supervision team, these mitigation measures were successful, and the risk rating dropped to Moderate by the end of the project.

B. KEY FACTORS DURING IMPLEMENTATION

Factors Subject to the Control of the Government and/or Implementing Entities

79. The main factor within Government control which affected the overall implementation of the project was Government commitment beyond the immediately involved ministries and directorates. Difficulties in accessing the co-financing commitments made by the Government during project preparation and at approval created substantial challenges and additional costs, potentially placing both the health of field agents (delays in testing) and the effectiveness of the inventory (seven-month hiatus) at risk. In addition, these created administrative costs both at the World Bank and the IPMU, requiring additional staff time in devising alterations to budget allocations, restructuring, and contracting issues with regard to the delayed inventory process. In the end, the Government came forward with about 55 percent of its initial commitments (approximately US\$2.1 million of an original commitment of US\$3.7 million). This also meant that financing for certain activities was reduced, for example, some public awareness and communications efforts were curtailed, and the disposal operation budget was reduced as well as that of Component 3. In the case of the disposal operation, the work could be carried out effectively given that RMG CI had sufficient storage capacity up to international standards, but it meant that the possibility of Government-managed storage could not be developed. (Such an activity was dependent on identification as a need in the national pesticide strategy, but the lack of Government funding for this component limited the possibility). For Component 3, activities were revised and possible test sites for cotton and food crops were dropped to focus on the cocoa sector. Results for that sector were satisfactory. (See ‘Sustainability’ discussion for information on the lack of adoption of key legislation.)

Factors Subject to World Bank Control

80. In designing the project management component of the project, the World Bank team and other partners determined that the existing PIU coordinating the FCPF REDD+ project would be in the best position to manage PROGEP-CI given its experience with World Bank procedures and the potential for economies of scale. In practice, the ability of the integrated PIU to come up to speed quickly and appropriately carry out reporting and administrative tasks with regard to financial reporting, disbursements, and procurement proved to be limited. These difficulties were slowly resolved over the life of the project, but the IPMU would likely have benefited from additional training and month-to-month support, particularly on FM reporting and management, during the first years of the project to establish a stronger base capacity. The second TTL and team members worked closely with the IPMU to improve operations and succeeded in turning the project around in its last two years of implementation from one that was in danger of being a failed project to one which fully met its PDO.

Factors Outside the Control of the Government and/or Implementing Entities

81. The country suffered from two exogenous impacts during the life of the project. The first was due to delays caused by civil unrest following national elections in the autumn of 2020 which created



challenges and delays of project activities, particularly related to final disposal processes. The second was the COVID-19 pandemic which, from March 2020, affected the ability to have in-person meetings and workshops and conduct field missions and site visits and for the World Bank team to support the country with in-person supervision missions. The project team adapted as quickly as possible to using videoconferencing and other virtual tools and instituted additional health protocols for agents and workers in the field, ensuring masks were worn and other distancing measures were undertaken whenever possible. The Government also requested an extension of the closing date from October 31, 2020, to June 30, 2021, which assisted the country in meeting the project objectives despite these factors.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

M&E Design

82. At the preparation stage, the team identified the activities, desired outputs, and critical assumptions to provide sufficient and necessary information and data on obsolete pesticides to meet the needs and demands for evidence-based policy formulation in the sector as well as facilitate assessment of progress against the PDO. Most of the project indicators were clear, measurable, and time-bound and linked well to the overall project outcome as they measured the desired results/short-term outcomes of activities. The Project Implementation Manual included an M&E Manual with a detailed explanation of each indicator, how it was defined, and how it should be measured and interpreted. A dedicated full-time monitoring and evaluation (M&E) specialist was a member of the IPMU (and slated to work on both PROGEP-CI and the FCPF REDD+ Project). The M&E specialist was responsible for maintaining the projects' data on all indicators and coordinated the inputs of the many actors who were responsible for collection and interpretation of data, primarily those of MINEDD and MINADER.

M&E Implementation

83. The implementation of the M&E system was generally Moderately Satisfactory to Satisfactory throughout the implementation of the project. While the monitoring of the results indicators and quality of reports was generally good and sufficient for tracking the progress of the project activities against the PDO and intermediate-level indicators, there were some issues in creating a centralized system for archiving of key project documents (for example, the Project Appraisal Document [PAD], Grant Agreement, Aide Memoires, and Monitoring Reports) which may have contributed to the IPMU's challenges in tracking budgets by component. This issue was identified and rectified at the midterm review.

84. Utilizing the annual program and budget, the M&E team undertook essential tracking of contracting, procurement activities, implementation of project activities, and site visits, as necessary, to gather key information to be included in the detailed biannual activity reports, as well as feed into the overall Results Framework for the project. The M&E specialist provided key inputs to supervision missions and also supported the monitoring of the inventory and disposal process.



M&E Utilization

85. M&E for the project was supported by a monitoring committee whose work was important in identifying issues during project implementation, particularly with regard to the need to adapt activities given the shortfall in Government funding. In addition, the M&E process was extremely valuable in ensuring the contractor met all requirements with regard to compliance with the Environmental and Management Plan. The M&E team identified key activities being affected by the lack of Government budget and assisted the overall team in identifying how best to modify activities while still meeting results.

Justification of Overall Rating of Quality of M&E

Rating: Satisfactory

86. The execution of the M&E system was generally moderately satisfactory to satisfactory through the project and while there were some issues with archiving and tracking of data, the general results, particularly given the range of activities to be monitored, were satisfactory.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

Environment and Social

87. **Safeguard compliance was overall Satisfactory.** The project was classified as environmental category A (full assessment) and triggered two World Bank safeguards policies: OP/BP 4.01 (Environmental Assessment) and OP 4.09 (Pest Management). An overall Environmental and Social Impact Assessment was carried out, leading to the preparation of an ESMF including an Environmental and Social Management Plan (ESMP). The ESMP served to guide the environmental and social risks management during project design and implementation, including describing procedures and preventive/mitigation measures to manage environmental and social risks associated with operations related to (a) in situ inventory of obsolete pesticides and associated wastes (without collection and storage on temporary sites), (b) transportation of obsolete pesticides and associated waste and treatment of polluted sites, (c) disposal of obsolete pesticides and associated waste, and (d) response to emergency situations on sites identified by the inventory. An ESMP was included in the ESMF. Given that storage and disposal took place at the RMG site, which met all national and international standards for storage and disposal of obsolete pesticides, no additional Contractors ESMP was deemed necessary. RMG, its facility, and site storage capacity had previously been verified and approved by MINEEDD and the environmental safeguards specialist from the World Bank also verified compliance before, during, and after disposal to ensure safe operation and post-disposal procedures.

88. The different phases of the collection, transport, and disposal of obsolete pesticides and associated waste were successfully carried out, without incident, and in strict compliance with the World Bank's safeguards policies and environmental health and safety/occupational health and safety guidelines. All the operations carried out passed off under the CIAPOL's team and specialists of PROGEP-CI supervision. In addition, the requirements for the protection of the environment, health and safety of workers carrying out the different phases of disposal of obsolete pesticides and associated wastes, as well as communities were incorporated and complied with. The post-inventory cholinesterase tests were completed with no case of intoxication detected. Lastly, no accidents or incidents were reported during the process. The removal of obsolete pesticides and associated wastes from each site also took account



of the current health crisis resulting from the COVID-19 pandemic in Côte d'Ivoire, by applying the measures issued by the Government (prevention barrier measures and World Health Organization good practices).

89. Furthermore, the residual activities were limited to the follow-up of the cleanup of the obsolete pesticides and associated wastes removal or collection sites before closing the project. The verification of sites cleaning would be ensured by an expert, based on the agreement with the FAO and the support of the CIAPOL.

90. Safeguard missions were conducted by an environmental and social World Bank safeguards specialist to support implementation during the lifetime of the project and mission findings were recorded in the Aide Memoires. A grievance redress mechanism was put in place, but there is evidence that it was not fully effective or compliant with World Bank standards as the IPMU staff reported that oral complaints had been received at times but not recorded. The team informed the IPMU that oral complaints must be registered. Some concerns were also raised with regard to the compliance of workers with health measures which required additional oversight. Finally, the absence of a social specialist in the IPMU until May 2020 and the impact of COVID-19 on travel meant that supervision missions were suspended for a period, potentially affecting the ability to fully monitor all safeguards instruments during this period.

Financial Management

91. While the project had some difficulties with reporting and withdrawal applications in the first years of the project, FM performance improved over time and the final global performance of FM is rated Satisfactory. An FM specialist based in the World Bank office in Abidjan carried out regular implementation support missions. Several positive points have been relevant to the FM aspects of the project: (a) the interim financial reports non-audits have all been prepared and submitted by the deadlines agreed in the financing agreements and were all deemed acceptable and (b) the provisional audit reports were submitted to the project on time by the end of each fiscal year and the FY20 audit report was submitted before the June 30, 2021, deadline. However, the majority of the reports were issued with qualified opinion due to the delay in justification of the accounts-receivable balance.

Procurement

92. **Procurement was rated Moderately Satisfactory.** Procurement activities were implemented based on the applicable Procurement Guidelines at the time of project appraisal and in accordance with the Procurement Plan, which was duly updated, reviewed by the World Bank, and disclosed regularly. The last post review was conducted in March 2019 and found that procurement arrangements were still in place and in line with the workload. Procurement process and contract administration were reviewed, and the main shortcomings are as follows:(a) inaccurate evaluation criteria, (b) missing documents in the Call for Expressions of Interest, (c) the evaluators systematically averaging their score instead of harmonizing it, (d) long procedures, (e) errors in the appraisal report, (e) cost overruns, and (f) exceeding of execution deadlines.



C. BANK PERFORMANCE

Quality at Entry

93. The World Bank team worked well with both project stakeholders and other donors to create a clear and simply designed project with a well-structured Results Framework. In particular, the work with other World Bank projects and development partners active in the country and sector allowed the project to leverage a significant amount of parallel financing and ensured that project activities were supported by existing initiatives and project activities would be complementary to other country operations rather than redundant. Collaboration and parallel financing were provided by (a) initiatives supported by CropLife CI totaling US\$2 million, GIZ's Promotion of Agricultural Value Chains and Biodiversity Project totaling US\$6 million; the C2D Project of the French government totaling US\$6 million; and a large World Bank-financed Agriculture Sector Support Project totaling US\$14 million. In addition, the World Bank put in place risk mitigation measures which, over the life of the project, led to a significant decrease in measured risk.

94. The World Bank also identified up front the need for institutional support to the IPMU to facilitate project implementation as follows:

- **Procurement.** Implementation support included (a) providing training to the IPMU staff as needed, (b) reviewing procurement documents and providing timely feedback to the IPMU, (c) providing detailed guidance on the World Bank's Procurement Guidelines to the IPMU, and (d) monitoring procurement progress against the detailed Procurement Plan.
- **FM.** Supervision of the project's FM system included, but was not limited to, accounting, reporting, and internal controls.
- **Environmental safeguards.** The World Bank's safeguards specialists in the project task team supervised the implementation of the environmental safeguards instruments developed during project preparation and provided guidance to MINEDD as needed. The World Bank's environmental specialist based in the Abidjan country office provided training on the World Bank's safeguards policies and procedures for the project implementation team of the IPMU as well as for the technical team at MINEDD.
- **Anticorruption.** The World Bank team supervised the implementation of the agreed anticorruption guidelines and provided guidance in resolving any issues identified.

95. Given the issues throughout the project with FM, the World Bank may have needed more investment in FM supervision and training to get the IPMU team up to standard.

Quality of Supervision

96. The World Bank conducted biannual supervision/implementation support missions (in total eight during the lifetime of the project). A midterm review mission of the project took place in May 2019. With just one change in task team leadership in 2018, the project enjoyed stable project management. The November 2018 mission was attended by both the outgoing and incoming TTLs, allowing for a smooth



transition. In addition, the GEF coordinator was regularly consulted to help ensure continuity. Supervision missions included field visits to confirm progress on the ground, and the task team also relied on the PIU to monitor and report on project implementation. Implementation Status and Results Reports and Aide Memories were candid and of high quality. These documents systematically recorded challenges encountered, critical milestones, key decisions, and next steps including timelines for implementation and information on project field visits and stakeholders met. Fiduciary aspects were regularly supervised by the FM and procurement specialists who also supported the IPMU with guidance and technical assistance. The challenges that were hindering the project to move forward were addressed on time such as the lack of counterpart funding and the official nomination of the coordinator of the PIU. The TTL and team also increased supervision through videoconferencing and monthly calls to help stay on top of implementation challenges and ensure the PDO could be achieved.

Justification of Overall Rating of Bank Performance

Rating: Satisfactory

97. Although the project had some administrative and budget issues related to Government co-financing which translated to some difficulties with implementation delays and scope, the World Bank team consistently worked with the IPMU to resolve issues and was able to assist the country in meeting or exceeding all five PDO-level indicators. The overall rating of World Bank performance is Satisfactory.

D. RISK TO DEVELOPMENT OUTCOME

98. The project successfully and safely collected, transported, stored, and disposed of 329 tonnes of obsolete pesticides and associated waste. These pesticides no longer pose a threat to human and environmental health in the country and in the case of the POP pesticides, no longer pose a threat to human and environmental health at the global level. Through conducting a comprehensive inventory, establishing a functional and state-of-the-art pesticide information system, undertaking and monitoring a nationally contracted disposal process, and revitalizing and establishing a PC and a national pesticide strategy, the country not only helped strengthen institutions vital to the improved management of pesticides but also substantially built capacity within key agencies and ministries. These accomplishments all contribute positively to the future sustainability of the development outcomes.

99. However, the fact that the Government has not yet adopted key regulations developed under the project could hinder effective enforcement and management of pesticides and increase the risk of the accumulation of OP stocks in the future if the decrees are not taken in the near future. The Government will also need to ensure ongoing budgetary support to the pesticide MIS for it to continue to provide added value and support improved pesticide management in the longer term. The responsibility for the MIS has been transferred fully to the relevant department in MINADER.

V. LESSONS AND RECOMMENDATIONS

100. **Lesson 1.** With internationally recognized technology and full monitoring of disposal activities in accordance with environmental standards, it is possible to dispose of obsolete pesticides and associated wastes safely and effectively within the subregion. The disposal firm, RMG CI, was able to effectively and safely dispose of the obsolete pesticides and associated wastes inventoried and collected throughout the



country. Careful monitoring by an international disposal expert, safeguards specialists, and technical staff was an essential element to ensure environmentally sound disposal. Regional disposal was also made possible because the make-up of obsolete pesticides (that is, limited POPs identified) allowed for regional disposal.

- **Recommendation.** Pursuant to international and regional agreements (such as the Basel, Rotterdam, and Bamako Conventions) and appropriate environmental standards and safeguards, other countries in the subregion could consider utilizing national or subregional disposal resources. Considering the make-up, amounts, and safe transport issues, similar World Bank projects should be encouraged to explore the possibility of regional disposal (in Côte d’Ivoire and elsewhere, if appropriate). Cost of disposal was within a reasonable range and given that FAO pricing models have not changed over the past 10–15 years and given additional experience, the cost of disposal has the potential to drop further with economies of scale and additional experience.

101. **Lesson 2.** Project activities which focused on testing alternative approaches to manage brown pod rot (non-chemical interventions/biopesticides) and providing training on measures that are technically, environmentally, and economically feasible to reduce reliance on toxic pesticides at farmer field schools in targeted cocoa growing areas were successful and can be a key part of risk reduction and promotion of alternatives, though not sufficient by themselves for a fully integrated approach to protection of crops and environmental health.

- **Recommendation.** Raising awareness of pesticide risks at all levels (farmers, pesticide dealers/retailers, regulators, and consumers) and promoting integrated approaches to pest management will help reduce/eliminate reliance on toxic chemical pesticides. Hence, it is recommended to mainstream these IPM approaches into crop production and protection activities for long-term sustainable production and risk reduction. The lessons from PROGEP-CI can be combined with those from other regional programs such as the Cerex-Locutox laboratory on controlling the maximum pesticide residue limits in food crops and the West Africa Cocoa IPM and the FAO Integrated Production and Pest Management in Africa for long-term sustainability of the results.

102. **Lesson 3.** Access to digital technology, tablets, and cloud-based operations can help create data collection systems that are more accurate with more easily transferred data from the field and between applications. Digitally driven information tools for pesticide inventories and pesticide information systems yield greater flexibility in terms of data analytics, updating, and projection tools. The country utilized and built effective digital inventory/pesticide information system and tools that yielded positive results, increased transparency, and increased capacity among staff in a state-of-the-art system. Effective information systems can also be the first step in better understanding the hidden/external costs associated with the use and improper disposal of the obsolete pesticides (economic, environmental, and health impact due to leakage and use). While not a substitute for field operations, the use of ‘voluntary disclosure’ in inventories was found to be an efficient and cost-effective way to gather data from certified distributors.

- **Recommendation.** Other countries in the subregion should consider Côte d’Ivoire’s use of these digital tools and systems as they look to upgrade their own pesticide information



systems, particularly the paper-based systems previously developed by the FAO. Departments with staff trained in data collection methodologies, data transfer, validation, and analysis should consider providing support and training to other agencies which could benefit from the technology within Côte d'Ivoire and within the larger subregion. The use of 'voluntary disclosure' should also be encouraged as an efficient inventory tool for already identified and certified pesticide distributors.

103. **Lesson 4.** Government budget commitments are subject to fiduciary constraints within budget years, changes in staffing, and other conflicting demands. These challenges are seen throughout the portfolio of projects and, in the case of PROGEP-CI, the difficulties in obtaining Government financing to co-fund pesticides inventory delayed the conduct of the inventory and affected project implementation.

- **Recommendation.** Given the challenges faced in mobilizing funds, it is suggested that counterpart financing be focused primarily on in-kind contributions and more feasible monetary contributions. Government financing should typically be limited to operating costs such as staff salaries, accommodation, and related utilities for PIUs.

104. **Lesson 5.** Early collaboration with other development partners in both the public and private sectors can yield both substantial leveraged financing to support project objectives and improved project design and reduced replication of activities.

- **Recommendation.** Project preparation should continue to emphasize collaboration and cooperation with a range of development partners and stakeholders to improve project design and outcomes and leverage financing.



ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: Improved management of obsolete pesticides and associated wastes

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Data on OPs and associated wastes publicly accessible	Percentage	0.00 01-Jul-2015	80.00 01-Jul-2015		81.00 30-Jun-2021

Comments (achievements against targets):

A national inventory of pesticides was carried out by 180 agents recruited by the project. 4,071 pesticide deposits were identified, in which 6,052.41 tonnes of pesticides were collected. This collection operation was carried out on paperless forms through digital tablets. At the end of this process, which lasted 6 months, a database was created. It includes 21 types of information grouped into 4 categories: C1: sites: list of pesticide depot sites C2: Deposits : list of deposits, obsolete pesticides by deposits, diagram of the environmental risk by deposits, mapping of deposits C3: Pesticides: list of pesticides, list of active ingredients, list of suppliers, list of manufacturers, list of obsolete pesticides, list of prohibited active ingredients, the quantity of obsolete pesticides by region, the quantity of obsolete pesticides by criteria, quantity diagram of obsolete pesticides, mapping of obsolete pesticides by region. C4: Other forms: list of veterinary products, list of empty packaging, list of contaminated equipment, contaminated soil, contaminated materials, contaminated construction materials. Of the 21 types of information, 4 (or 19%) are not accessible to the general public because of their sensitivity and their link with the private sector. These are: (i) obsolete pesticides by deposits; (2) list of manufacturers; (3) quantity of OPs and associated waste by region, and (4) mapping of OPs and associated waste by region. 81% of the information on obsolete pesticides and associated waste is available to the general public through the PROGEP-CI website www.progepci.uiapenvironnement.ci



Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
POPs & POPs waste destroyed, disposed or contained in an environmentally sound manner	Metric ton	0.00 01-Jul-2015	250.00 01-Jul-2015		329.00 30-Jun-2021
OPs and associated waste safely contained at targeted sites	Metric ton	0.00 01-Jul-2015	100.00 01-Jul-2015		329.00 30-Jun-2021
OPs and associated waste safely disposed of	Metric ton	0.00 01-Jul-2015	150.00 01-Jul-2015		329.00 30-Jun-2021
<p>Comments (achievements against targets): 6052.41 inventoried pesticides were reviewed to determine the quantity of obsolete pesticides according to predefined criteria (obsolete, fraudulent, prohibited by law) which resulted in 128.56 tonnes of obsolete pesticides and 10.69 tonnes of empty packaging. At the same time, a "voluntary declarations" operation was initiated which enabled the inventory of 189.75 tonnes of obsolete pesticides. 318.3 tonnes of obsolete pesticides and 10.69 tonnes of associated waste were eliminated in the incinerators of the company RMG -CI type ATI HP 1250 at very high temperature (850 to 1200 ° C) in accordance with the international and national regulations in force for the protection of the environment and human health. RMG was able to eliminate 329 tonnes of obsolete pesticides and associated waste (empty packaging). The entire incineration operation was carried out under the control of CIAPOL and the assistance of the pesticides specialist and the project safeguard unit.</p> <p>The final target value was was exceeded at 131.6%.</p>					



Objective/Outcome: Benefits of improved management accrue to all stakeholders

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Direct project beneficiaries	Number	0.00	100000.00		153,279.00
		01-Jul-2015	01-Jul-2015		30-Jun-2021
Female beneficiaries	Percentage	0.00	50.00		51.00

Comments (achievements against targets):

The data used to inform this indicator were obtained from (i) information meetings and workshops (ii) information and awareness sessions conducted by inventory officers for pesticide holders during the survey, (iii) identification of depots and (iv) collection of Obsolete Pesticides and Associated Waste. A total of 153,279 direct beneficiaries were reached, including 77,559 women.

A.2 Intermediate Results Indicators

Component: Regulatory and institutional framework

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
National strategy for management of OPs and associated wastes	Number	0.00	3.00		1.00
		01-Jul-2015	01-Jul-2015		30-Jun-2021



implemented

Comments (achievements against targets):

The national strategy document for Obsolete Pesticides and associated waste was prepared and validated with key stakeholders. Following its validation, the key players (MINADER, MSHP, MIRAH, MINEDD, MCI) will translate the recommendations contained therein into an action plan that they will carry out as part of their involvement in the life cycle of pesticides. The implementation of the strategy requires building the technical capacities of existing pesticide analysis laboratories (through providing equipment and training), providing the Departmental Committees for the Fight against Illegal Pesticides (CDLPIs) with vehicles and control equipment on the markets and at border crossings. By the end of the project, LANADA (National Agricultural Development Support Laboratory) was equipped with sampling equipment to enable it to fully play its role in the process of monitoring pesticides in environmental matrices.

On a 0 to 3 scale used to measure strategy readiness, implementation and effectiveness, 0 = no progress; 1 = strategy designed; 2 = infrastructure and logistics in place to enable implementation; 3 = strategy budgeted and implementation in progress. Based on this scale, the indicator is at level 1.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Pesticides Committee functional	Number	0.00	3.00		3.00
		01-Jul-2015	01-Jul-2015		30-Jun-2021

Comments (achievements against targets):

The Pesticides Committee is fully functional and exercises its responsibilities properly. Committee meetings are held quarterly with minutes available and published on the project website (www.progepci.uiapenvironnement.ci). These minutes contain information on updating the list of approved pesticides, prohibited pesticides, approvals of distributors, resellers and applicators.

According to the scale from 0 to 3 to measure the level of achievement of the indicator, 0 = the PC does not meet regularly and does not work; 1 = the PC meets at least twice a year, with a well-defined mandate, but does not exercise its responsibilities; 2 = the PC performs its functions (approval of products,



policy decisions, etc.) and members understand their roles but the PC is limited in its effectiveness due to capacity constraints; 3 = the PC is fully functional and fulfills its responsibilities properly.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Effective regulatory framework for obsolete pesticides and associated wastes	Number	0.00 01-Jul-2015	3.00 01-Jul-2015		1.00 30-Jun-2021

Comments (achievements against targets):

The draft law relating to the repression of offenses against pesticides and the preliminary draft decree regulating the transport, storage, and disposal of pesticides in Côte d'Ivoire and the preliminary draft interministerial order establishing a procedure for managing pesticide were validated by all stakeholders and sent to the SGG in February 2020. The law has not yet been programmed in the Council of Ministers for their passage to the National Assembly and the Senate for adoption. Steps are being taken with the competent authorities for the presentation of the Law to the Council of Ministers in April 2021 with a view to initiating its adoption by the two parliamentary chambers before the end of June 2021. This indicator is measured on a scale of 0 to 3, 0 = regulatory framework for OP absent; 1 = legislative / regulatory measures drafted or revised; 2 = legislative / regulatory measures adopted but not implemented; 3 = legislative / regulatory measures implemented / enforced with the corresponding budget. Based on this scale, the indicator is at level 1. Pending the adoption of the law and the signing of the regulatory texts developed by the project, the regulatory framework for pesticides is governed by 4 main texts: - Decree 89-2 relating to the approval, sale, manufacture, and use of pesticides in force for more than 30 years - Interministerial Order N ° 509 / MINAGRI / MEMIS of 11/2014 organizing the control of pesticides, inspection and sanitary, phytosanitary and quality control of plants, products of plant origin, agricultural products, and any other material likely to convey organisms harmful to crops, human health, and animals at the entry and exit doors of the national territory - Order No. 030 / MINAGRI / CAB of 11/2015 prohibiting the use in agriculture of active substances used in the manufacture of plant protection products - the decree creating the CDLPI (Departmental Committees for the Fight against Illegal Pesticides) of February 2017 for the fight against fraud at land borders. The law and the two texts are drawn up by the project come to emphasize the repression of the use of obsolete pesticides and to regulate the management of usable and obsolete pesticides through better coordination of the roles of the different actors in the sector.



Component: Management of obsolete pesticides and associated wastes

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Inventory of obsolete pesticides and associated wastes	Number	0.00 01-Jul-2015	3.00 01-Jul-2015		3.00 30-Jun-2021

Comments (achievements against targets):

The national pesticide inventory has been completed and the inventory data has all been incorporated into the database designed for this purpose. A total of 329 tonnes of OPs and associated waste were inventoried, including 318.310 tonnes of obsolete pesticides and 10.69 tonnes of associated waste. The data is incorporated into the Obsolete Pesticides database. The project recruited 180 agents from the Ministry of Agriculture deployed in the 31 regions and 2 districts (Abidjan and Yamoussoukro) who crisscrossed the 4,071 pesticide depots for 6 months. Data collection in the repositories was done through digital tablets connected with data transmission via the internet directly to a server installed in Abidjan at the premises of BEERA. At the end of the process, the database contained data from all the regions of Côte d'Ivoire. These raw data were analyzed by a validation process by a software called "validator" which made it possible to determine the quantity of obsolete pesticides taking into account the defined obsolescence criteria (expiry date, fraudulent, prohibited by legislation).

This indicator is rated on a scale of 0 to 3. 0 = insufficient inventory data and no plan formulated; 1 = implementation method designed and evaluated in terms of cost, and procurement in progress; 2 = inventory in progress; 3 = inventory substantially completed and data incorporated into OP databases. Based on this scale, the indicator is at level 3

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MIS on obsolete pesticides	Number	0.00	3.00		3.00



and associated wastes established and functional		01-Jul-2015	01-Jul-2015		30-Jun-2021
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Comments (achievements against targets):

All information from the inventory of obsolete pesticides and associated waste conducted on national territory is stored in a database that was successfully developed and is functional. Access to the MIS interface through syspestci.com is limited to key players: MINADER / DPVCQ, MINEDD, MIRAH, MSHP, Customs, MCI. The information in the database accessible to the public is made available on the following website: www.progepci.uiapenvironnement.ci. The objective of the database is to empower the regional directorates of the Ministry of Agriculture in information management on pesticides. This database includes the list of approved and banned pesticides, the list of depots, status of the holders, a unique collection number, the territoriality of the tablets. This will involve establishing links to other information sites such as the phytosanitary index, the DPVCQ site and allowing personalized access to the 33 regions with mapping and regional data. When the project closes, the MIS will have the DPVCQ / MINADER as its administrator, which will be able to continue its construction and finalize the interconnectivity with the key players in the pesticide life cycle. Progress towards a database on obsolete pesticides and associated waste is measured on a scale of 0 to 3. 0 = no existing MIS on the OPs and no existing strategy; 1 = information management strategy formulated with detailed methodology and procurement in progress; 2 = MIS functional and enriched with relevant data; 3 = MIS functional, durable, in use, and data available to the public. Based on this scale, the indicator is at level 3.

Component: Promotion of alternatives to chemical pesticides

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Implementation of pilots on alternatives to chemical pesticides	Number	0.00	3.00		3.00
		01-Jul-2015	01-Jul-2015		30-Jun-2021

Comments (achievements against targets):

A farmer field school has been set up in the city of Azaguié with the support of the Center of Excellence for the Development of Biopesticides (CEA-CCBAD) thanks to the agreement signed with the PROGEP-CI Coordination Unit. The local school field management committee has been set up. In addition, 100



farmers were trained in January 2020. Two biopesticides (Astoun and Neko) have shown their effectiveness in the fight against brown rot in cocoa and have been registered for the control of brown rot in cocoa in Cote d'Ivoire.

Progress towards the design and implementation of two field demonstrations for the development of alternatives to chemical pesticides is measured on a scale of 0 to 3. 0 = no demonstration in progress and no plan already formulated; 1 = field demonstration proposals designed, consulted, evaluated in terms of cost, and procurement in progress; 2 = field demonstrations in progress and first results available; 3 = results available and sufficiently disseminated. Based on this scale, the indicator is at level 3.



B. KEY OUTPUTS BY COMPONENT

Objective/Outcome 1: Improved management of obsolete pesticides and associated wastes <i>through the identification, cleanup and disposal of OPs and associated wastes.</i>	
Outcome Indicators	<ol style="list-style-type: none"> 1. Data on OPs and associated wastes publicly accessible 2. OPs and associated waste safely contained at targeted sites 3. OPs and associated waste safely disposed of 4. 100,000 total beneficiaries 5. 50,000 female beneficiaries
Intermediate Results Indicators	<ol style="list-style-type: none"> 1. Inventory of obsolete pesticides and associated wastes 2. 250 tonnes of OPs and associated wastes destroyed, disposed of or stored in a way that preserves the environment. 3. 100 tonnes of OPs and associated wastes stored safely at targeted sites. 4. 150 tonnes of OPs and associated wastes disposed of safely in accordance with the Environmental and Social Management Framework
Key Outputs by Component (linked to the achievement of the Objective/Outcome 2)	<ol style="list-style-type: none"> 1. 318.3 tonnes of obsolete pesticides and 10.69 tonnes of associated waste were disposed of in accordance with the Environmental and Social Management Framework 2. 6,052.41 tonnes of usable and obsolete pesticides were inventoried 3. 329 tonnes were stored in RMG warehouses and built in accordance with international standards 4. 4 071 pesticide deposits were visited in 31 regions across Côte d'Ivoire 5. A database was created for key ministries to better manage pesticides which includes data from all regions of Côte d'Ivoire



	<ol style="list-style-type: none"> 6. A website (www.progepci.uiapenvironnement.ci) with access to the public was created 7. An inventory guide was developed to inform other projects of the methodology used to carry out the inventory and was made available on www.progepci.uiapenvironnement.ci
<p>Objective/Outcome 2: Improved management of obsolete pesticides and associated wastes <i>through strengthening key institutional, regulatory and technology systems needed to prevent future accumulations.</i></p>	
<p>Outcome Indicators</p>	<ol style="list-style-type: none"> 1. 100,000 direct beneficiaries benefitted from the project 2. 50,000 female beneficiaries benefitted from the project
<p>Intermediate Results Indicators</p>	<ol style="list-style-type: none"> 1. National strategy for management of OPs and associated wastes implemented 2. Effective regulatory framework for obsolete pesticides and associated wastes 3. Pesticides committee functional 4. MIS on obsolete pesticides and associated wastes established and functional 5. Implementation of pilots on alternatives to chemical pesticides
<p>Key Outputs by Component (linked to the achievement of the Objective/Outcome 1)</p>	<ol style="list-style-type: none"> 1. National strategy for management of OPs prepared and adopted 2. Three legal texts on the reduction of the re-accumulation OPs were prepared 3. Farmer field school established 4. Local school field management committee established 5. Two biopesticides (Astoun and Neko) against brown rot in cocoa pods were successfully tested and the results have been disseminated 6. 100 cocoa farmers from the Agnéby program were trained in good pest management practices, the calibration of treatment equipment and the use of biopesticides



- | | |
|--|--|
| | <ol style="list-style-type: none">7. Awareness raising of 153,279 direct beneficiaries, including 77,559 women8. 51,348 persons benefitted from information workshops |
|--|--|



ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

A. TASK TEAM MEMBERS

Name	Role
Preparation	
Douglas J. Graham, Salimata D. Follea	Task Team Leader(s)
Maurice Adoni	Procurement Specialist(s)
Jean Charles Amon Kra	Financial Management Specialist
Marie Bernadette Darang	Team Member
Lucienne M. M'Baipor	Social Specialist
Aissatou Diallo	Team Member
Andrea E. Stumpf	Counsel
Mariame Bamba	Team Member
Melissa C. Landes	Social Specialist
Abdoulaye Gadiere	Team Member
Faly Diallo	Team Member
Supervision/ICR	
Salimata D. Follea	Task Team Leader(s)
Antro Kenneth Sanvi, Maurice Adoni	Procurement Specialist(s)
Jean Charles Amon Kra	Financial Management Specialist
Josue Akre	Financial Management Specialist
Edichi Brigitte Andoh Epse Mobongol	Environmental Specialist
Sophie Martine Olivia Wernert	Counsel
Souleymane Traore	Procurement Team
Alexandra Annabelle Niesslein	Social Specialist



Haoua Diallo	Procurement Team
Abdoulaye Gadiere	Team Member
Mariame Bamba	Procurement Team
Julie Nyamien Messoum Kouame	Team Member
Aissatou Diallo	Team Member
Rahmoune Essalhi	Procurement Team
Abdoul Wahabi Seini	Social Specialist
Ellen Tynan	ICR Author
Dania Mosa	ICR Co-Author

B. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US\$ (including travel and consultant costs)
Preparation		
FY13	9.175	57,511.35
FY14	6.225	51,398.34
FY15	7.925	73,751.87
FY16	2.175	14,333.31
Total	25.50	196,994.87
Supervision/ICR		
FY16	7.653	48,719.12
FY17	5.331	52,052.92
FY18	6.482	54,209.40
FY19	5.617	54,706.48
FY20	2.325	45,602.89
Total	27.41	255,290.81





ANNEX 3. PROJECT COST BY COMPONENT

Components	Amount at Approval (US\$, millions)	Actual at Project¹⁹ Closing (US\$, millions)	Percentage of Approval (%)
Strengthening the Regulatory and institutional framework	1.90	2.17	114
Management of obsolete pesticides and associated wastes	6.50	4.23	65
Promotion of alternatives to chemical pesticides	0.70	0.29	41
Project management	1.70	2.40	140
Total	10.80	9.09	84²⁰

¹⁹ Given currency fluctuations throughout the life of the project, this ICR utilizes an average exchange rate of CFAF 533 calculated from actual disbursement of the grant in US dollars with the actual expenditures in West African CFA Francs.

²⁰ This represents the lower-than-expected contribution of the Government which dropped from a commitment of US\$3.7 million at project approval to an actual contribution of approximately US\$2.09 million.



ANNEX 4. EFFICIENCY ANALYSIS

1. The PDO was to improve the management of obsolete pesticides and associated wastes in Côte d'Ivoire by the Government and other stakeholders. By eliminating obsolete pesticides and associated waste, improving capacity to manage obsolete pesticides, and developing alternative solutions for IPM, the project generated significant benefits at local and global levels, including to health, environment, and economy. For example, poor storage and leakage of obsolete pesticides through contaminated water, air, and soil pose significant health risks and risks of environmental contamination, especially where it is carried beyond national boundaries, and associated costs resulted from exposure are extremely high.

2. To achieve the PDO the following interventions were implemented by the project:

- Strengthening of the regulatory and institutional framework:
 - Addressed issues related to obsolete pesticides and their associated wastes by drafting legislation on regulating the transportation, storage, and disposal of obsolete pesticides in harmonization with the regional legislation
 - Developed a national strategy for the management of obsolete pesticides and their associated wastes.
- Management of obsolete pesticides and associated wastes:
 - Inventory of the pesticides conducted by the PSMS—resulting in inventory of over 6,042 tonnes of obsolete pesticides.²¹
 - Storage and disposal of obsolete pesticides and associated wastes—329 tonnes of obsolete pesticides and associated wastes disposed.
 - Pesticide MIS. The database, first of its kind in the West Africa subregion, maintains a mapping of pesticides; details of stocks and associated wastes, including manufacture and expiration dates; physicochemical characteristics and potential environmental impacts; and information on pesticide value chains and tracking traceability.

3. **Promotion of alternatives to pesticides.** The project supported the promotion of alternatives to chemical pesticides through testing of a biopesticide called Astoun on cocoa agroforestry farms in Azaguié (southeastern Côte d'Ivoire). These activities were implemented by the Ivorian Association of Agronomic Sciences and CEA-CCBAD. The association of this biopesticide with cocoa agroforestry showed spectacular yields: cocoa production increased from 750 kg per ha to 2 tonnes per ha during the 2019 campaign, according to the farmers' cooperative (association Agneby) which applied Astoun in replacement of chemical pesticides in cocoa farms with an average of 50 trees per ha.

4. The economic analysis at the appraisal stage provided a summary of qualitative assessment of potential costs and impacts associated with the obsolete pesticides disposal (impacts on agricultural production, costs of impacts on human health or deaths, or costs of controlling illegal activity) and listed potential benefits, including economic benefits because of reduced morbidity and mortality from more efficient agricultural production. Due to lack of specific data about potential costs and impacts, the main

²¹ About 4,071 pesticide deposits were identified, in which 6,052.41 tonnes of pesticides were collected.



rationale presented a rapid cost-effectiveness analysis, as an alternative to cost-benefit analysis. In addition, the PAD provided incremental cost analysis for the GEF alternative.

5. In general terms, project economic analysis should include the cost of obsolete stock creation, management, and disposal, in addition to quantification of the externalities. However, due to the absence of reliable data on doseresponse and the impact of obsolete pesticides, accurate cost-benefit estimates are not feasible in this case. It is also complicated by the use of illegally imported pesticides, which are estimated to represent 40 percent of the total market for pesticides in Côte d'Ivoire suggesting a rough estimate of total pesticide use of about 20,000 tonnes per year. Therefore the project economic assessment at this stage focuses on cost-effectiveness analysis (cost per unit). The FAO cost estimates for the disposal of obsolete pesticides serve as a reference value—between US\$3 and US\$5 per kilogram or liter of pesticide or contaminated material.²² The cost varies with the location, condition, and type of waste and the methods used for its destruction. Comparison of costs per unit (US\$ per ton) of disposed obsolete pesticides in the World Bank projects is provided in table 4.1.

Table 4.1. Comparison of Costs Per Unit of Disposed Obsolete Pesticides in World Bank Projects

Project Name/Year	Associated Cost of Disposal, US\$, million	Amount Disposed, tonnes	Cost per Unit (US\$/tonne)
Côte D'Ivoire	1.18	329	3,599
Moldova - Persistent Organic Pollutants (POPs) Stockpiles Management and Destruction Project GEF P090037 (approval FY2006, ICR 2011)	9.33	1,293	4,183
Belarus POPs Stockpile Management Project GEF P111110 (approval 2010, ICR 2018)	4.04	2,616	1,545
Egypt Sustainable POPs Management P116230 (approval 2010, PAD)	3.80	1,100	3,400
Africa Stockpiles program, ICR 2013	9.80	3,164	3,103
Mali Obsolete Pesticides Disposal and Prevention Project P146247 ICR 2020	3.18	552	5,700

6. The project estimated GEF co-financing of US\$0.9 million for the national inventory of usable and obsolete pesticides, US\$0.4 million for the development of the PMIS and US\$2.9 million for the disposal and storage of obsolete pesticides. Disposal of obsolete pesticides includes pre-collection; collection; securing; transport; storage; decontamination of depots; and incineration of obsolete pesticides, empty packaging, and other associated waste (soil or other contaminated material). Original estimates (as in the PAD) of the total amount of disposal were to be at 250 tonnes. With the projected cost of disposal (US\$897,750), the unit cost of disposal was projected at US\$3,599 per ton. As a result of the project, 329 tonnes of obsolete pesticides and associated wastes were disposed, with the total cost of US\$1,184,070. The cost of disposing obsolete pesticides and associated wastes was estimated at the same level as at the appraisal or US\$3,599 per tonnes within the lower FAO estimates and compatible to the relative disposal cost in the similar projects.

²² 2001. FAO. *Baseline Study on the Problem of Obsolete Pesticide Stocks*.



7. While the accurate assessment of the ex-post cost-benefit analysis at this stage is not feasible, there is a potential to conduct this exercise after the pesticide MIS becomes fully operational and includes complete set of data covering countrywide facilities and agricultural producers.

8. For this project based on the existing literature reviews on overall hidden and external costs of pesticide use in Mali²³ and in the absence of specific data on economic, health, and environmental costs associated specifically with obsolete pesticides, rough estimates of the cost-benefit analysis demonstrate overall project efficiency assuming the discount rate as 12 percent, project life as 20 years, and considering that the Government will continue disposal of obsolete pesticides at the same level. With these assumptions, the project NPV is estimated at US\$80.47 million, IRR as 14 percent, and benefit-cost ratio at 4.5 percent.

9. The assessment of IPM established by the project and practical application of the biopesticides use in cocoa production can also be applied to the analysis. For example, rough estimates made under Côte d'Ivoire Forest Investment Program (FIP) 2, for mixed application of cocoa agroforestry and biopesticides demonstrate significant NPV and IERR at 43 percent with 12 percent discount rate. Environmental benefits valued at market prices and sensitivity analysis indicate that results remain robust under various stress-test scenarios (price variations from 10 percent to 25 percent and discount rates - 6 percent and 12 percent).

10. In addition, preliminary Economic and Financial Analysis for the Côte D'Ivoire Cocoa Integrated Value Chain Project (in a pipeline) demonstrated that combination of these applications could result in significant positive project NPV and IRR (48 percent), under a discount rate of 12 percent.

Implementation Efficiency

11. The project was approved on August 25, 2015 and planned to be closed in October 2020. Due to delays in implementation, the actual closing date was June 30, 2021. The implementation of the project was affected by two factors: (a) a six-month delay in the annual budget allocation by the Government to the project for the implementation of the 2020 annual work plan—this delay was due to the setting up of a new budget allocation system at the national level and (b) the restrictions of movements due to the COVID-19 which further slowed down project implementation pace. The extension enabled the PIU to finalize the sustainability instruments of the project aiming to prevent new accumulation of obsolete pesticides and associated wastes through (a) development (although not adopted) of a series of decrees on safe transportation, storage, and elimination of pesticides and management of non-homologated pesticides²⁴ and (b) deployment at the national level of a web-based PSMS which will enable MINADER and its 29 regional directorates to better manage entry of pesticides in the country and take timely actions to prevent accumulation of new obsolete pesticides. Though higher than in similar projects, project

²³ Bourguet, Denis, and Thomas Guillemaud. 2016. "The Hidden and External Costs of Pesticide Use." *Sustainable Agriculture Reviews*, edited by Eric Lichtfouse, 35–120, 2016. Springer International Publishing. .

²⁴ (From the project efficacy assessment section)—four draft regulations: (a) a law strengthening punishments for offenses related to obsolete pesticides and associated waste management; (b) a decree regulating the possession, transport, storage, and disposal of pesticides; (c) a decree establishing and operationalizing an Anti-Poison and Toxicology-Vigilance Center; and (d) an interministerial decree establishing a procedure for the management of seized pesticides.



management costs are explained by the expanded, unexpected scope of inventory, related to the increased demand for M&E and disposal process.

12. Overall, project operational efficiency is confirmed by the third-party audit of the inventory costs, which noted that typical inventory operations cover about 400 sites at a maximum whereas the PROGEP-CI inventory covered over 10 times that amount—4, 072.

13. The project was relevant to the GEF's higher-level objectives according to the GEF 5 Chemicals Strategy objective which is "to promote the sound management of chemicals throughout their life-cycle in ways that lead to the minimization of significant adverse effects on human health and the global environment." More specifically, this proposed project is consistent with the GEF's Chemicals and Wastes (CW) Focal Area Objective 1 to "Phase out POPs and reduce POPs releases" and outcomes: production and use of controlled POPs chemicals phased out; POPs releases to the environment reduced; POPs wastes prevented, managed, and disposed of, and POPs contaminated sites managed in an environmentally sound manner; and country capacity built to effectively phase out and reduce releases of POPs. These objectives remain relevant under the current GEF 7 Programmatic Directions for Chemicals and Wastes Focal area.

14. As the purpose of the GEF grant financing was for global environmental benefits from the mitigation and elimination of risks associated with POPs releases, incremental cost reasoning was applied to determine the additional cost of the intervention. The baseline scenario at appraisal constituted a small number of initiatives and projects related to the management of obsolete pesticides and strategies to prevent their continuing build-up. The main purpose of the GEF project was twofold: to stem ongoing and future impacts on the environment and human health that are posed by leaking and inappropriately stored obsolete pesticides and to stem a future build-up of obsolete pesticides by encouraging alternatives to pesticides and better management of synthetic pesticides where there are currently no alternatives.

15. The original incremental cost summary indicated that the GEF alternative scenario was estimated at US\$34.8 million, including the baseline cost at US\$24 million, GEF project funding at US\$7 million, and Government funding at US\$3.8 million. The GEF alternative after project completion was lower than expected and amounted to US\$29.4 million—Government contribution was US\$2.3 million; contribution of US\$12 million equity investment from the Agricultural Sector Support Project; and contributions from CropLife CI, GIZ project to support agricultural sector and biodiversity protection, and C2D, and the French government's program of debt relief. Despite lower co-financing rate, the project managed to cover more obsolete pesticides and associated wastes by inventories than originally expected and eliminate twice as much of obsolete pesticides and associated wastes compared to the target at the approval stage. Moreover, the promising results in application of the biopesticides, application of the IPM approaches, mixed with the agroforestry techniques for cocoa production, if applied in larger scale, will lead to high financial and economic gains and improved competitiveness of the Ivorian cocoa.



Table 4.2. Co-financing for the GEF Alternative

Name of Co-financer	Type of Co-financing	Investment Mobilized/Recurrent Expenditure	Amount Confirmed at CEO	Actual Amount Materialized at Midterm	Actual Amount Materialized at Closing
Agricultural sector support project in Côte d'Ivoire	Equity Investment	Investment Mobilized	14,000,000	9,845,600	12,000,000
Government	Public Investment	Investment Mobilized	3,800,000	1,356,000	2,280,000
CropLife CI	Equity Investment	Investment Mobilized	2,000,000	2,580,000	2,580,000
GIZ , Project to promote agricultural sectors and biodiversity in Côte d'Ivoire (PROFIAB)	Equity Investment	Investment Mobilized	2,000,000	1,042,000	1,500,000
C2D, Project to support the revival of agricultural sectors in Côte d'Ivoire (PARFACI)	Equity Investment	Investment Mobilized	6,000,000	2,650,450	4,000,000
			\$27,800,000	\$17,474,050	\$22,360,000



ANNEX 5. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

NB: The following is a summary of the Borrower's Evaluation report.

INTEGRATED PROJECT MANAGEMENT UNIT
OBSOLETE PESTICIDES MANAGEMENT PROJECT IN CÔTE
D'IVOIRE
(PROGEP-CI)

Financing World Bank
IDA Grant No. TF 0A0742

CONTRACT N° 01-CS-ED-PROGEP-CI-2021

Budget heading: Line 6222

**FINAL EVALUATION OF THE CIPROJECT AND THE
IMPLEMENTATION OF THE ENVIRONMENTAL AND SOCIAL
MANAGEMENT FRAMEWORK**

M.Ammati, Senior International Consultant, Pest and Pesticide Management

AUGUST 2021



ABBREVIATIONS	MEANINGS
AISA	Ivorian Association of Agronomic Sciences
ANDE	National Environment Agency
ANO	Notice of No Objection
Bm	World Bank
CDLPI	Departmental Committees for the Fight against Illegal Pesticides
CEA-CCBAD	Centre of Excellence for Biopesticide Development
CESEC	Economic, Social, Environmental and Cultural Council
CGES	Environmental and Social Management Framework
CIAPOL	Ivorian Anti-Pollution Centre
DAO	Tender documents
DGM	Donation of governance to the Community
DPD	Direct Payment Request
DPVCQ	Plant Protection and Quality Control Directorate
DR	Regional Directorates
DRF	Request for Withdrawal of Funds
DTS	Special Drawing Rights
EIES	Environmental and Social Impact Assessment
ENVAL	
FCFA	African Financial Community Franc
FEM	Global Environment Facility
IDA	International Development Association
INHP	National Institute of Public Hygiene
INP-HB	National Polytechnic Institute Houphouët-Boigny
JMLDS	World Day to Combat Desertification and Drought
JSP-CI	Science Day on Pesticides in the Ivory Coast
LANADA	National Agricultural Development Support Laboratory
MEF	Evaluating Mission
MINADER	Ministry of Agriculture and Rural Development
MINEDD	Ministry of the Environment and Sustainable Development
PAD	Project Assessment document
ESMP	Environmental and Social Management Plan
PGN	Pest Management Plan
GDP	Gross Domestic Product
PIF	forestry investment project
GNP	Gross National Product
PODA	Obsolete pesticides and associated waste
POP	Persistent organic pollutants
PPM	Procurement Plan



PROGEP-CI	Obsolete Pesticide Management Project in Côte d'Ivoire
PTBA	Annual Work Programme and Budget
REDD +	Reducing emissions from deforestation and forest degradation and sustainable forest management
RSF	Financial Monitoring Report
RTI	Radiodiffusion Télévision Ivoirienne
RUCHE	Computer application of the M&E system
SAICM	Strategic Approach to International Chemicals Management
SEP-REDD+	Permanent Technical Secretariat of REDD+.
GIS	Pesticide Management Information System
SIGFIP	Integrated Financial Management System.
TDR	Terms of Reference
UIAP	Integrated Project Management Unit
UFHB	
URPCI	Union des Radios de Proximité de Côte d'Ivoire
USD	United States Dollars
UVICOCI	Union of Cities and Towns of Côte d'Ivoire
VALIDATOR	Processing and analysis software designed for PODA inventory



I. INTRODUCTION

1. The Project named "Project for the Management of Obsolete Pesticides in Côte d'Ivoire (PROGEP-CI)" was approved in 2015 and its official launch took place in February 2016 and the project activities started in July 2016, for a duration of 5 years (February 2016-June 2021). The first disbursement is expected to take place in 2016 and the last one is scheduled for 2021. The project was executed by the Ministry of Environment and Sustainable Development (MINEDD) and implemented by the World Bank.

2. At the time of formulation, the project budget was estimated at US\$ 32 million, co-financed in cash by the Global Environment Facility (GEF) for US\$ 7 million and the Government of Côte d'Ivoire for US\$ 4.5 million. The rest of the co-financing is in kind by CropLife-Côte d'Ivoire, the World Bank under the Support Project to the Agricultural Sector of Côte d'Ivoire (PSAC), GIZ, and the French Development Agency under the Debt Reduction and Development Contract (C2D).

3. The project development objective (PDO) is to improve the management of obsolete pesticides and associated wastes in Côte d'Ivoire by the government and other stakeholders. Other stakeholders include key actors from nongovernmental organizations and the private sector involved in the importation, manufacture, use, storage, and disposal of pesticides. PROGEP-CI has three complementary technical components and a management and monitoring and evaluation component.

II. EVALUATION PROCESS OF THE CIPRO

4. In 2015, a preliminary technical (Pre-Project), financial and systematic operational risk assessment was conducted by the World Bank team. The potential risks and constraints related to each project component were detailed in the Project Assessment Document (PAD). The systematic risks related to institutional capacity for project implementation and the environmental and social impact of the project were rated as "Important" and should be given special attention during project implementation.

5. During the implementation of the Project, a mid-term evaluation (MTE) was conducted by two joint World Bank-PROGEP-CI missions in November 2018 and May 2019. The project was evaluated on the basis of progress towards achieving the PDO and on the basis of its overall implementation. PROGEP-CI was rated Moderately Unsatisfactory (MI) and is expected to do better in meeting its targets in 2021.

6. At the end of the Project, June 2021, a final independent evaluation which is the subject of this report covered all project activities programmed during February 2016-June 2021; measured progress following the mid-term evaluation during June 2019-June 2021 and the implementation of the Environmental and Social Management Framework (ESMF) since the launch of the project in February 2016.

III. METHODOLOGY

7. The final assessment uses a SWOT approach: Strength; Weakness; Opportunities and Threat. This approach is based on the following criteria:



- The relevance of PROGEP-CI to national, regional and global policy in the areas of pesticide management and pest control;
 - The design of the project to accompany the said relevance and enable the Project Development Objective (PDO) to be achieved;
 - Effectiveness of the project in relation to expected or unexpected outcomes ;
 - The efficiency of the Integrated Project Management Unit (IPMU) assisted by the Technical Committee and the Steering Committee under the supervision of the World Bank;
 - The sustainability of the results obtained and the partnerships developed within the project;
 - Analysis of the implementation of the CGES from inception to the end of the project.
8. This approach also used the specific questions for each criterion:
- Relevance and design: Are the project objectives consistent with national, regional and GEF policy on pesticide management? To what extent would the project design achieve the expected results?
 - Effectiveness: Were the expected results of the project partially or fully achieved? What factors made it possible to achieve these results? What factors did not make it possible to achieve the expected results?
 - Efficiency: How efficient is the use of human resources (real-time preparation of terms of reference, establishment of contracts and agreements, tendering, contracting, recruitment of service providers etc.)? How efficient is the use of financial resources (real-time transfer of annual budgets from the World Bank and the Government and payments for services)?
 - Integration of the CGES: Have the CGES implementation plans (Pesticide Management Plan and Safeguard Plan and Complaint Management Plan) been partially or fully integrated in the preparation and monitoring of the Annual Work Plan and Budget (AWPB)?
 - Gender mainstreaming: Did the project take gender into account when recruiting training and awareness-raising staff and communicating results?
 - Sustainability: Has the project already identified the institution(s) to transfer its responsibilities to and ensure the continuity of the results achieved? Has the project prepared a budget to finance the transition phase of the responsibilities to the said institution(s)? Has the project negotiated the duration and period of the transition before its completion?
9. The final evaluation was conducted in the following phases:
- Documentary analysis, in this case, (i) the periodic reports of the technical committee and the steering committee, those of the mid-term evaluation, and those of the service providers relating to the development of the information system on pesticides, the national inventory of pesticides, the safeguarding, transport and elimination of obsolete pesticides and empty packaging; (ii) the memoranda of the World Bank supervision missions; and (iii) the documents of the agreements signed with the Ivorian Antipollution Centre (CIPOL) and the



African Centre of Excellence for Climate Change, Biodiversity and Sustainable Agriculture (CEA-CCBAD).

- Virtual meetings with key project partners for the development of the PROGEP-CI final evaluation mission program, the national pesticide management strategy and its action plan.
- Physical meetings with representatives of the Ministries of Agriculture, Environment and Health, BEERA-Technogy, RMG, CIAPOL and CEA-CCBAD; beneficiaries from the rural community, regional directorates of agriculture and environment, representatives of the public and private sector.
- Visits to PODA disposal sites to assess the application of the environmental and social management framework for the safeguarding, transport, storage and incineration of obsolete pesticides and empty packaging by RMG.

10. During the virtual and physical meetings and visits to the depots, the questions outlined above were asked and discussed in total transparency with the partners, the service providers and the administrative and technical staff of PROGEP-CI.

IV. STRENGTHS/WEAKNESSES OF THE PROJECT

A. RELEVANCE

The project is very relevant.

- It is in line with national, regional and global policy on pesticide management and pest control.
- The objectives and expected results of the project are clear to public and private sector stakeholders, and to civil society.

B. DESIGN/APPROACH

The project design/approach is satisfactory.

- Complementarity and synergy between technical components 1,2 & 3 to achieve the ODP.
- Component 4 ensures the planning, monitoring, evaluation of indicators and integration of the CGES

Deficit/shortfall :

- Lack of a communication component with activities, indicators and budget
- Component 3 should be clearer in terms of activities and outputs, indicators and budget

C. EFFECTIVENESS

Main results /ODP

- Legal texts on the management of obsolete pesticides and associated wastes prepared and submitted to the Government in February 2020, awaiting approval and adoption



- Institutional capacity building: 108 CDLPs trained but awaiting budget for their operation and sustainability.
- Design of a management strategy for usable, obsolete pesticides and associated waste

Deficit/shortfall :

- Technical, administrative and financial staff departures since 2019.
- Lack of communication on the results obtained
- Regulatory texts not yet validated: still with the Secretariat General of the Government.
- Lack of infrastructure and budget for the implementation of the national pesticide management strategy

Inventory of Pesticides

11. The project recruited an international expert to assist in the design, organization, execution and supervision of the field inventory. To this end, the international expert recommended that the Project immediately initiate the voluntary declarations of public and private institutions in possession of obsolete pesticides, the elaboration of the pesticide supply network (about 5000 depots) and the execution of the national inventory of usable, obsolete pesticides and associated wastes during December 2017 - July 2018. The execution of the inventory should be in line with the requirements of the Environmental and Social Management Framework (ESMF).

Moderately satisfactory

Partial inventories :

- December 2017-January 2018 & September - December 2018.
- Technical validation of the inventory results in 2020
- Validation of the inventory by the partners in April 2021

Deficit/shortfall :

- Delay in procurement and acquisition of PPE, tablets and motorcycles
- Late payment of DSA, Fuel, Internet access and telephone calls.
- The inventory should cover the period February-June to have a clear idea of the quantities of usable, obsolete and associated waste pesticides (quantities less or more than 75%).

Conclusion C2.2:

12. Despite the difficulties outlined above in conducting the inventory, the project was able to
- Develop and test and deploy the MIS, an advanced version of the PSMS system created by FAO.
 - Create a map of the pesticide supply network.
 - Develop a preliminary database of usable, obsolete and waste pesticides.



- This preliminary database was validated in April 2021.
- At this stage of final evaluation, it could not be concluded whether the inventory was able to cover the 75% of obsolete pesticides and associated waste!

C2.3 Disposal of obsolete pesticides and associated waste

Collection-Safeguard-Transport-Decontamination-Storage-Incineration: Moderately satisfactory

- Partial results were obtained: 329 tonnes²⁵ of obsolete pesticides and empty packaging were incinerated.

Deficit/shortfall :

- The depots/stores were not followed by professional decontamination after disposal.
- Lack of a dedicated PODA management store

C3. Implementation of Component 3: Promotion of alternatives to pesticides

Main results /ODP : Unsatisfactory -MS

- A demonstration for the Promotion of a product to fight against the grey rot of Cocoa.

Deficit/shortfall :

- Lack of a demonstration on cotton
- Failure to include relevant public and private sector institutions
- Non-inclusion of registered and unregistered non-hazardous chemicals and biopesticides from the private and public sectors.
- Lack of a national approach and action plan overseen by the CCIMP technical committee.
- Lack of an integrated pesticide and pest management plan

Recommendations :

- Capitalize on the cocoa production pattern and preliminary results of the Agneby demonstration to develop a national or even regional cocoa pest and pesticide management program
- Contact IITA and share their experience in promoting alternatives to pesticides for cotton and food crop pest control

IV. FINDINGS :

Highlights:

- A digital MIS developed and operational: logistics and capacity set up in each region.
- A preliminary pesticide database is developed: Pesticide distribution and storage network; ESIA of depots, pesticide management network; partial information on used, obsolete and waste pesticides; and lists of registered and banned pesticides.

²⁵ Tonne = 1 metric tonne or 1,000 kilograms.



Weaknesses :

- Partial inventory: lack of information during the February-July period.
- SIGP, the logistics and capabilities put in place have been inactive since late 2018.

Immediate action

- A transition period to complete and consolidate the results of the project.
- Mobilization of resources for the continuity of the project for the benefit of Côte d'Ivoire and neighbouring countries to eliminate the circulation of illegal pesticides.



ANNEX 6. SUPPORTING DOCUMENTS (IF ANY)

Annex 6a: Information Included in the Pesticide Inventory Database by Category

Categories	Information	Availability
C1: Sites	List of pesticide deposit sites	Accessible to the public on the website: https://progepci.uiapenvironnement.ci
C2: Storage	List of the 4,071 storage facilities/locations	
	Diagram of environmental risk by pesticide storage/location	
	Mapping of pesticides storage/location	
	Obsolete pesticides and associated waste by storage/location	Limited access
C3: Pesticides	List of manufacturers Mapping and quantities of obsolete pesticides and associated wastes by region	Accessible to the public on the website: www.progepci.uiapenvironnement.ci
	Lists of pesticides, active material, suppliers, obsolete pesticides, prohibited active ingredients, quantities of obsolete pesticides, and associated waste by criteria and diagrams	
C4: Other	Lists of veterinary products, empty packaging, contaminated equipment, contaminated soil, contaminated materials, and contaminated construction materials.	



Annex 6b: Direct Beneficiaries by Type of Activity and Sources of their Determination

Activities	Direct Beneficiaries	Of which Women	Comments	Source
Information meetings and workshops	51,348	16,431	Attendance lists for meetings and workshops from 2016 to 2019	Attendance lists
Mission identification of deposits and inventory	101,775	61,065	25 people reached per depot out of a total of 4,071 identified depots	Inventory agents reports
Collection of obsolete pesticides and associated wastes from 52 depots	156	94	3 people reached per collection site out of 52 obsolete pesticides and associated wastes collection sites	Obsolete pesticides and associated wastes inspection mission reports
	153,279	77,590		