



United Nations Environment Programme

**Terminal Evaluation of the UNEP/GEF project:
“Reducing Dependence on POPs and other Agro-Chemicals in the
Senegal and Niger River Basins through Integrated Production, Pest
and Pollution Management”**



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“Reducing Dependence on POPs and other Agro-Chemicals in the Senegal and Niger River Basins through Integrated Production, Pest and Pollution Management”
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Table 1. Project Identification table

UNEP PIMS ID:	GF/4030-02-19	IMIS number:	GFL/2732-02-4572
GEF project ID:	1420	Project Type:	Full Size Project (FSP)
Sub-project:	Ecosystem Management	Expected Accomplishment(s):	(a) Use of the ecosystem approach in countries to maintain ecosystem services and sustainable productivity of terrestrial and aquatic systems is increased
GEF OP #:	Joint - OP#10: Contaminants and OP#14: POPs	GEF Focal Area(s):	International Waters and Persistent Organic Pollutents
GEF Strategic Priority/Objective:	IW-3 and POP-3	UNEP PoW Output(s):	PoW 313 Output: Tools, technical support and partnerships to improve integrated water resource management including water quality using the ecosystem approach
GEF approval date:	March 2009	UNEP approval date:	20 January 2009
Executing Agency:	UN FAO	Participating countries	Benin, Guinea, Mali, Mauritania, Niger, Senegal
UNEP division/Unit:	Division of Environmental Policy Implementation (DEPI), Biodiversity/Land Degradation And Francophone Africa Focal Point, GEF Unit	Project Partners	Oregon State University (OSU) USA; ENDA Tiers Monde, Senegal; CERES Locustox, Senegal; participating governments
Expected Start Date:	March 2009	Actual start date:	April 2009
Planned completion date:	December 2012	Actual completion date:	December 2014
Planned project budget at approval:	\$ 9,305,340	Expected MSP/FSP co-financing:	\$ 4,827,510
GEF Allocation:	\$ 4,919,830	Actual expenditures entered in IMIS as of 30 June 2014	\$ 4,061,762.66
First Disbursement:	\$ 200,000.00 (25.03.09)	Disbursements as of 30 June 2014	\$ 4,061,762.66
No. of revisions:	4	Date of last Steering Committee meeting:	January 2014
Mid-term review/evaluation (actual date):	August - September 2012	Terminal Evaluation (actual date):	July 2015

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List of Acronyms

BSP	Bali Strategic Plan
CERES	Centre de Recherches en Ecotoxicologie pour le Sahel
CILSS	Comité permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel
CPH/AOC	Comite Phytosanitaire des Pays de la zone humide de l’Afrique de l’Ouest et du Centre
CSP	Comité Sahélien des Pesticides
ENDA	Environment and Development Action in the Third World
FAO	Food and Agriculture Organization of the UN
FFS (CEP in french)	Farmer Field School
FO	Farmers’ organizations
GEF	Global Environmental Facility
GIPD	Gestion Intégrée de la Production et des Déprédateurs
Ha	Hectare
IITA	International Institute of Tropical Agriculture
IPPM	Integrated Production and Pest Management
IW	International Waters
LOA	Letter of Agreement
NCU	National Coordination Unit
NGO	Non Governmental Organization
NPC	National Project Coordinator
NPK	Nitrogen Phosphorus Potassium
NTSC	National Technical Steering Committee
OECD	Organization of Economic Cooperation and Development
OP	Operational Programme
OSU	Oregon State University
PCU	Project Coordination Unit
POP	Persistent Organic Pollutant
PSD	Passive Sampling Device
RPC	Regional Project Coordinator
RPCU	Regional Project Coordination Unit
RTSC	Regional Technical Steering Committee
SAED	Société d’Aménagement et d’Exploitation des Terres du Delta
TCU	Technical Coordination Unit
ToC	Theory of Change
ToR	Terms of Reference
TOT	Training of Trainers
UNEP	United Nations Environment Programme
WA PRM	West Africa Pesticide Risk Management
WARDA (ADRAO in french)	West Africa Rice Development Association

Executive Summary

1. This report is the result of a final evaluation commissioned by UNEP to evaluate the Global Environment Facility (GEF) project “Reducing Dependence on Persistent Organic Pollutants (POPs) and other Agro-Chemicals in the Senegal and Niger River Basins through Integrated Production, Pest and Pollution Management”, that seeks to provide agricultural and environmental programming in six countries (Senegal, Mauritania, Mali, Guinea, Niger and Benin) aimed at ensuring food security while protecting public health and the environment against the harmful effects of pesticides and other agrochemicals. The evaluation was carried out from October 2015 to January 2016. Data was collected from beneficiaries, implementing partners and collaborators at national, regional and international levels. This data has enabled the mission to determine through an ex-post mixed method (principally qualitative methodology) the successes and challenges of this complex and innovative project implemented via collaboration with multiple public and private actors and donors including the UNEP, The Food and Agriculture Organization (FAO), the national governments of the six participating governments, and Oregon State University.

2. The project began in April 2009; it has benefitted from multiple extensions and tranches of funding. This evaluation, however, examines the final phase of the project, from 2011- 2014. The project aimed to contribute to both GEF Operational Program (OP)#10—International Waters Contaminants and OP#14—POPs reduction by developing local and national-level awareness-raising activities; policy studies on national pesticide use patterns, and to create links with national and regional pesticide legislative bodies. It also sought to build capacity in the region to carry out water quality assessment studies in six countries, run models to estimate the impact of toxic chemicals on biodiversity in terrestrial and aquatic systems, and estimate quantifiable risks to human health. At the local level, the project sought to work with communities to adopt improved, alternative agricultural production methods and to promote and develop local, national and regional networks of stakeholders interested in improving the conditions surrounding the use of harmful agrochemicals and POPs.

3. The project was one of the firsts to seek to test for and address the presence of harmful agrochemicals and POPs in two of West Africa’s largest and most important river basins. It was one of the first projects to identify through internationally accepted testing techniques the presence of harmful agrochemicals and POPs in West Africa; prior to this project there was no scientific knowledge about the presence and content of Pollutents in these critically important river basins. In addition to establishing that there was indeed a clear and present danger represented by the confirmed presence and magnitude of harmful agrochemicals and POPs in the Niger and Senegal river basins, the major successes of the project include the following:

- The project succeeded in raising awareness regarding the presence of harmful agrochemicals and POPs
- Farmers field schools were created in selected communities within the participating countries
- Farmers were trained in alternative production methods and chemical-free farming
- Target communities were informed and made aware of the dangers of agrochemicals and POPs

4. The project established critical precedent and foundation for work that needs to be extended throughout the region to promote reduced use of harmful agricultural chemicals and POPs and the use of alternative and safer methods that will lead to healthier more sustainable agriculture and lessen negative environmental impact. While the project had some major successes there are some challenges to the successes and impacts of the project.

5. The major challenges experienced by the project are the following:
- While the project theory of change and design was quite strong and evidence-based, the funding mechanism was organized in such a way that it undermined the ability of project staff to carry out the project according to the theory of change and led to the project being implemented as tranches of funding became available which was not necessarily linked to the theory of change.
 - The project sought to address a very large and complex issue however, the size of the budget relative to the geographic region target and number of interventions was not sufficient and did not permit for implementation at scale to have the desired impact.
 - Budgets for some activities such as routine testing of samples originating from the two river basins were very limited; as a result, there is not enough data regarding water contamination by harmful agrochemicals and POPs at the end of the project. Unfortunately, this limits the ability to measure the impact of the project on achieving its goal of reducing the presence of harmful agrochemicals and POPs. Unfortunately, this limits the ability to measure the impact of the project on achieving its goal of reducing the presence of harmful agrochemicals and POPs.

6. The project is completely relevant and appropriate; its aim seeks to reduce the use of POPs and other agrochemicals in agriculture in the Niger and Senegal river basins and is highly relevant in the current context. It aligns politically, socially and economically with the needs of the local, national and regional targets. The project is relevant for governments, farmers and their communities.

7. Producers participating in the Farmers Field Schools (FFS) have greater awareness of the dangers of agrochemicals and POPs in their environment. The majority of those producers began to apply the techniques taught by the project for seeding, integration of organic manure, and the search for alternative treatment based on natural products. They all claim to have seen an increase in yields at their plots through the observation of best practices promoted by the project. It should be noted that those producers represent a small number of the farmers in a given village (a maximum of 50 per site).

8. The reduction of the presence of POPs was not achieved because the original design was too ambitious and the scale of the effort needed too large compared to the time and budget of the project. In addition, the project staff could not always detect the presence of POPs in the agrochemicals used by farmers because they were sold in different shapes, colors and containers without proper packaging and with no brand-name. That made it difficult to link the commercial products to the presence of POPs.

9. Strong anecdotal evidence regarding the success of the project was highlighted at the national level; two government representatives in Senegal and Niger reported using the concepts and theories of the project in the development of new projects or policies and the national extension scheme adopted by the state

The major lessons learned from this projects are as follow:

10. Neither FAO, nor Environment Development Action / Regional Centre for Research in Ecotoxicology and Environmental Safety (ENDA/CERES Locustox), had risk communication experience, and that hindered the project because, the data was collected but FAO and ENDA/CERES did not have the expertise to communicate information to communities in ways that they could understand. FAO needed to invest more into finding methods for communicating the information in

an appropriate form to communities. It should nonetheless be noted that the risk communication component was at least started towards the end of the project, under alternative funding sources

11. While the budget was modified several times during implementation, at no point in time did the project team substantially amend it to integrate the risk communication component that would have operationalized the detection of the POPs. In fact it seems the project did not understand the distinction between the pilot and the application on a larger/wider scale to create a stronger evidence base for the presence and potential harmful effects of POPs for participating communities. It is estimated that the project needed to devote at least 1/3 of its budget to the risk communication component to be at optimum levels.

12. The analysis of the water samples from the participating communities at the beginning of the project, showed that POPs were present at low levels in the environment, the major discovery was the level and breadth of chemical use was much higher than ever anticipated in West Africa. The project was instrumental in proving this, which has brought quite a bit of attention to this emerging and continuing problem in the participating countries. Unfortunately, no analysis was done at the end of the project to determine if there was a reduction of the contamination levels following the project conclusion.

13. FFS approach is saying that all chemicals are bad and no distinction seems to be made. This was a challenge as some participants continued to use pesticides and herbicides because they were not always providing effective alternative and not clarifying which pesticides/herbicides are most toxic and their degrees of toxicity. In fact it was difficult to tell that in the absence of lab testing results for each product. In addition, the performance of those products and the best environment-friendly alternative compounds was not always known.

At the end of this evaluation, the following key recommendations are made to improve programing in this domain for the future:

14. For similar projects, it will be important to make sufficient provisions in the budget for lab testing and the risk communication component. The rule of thumb could be that one third of the project budget be kept aside for that important component.

15. The messages passed in the FFS should be based on FAO long experience in promoting FFS but also on verifiable scientific data. Integrated Production and Pest Management (IPPM) should not rule out the use of chemicals in the production systems. FAO should work with laboratories to identify the least dangerous chemicals that could both respond to producers needs and cause the least damage possible to the environment.

16. To Increase the use of biological products to combat pests and weeds, FAO should partner with laboratories and research institutes to identify the best available products that farmers could use and define the optimal dosage and mode of utilization. FAO should also work with national/regional policy makers in ramping up production and distribution and controlling of pesticides to meet the demand raised through FFS.

17. Although the project ended three years ago, at the time of this evaluation, FAO was not able to produce any database that could be used to do the final evaluation and back up its achievement claims. It is important to put in place a comprehensive monitoring, evaluation and learning system at the start of the project and maintain the system /keep the records until at least five years after the project has ended because most impact evaluations are executed between the time a project ends and the fifth year after completion.

18. It was fortunate that the majority of producers in the FFS were female but in the future, gender needs to be more systematically incorporated into the design phase. There must be a clearly articulated gender strategy with milestones and timelines that are integrated into the larger project strategy from the outset. Technical expertise and staff should be brought on board to manage and ensure progress on the gender indicators across the project.

The project is rated Moderately Satisfactory and the following table is a summary rating of each of the evaluation criteria

Table 2. Summary of Evaluation Criteria Ratings

Criterion	Independent Evaluator's (IE) Assessment	IE Rating	Evaluation Office (EO) Assessment	EO Rating
A. Strategic relevance	The WA PRM is highly relevant to the needs of the beneficiary countries and the UNEP priorities. By trying to reduce the use of POPs and other agrochemicals, it addresses the needs of several communities along the Senegal and Niger river basins. Most of these communities recognize the need for such a project but were provided little support by their governments and partners. The project did not develop and implement a proper gender strategy although it ended up reaching more women than men.	S	The project is highly relevant to regional environmental needs including all six countries of the Senegal and Niger basins, GEF operational programmes (OP 12 and OP14), relevant expected outcomes of the UNEP MTS 2010-2013 and 2014-2017.	HS
B. Achievement of outputs	Many of the project outputs have been achieved. The WA PRM was nonetheless not successful in setting up community-level pesticide-use monitoring systems. Consequently, activities related to the detected risk-communication were not implemented and none of their respective outputs reached	S	EO concurs	S
C. Effectiveness: Attainment of project objectives and results		MS	EO concurs	MS
<i>1. Achievement of direct outcomes</i>	Most direct outcomes linked to the planned and achieved outputs, were achieved. The capacity and knowledge of relevant stakeholders (farmers, governmental bodies, laboratories, etc.) throughout the Niger and Senegal river basins were reinforced, A clear picture was established on the contaminant type and level of threat to humans and environment from pesticide-contaminated waters Risks to farmers and aquatic environment from exposure to pesticides were estimated (Human Health Risk Assessment) but unfortunately not communicated.	MS	EO concurs	MS
<i>2. Likelihood of impact</i>	Governments in Senegal, Mali, Niger and Mauritania had started to adopt IPPM in their national training curriculum for farmers. CILLS at the regional level is increasingly working towards better regulation in the use of agrochemicals. It is expected that in the long run, the impact will be achieved by enrolling more farmers in similar programs and by securing stronger government support.	ML	EO concurs	ML

Criterion	Independent Evaluator's (IE) Assessment	IE Rating	Evaluation Office (EO) Assessment	EO Rating
<i>3. Achievement of project goal and planned objectives</i>	AT the time of this evaluation, there was no indication of a significant reduction in the level of water toxicity due to the project activities. Similarly, the increase of production is marginal to date. Nonetheless because of an increase interest showed by governments and CILSS the regional partner, it is expected that the goal will be achieved in the future.	MU	Indeed, elimination of POPs pesticide-use and substantial reduction/elimination of toxic pesticides used in agriculture in the project area was not achieved because the original design was too ambitious and the scale of the effort needed too large compared to the time and budget of the project. We must however also acknowledge that the project did manage to do commendable job, within the available resources, of setting up a foundation on which further work on attaining the stated goal can be based.	MS
D. Sustainability and replication		U	As per the UNEP Evaluation Office guidelines, all the dimensions of sustainability are deemed critical. Therefore, the overall rating for sustainability will be the lowest rating on the separate dimensions	U
<i>1. Financial</i>	The project did not develop a sustainability plan that addresses the future financial needs. At the time of the evaluation, none of the FFS was functioning due to financial issues.	U	EO concurs	U
<i>2. Socio-political</i>	The project approach has received support from the governments and other development partners such as the European Union (EU).	L	EO concurs	L
<i>3. Institutional framework</i>	The project had good relationships with the agriculture authorities in beneficiary countries, they shared the same offices and use the same extension workers. If the funding is mobilized again, the activities will likely continue.	L	The sustainability of outcomes in this project requires the greater involvement of governments in the target countries; it appears there was no succession planning for the structures set up by the project as these no longer exist at national level. This notwithstanding, there does seem to be evidence of policy development related to IPPM in Senegal, Niger and Mali.	ML
<i>4. Environmental</i>	The Project promoted the reduction of the use of agrochemicals and sought to define alternative	L	EO concurs, adding to this the fact that FAO	L

Criterion	Independent Evaluator's (IE) Assessment	IE Rating	Evaluation Office (EO) Assessment	EO Rating
	methods to be used against plants pests and diseases. It also sought to establish the level of toxicity of the waters in both the Senegal and Niger river basins for policy programming. Both actions are highly beneficial to the environment. The alternative methods proposed to farmers were nonetheless not always successful and needed to be tested and refined in collaboration with laboratories and research institutes.		continues to promote IPPM activities in the general project area	
<i>5. Catalytic role and replication</i>	FAO was able to mobilize additional funding from the EU and the Spanish government after the GEF funding, to disseminate IPPM in additional locations. Even if those funding are limited they prove there is potential interest of development partners in the method.	S	EO concurs	S
E. Efficiency	National and regional committees were put in place to guide the project. The WA PRM used the extension workers used by governmental bodies to implement the FFS, which was a cost effective measure. The training of trainers' approach that was adopted did also permit to reach more farmers at a lower cost.	S	EO concurs	S
F. Factors affecting project performance				
1. Preparation and readiness	Government bodies and most stakeholders were largely consulted during the design phase. The farmers did not fully participate in the design of the project though. The implementing partners selected at the beginning of the project had the interest and were willing to improve their capacity to achieve the planned objectives	S	The project design appears to have been quite ambitious with respect to the time and financial resources available. The project managed to do a commendable task in setting up the ground work, but the findings imply that the complexity and nature of the problem was largely underestimated (as is also reflected in the delivery of planned outputs).	MS
2. Project implementation and management	The project had put in place several mechanisms to ensure a smooth implementation and management. Activities were disrupted due to the inadequate resource mobilisation plan.	MS	The project team appears to have made notable efforts to adapt to the challenges, although these efforts were impeded by time and funding limitations, and weaknesses in the project design	S
3. Stakeholders participation and public awareness	The NTSC and RTSC were put in place and did meet regularly. Farmers were not part of those two platforms and at the country level the NTSC did not function as expected.	MS	The findings imply that awareness raising was sufficient. With regards to participation, the FFS approach is in itself a local-level participatory method. Findings also imply that the project facilitated several meetings and participants	S

Criterion	Independent Evaluator's (IE) Assessment	IE Rating	Evaluation Office (EO) Assessment	EO Rating
			were able to interact with people from other communities as a result.	
4. Country ownership and driven-ness	Governments of beneficiary countries have started to roll out IPPM as part of their national farmer training curriculum. At the time of this evaluation, none of the government had directly involved its own financial resources for scaling up though.	S	EO concurs	S
5. Financial planning and management	The project had a good financial plan and management. The budget needed to implement the activities was not availed on time, hence several adaptation measures that were put in place to address that. Mauritania had suspicion of fund mismanagement which was later proved in an audit report done by FAO.	MS	EO concurs	MS
6. UNEP supervision and backstopping	UNEP provided technical assistance and backstopping to FAO during implementation. Delays were noted from time to time regarding the feedback that had to come from UNEP.	S	EO concurs	S
7. Monitoring and evaluation		MS	EO concurs	MS
<i>a. M&E Design</i>	The consultant was not able to retrieve the M&E operating manual of the project and at the time of this evaluation, the monitoring data that was collected throughout the project lifetime was not available either. The project had an inception report and a midterm evaluation report though and this evaluation is the final of the group that attempts to learn from and documents the project experience.	MS	EO concurs	MS
<i>b. Budgeting and funding for M&E activities</i>	The project had set aside sufficient fund for its M&E at the national level. FAO had sufficient funds to monitor the work that was done by the subcontractors in the field. It is nonetheless worth noting that at the field level most partners that have been met mentioned the fact that they did not have an adequate funding to closely monitor the farmers. The lack of resources have nonetheless prevented the final evaluation to include water testing which would have allowed the project to say if there were a reduction in water toxicity compared to the toxicity level at the beginning of the project	MS	EO concurs	MS
<i>c. M&E Plan Implementation</i>	Indicators were defined for each and the logframe results levels. The annual targets for each country were not systematically documented which made it difficult to say if the project annual performances were met in each country. The NTSC and RTSC have met regularly to discuss the project performance and plans (although without the main actors: the farmers). At the country level, the NTSCs meeting attracted	MS	EO concurs	MS

Criterion	Independent Evaluator's (IE) Assessment	IE Rating	Evaluation Office (EO) Assessment	EO Rating
	expenses that could not be regularly met which explains the flaws noted in the plan.			
Overall project rating		MS	EO concurs ¹	MS

Lessons

19. **Sustained awareness-raising increases stakeholders' interest in pilot projects:** The project can be credited with having established awareness around the use and negative effect of POPs and other harmful agrochemicals in agricultural production systems. In all the participating countries, authorities have expressed their support for the project activities and have begun to take steps to adopt the philosophy of the project. This is the case in Senegal and Niger where IPPM is actually being promoted as part of the national agricultural extension curriculum. It is the same in Mauritania and Mali.

20. The project was an innovation in West Africa and the importance of its work on POPs and other agrochemicals was ultimately recognized by the scientific community. The project results were highlighted during a two-day meeting of the British Royal Society, where three papers from the project were presented before a public audience and other scientists from around the world². Those papers were later published in late 2013 in the Philosophical Transactions of the Royal Society, Ser. B

21. **The lack of risk communication experience and funding hinders the achievement of planned objectives:** Neither FAO, nor ENDA/CERES had risk communication experience, and that hindered the project because, the data was collected but FAO and ENDA/CERES did not have the expertise to communicate information to communities in ways that they could understand. FAO needed to invest more into finding methods for communicating the information in an appropriate form to communities. It had no in-house expertise for that at the time of the project implementation; the project needed a communications/ popular mobilization expert to connect the lab to the field to use the data and educate and mobilize the population.

22. Adequate budgeting of the risk communication activities was necessary to achieve greater results and would cost at least a third of the budget. While the budget was modified several times during implementation, at no point in time did the project team substantially amend it to integrate the risk communication component that would have operationalized the detection of the POPs. In fact it seems the project did not understand the distinction between the pilot and the application on

¹ A weighted scoring approach, giving greater priority to the 'Effectiveness' and 'Sustainability' criteria and sub-criteria, yields a 'moderately satisfactory' overall rating. This notwithstanding, the efforts of the project team is readily acknowledged for the gains it did achieve towards meeting the formal project goal and objectives. According to the findings presented in the report, this project was an innovation in West Africa and the importance of its work on POPs and other agrochemicals was ultimately recognized by the scientific community.

² 1) Anderson et. al., from OSU and CERES Locustox, regarding the outcome of capacity building with CERES, the methods development undertaken, and the results, related to the water sampling with Passive Sampling Device (PSD) technology in 19 watersheds in the 6 program countries; 2) Jepson et. al., from OSU, FAO and ENDA, related to the monitoring of farmer pesticide use and calculations of risk to environmental and human health indicators in the 6 program countries; 3) Settle, et. al., from FAO, regarding the outcomes of training using Farmer Field Schools and the reduction of pesticide use by farming communities.

a larger/wider scale to create a stronger evidence base for the presence and potential harmful effects of POPs for participating communities. It is estimated that the project needed to devote at least 1/3 of its budget to the risk communication component to be at optimum levels.

23. The lack of effective alternative methods to combat pests and diseases leads to sustained use of POPs and other toxic agrochemicals: FFS approach is saying that all chemicals are bad and no distinction seems to be made. This was a challenge as the participants continued to use pesticides and herbicides because they were not provided with effective alternatives and clarification on which pesticides/herbicides are most toxic, and their degrees of toxicity.

24. It is was a **mistake for the project to follow an approach that promotes the use of neem for any sort of disease and pest in farmers plots**. Neem the primary alternative proposed in the FFS is not good for diseases, weeds and certain pest, so the alternative FFS proposed was not a comprehensive solution for producers needs. It is harder to regain farmers' confidence once they try and fail when using a recommended practice. The project was trying to be completely anti-pesticides when this may not have been appropriate in some circumstances, so FAO should be encouraged to create a better link between the lab and the FFS as a means of making projects like this one more effective.

Recommendations

25. For similar projects, it will be important to make sufficient provisions in the budget for the risk communication component. The rule of thumb could be that one third of the project budget be kept aside for that important component. In this case although the problem regarding the risk communication financing was raised early enough during implementation, it appeared that the budget modifications did not take them into account for unknown reasons. It will be useful in the future to build in FAO projects a certain level of flexibility that could accommodate similar challenges/issues.

26. The messages passed in the FFS should be based on FAO long experience in promoting FFS but also on verifiable scientific data. IPPM should not rule out the use of chemicals in the production systems. FAO should work with laboratories to identify the least dangerous chemicals that could both respond to producers needs and cause the least damage possible to the environment.

27. To increase the use of biological products to combat pests and weeds, FAO should partner with laboratories to identify the best available products that farmers could use and define the optimal dosage and mode of utilization.

28. Progress has been made in monitoring and evaluation during implementation but a lot of opportunities were missed because of the lack of proper M&E in the project. FAO needs to ensure that any project that will be implemented in the future has appropriate baseline information, well-defined targets, and SMART indicators from project inception. These outputs and outcomes should reflect the project logic and key results without becoming too entrenched in the project management details. This also means making investments to ensure the competency of FAO staff and partners in M&E.

29. Although the project ended three years ago, at the time of this evaluation, FAO was not able to produce any database that could be used to do the final evaluation and back up its achievement claims. It is important to put in place a comprehensive monitoring, evaluation and learning system at the start of the project and maintain the system /keep the records until at least five years after the

project has ended because most impact evaluations are executed between the time a project ends and the fifth year after completion.

30. It was fortunate that the majority of producers in the FFS were female but in the future, gender needs to be more systematically incorporated into the design phase. For future projects of a similar nature, UNEP and FAO must clearly articulate a gender strategy with milestones and timelines that are integrated into the larger project strategy from the outset. Technical expertise and staff should be brought on board to manage and ensure progress on the gender indicators across the project.

31. It is important that clear baselines be established for the most common use agrochemicals in each country. The project was successful in enrolling a certain number of laboratories in the region and building their capacity to detect those products in the environment. In designing future projects, UNEP and FAO should initially list and categorize all the chemicals that are used in the project countries and start establishing baselines of contamination levels. The baselines would then be used for public policy purposes.

1 Introduction

1. The report is the result of a final evaluation commissioned by UNEP to evaluate the GEF project “Reducing Dependence on POPs and other Agro-Chemicals in the Senegal and Niger River Basins through Integrated Production, Pest and Pollution Management” (also referred to as “West African Pesticide Risk Management”), which sought to provide agricultural and environmental programming in six countries (Senegal, Mauritania, Mali, Guinea, Niger and Benin) to ensure food security for their populations while protecting their health and the environment against the harmful effects of pesticides and other agrochemicals. The evaluation was carried out from October 2015 to January 2016. The evaluation was conducted employing mixed methods, however, emphasis was placed on desk review, semi-structured interviews, participant observation and focus groups during field visits made to key locations in each of the of the participating countries.

2. The evaluation sought to examine the performance of the project relative to the 5 main evaluation criteria of efficiency, effectiveness, relevance, sustainability and impact and two additional criteria, namely the factors and processes affecting project performance and the complementarity with the UNEP strategies and programmes. The evaluation also sought to identify key lessons learned and the way forward for future phases of the project to do this used a participatory approach engaging a wide subsection of the project stakeholders including beneficiaries, and national and regional institutions, to establish the lessons learned and best practices emerging from the implementation of such a complex project, that is ahead of its time given the need for improved and environmentally sound agricultural practices in West Africa, especially in a context of repeated shocks and natural and manmade disasters.

3. The project sought to "protect transboundary waters in the Niger and Senegal rivers basins through eliminating the use of POPs pesticides and a substantial reduction and elimination of other toxic pesticides used for agriculture and increase agricultural productivity and net economic benefits for farmers". The project focused on the two principal river basins in the West African Sub-region, the Niger and Senegal River Basins, and addresses riverine contamination issues related mostly to irrigated-farming activities.

4. The project aimed to contribute to both OP#10—International Waters Contaminants and OP#14—POPs reduction by developing local and national-level awareness-raising activities; policy studies on national pesticide use patterns, and create links with national and regional pesticide legislative bodies. It also sought to build capacity in the region to carry out water-quality assessment studies in six countries, run models to estimate the impact of toxic chemicals on biodiversity in terrestrial and aquatic systems and estimate quantifiable risks to human health. At the local level the project sought to support communities to adopt improved, alternative production methods and promote and develop local, national and regional networks of stakeholders interested in improving the current situation. The outcomes aimed to empower national and regional-level decision-makers with solid tools and data for addressing integrated development objectives and satisfying international treaty commitments; with an ultimate goal of substantially lowering pesticide use in the riverine communities—particularly the most toxic types, while at the same time substantially increasing yields and net revenues for farmers.

5. This final evaluation report highlights the degree to which the West African Pesticide Risk Management Project was able to achieve the aims set out in its project document and was led by the following evaluation questions set out in the Terms of Reference (ToR):

- a. To what extent did the project succeed in engaging and developing partnerships with governmental structures to raise awareness on issues and threats related to pesticide use and Persistent Organic Pollutents?

- b. Did the project succeed in establishing clear baselines on pesticide contaminant loads as a basis for national studies and policy recommendations? To what degree of success did the project build capacity in scientific assessment of freshwater contaminants?
- c. Did the 'Farmer Field Schools' approach effectively demonstrate Best Practices for agricultural production, improve community-level pesticide-monitoring, and enhance agricultural productivity and profitability?
- d. Did the project successfully disseminate its experiences and knowledge gained to neighboring communities in the same water-use areas, through its community networks of IPPM farmer facilitators, Farmer-Trainers and Technician-Trainers?
- e. To what degree has the project established institutional capacity to co-ordinate regional interventions, monitor project impacts, and disseminate and exchange information?
- f. What were the most effective coordination and management strategies used by the project and what were the key drivers and assumptions required to influence the achievement of planned outcomes and development goals?

6. The evaluation was conducted using qualitative and quantitative methodologies in line with the UNEP Evaluation Policy³ and the UNEP Project Manual⁴. This Terminal Evaluation will assess project performance in terms of relevance, effectiveness and efficiency, impact and sustainability.

1.1 Evaluation limitations

7. The mission was successful at collecting data that would permit the effective assessment of the project across the five evaluation criteria and key evaluation questions as detailed in the Terms of Reference for the mission. Despite its success the mission was not without its challenges. Here the challenges are outlined to provide context and clarity regarding the quality of the data emerging from the mission, and the context that may affect that data set:

8. The execution of the mission was challenging due to the **number of countries and stakeholders involved** as well as the fact that it has been implemented over time with some locations having received a few interventions quite some time ago. However, the evaluator sought to overcome these challenges through a triangulation of methodologies and data that allowed the mission to clearly identify the successes, accomplishments and challenges of the project according to the guidelines established in the ToR.

9. **In some places like Benin, Senegal, the project concluded almost three years ago**, and as such many staff and stakeholders have since moved on or left FAO and/or the partner organizations. While the mission was able to acquire data and inputs from a critical mass of stakeholders, it should be noted that some biases may result from the ex-post evaluation approach, due to actors no longer involved, available or in some cases challenged in their recollections, which can affect ability to effectively recall information or attribute impact and results to the project.

10. Funding for the different elements and components was allocated and distributed at differing points throughout the project duration. Hence, activities were implemented iteratively as the funding for the project was allocated and dispersed over the years of project implementation. As such project objectives were not quantitatively linked to the tranches of funding but overall project goals, therefore the theory of change as it pertains to the timing and implementation of the

³ <http://www.unep.org/eou/StandardsPolicyandPractices/UNEPEvaluationPolicy/tabid/3050/language/en-US/Default.aspx>

⁴ http://www.unep.org/QAS/Documents/UNEP_Program_Manual_May_2013.pdf

various elements of the project was not fully respected, and as such may have diluted the impact/ effect of the project.

11. It was challenging to reconstitute the data for this project because the project lacked a database for the project at the time of evaluation. In addition, progress reports could not be obtained; only final reports were obtained with summary tables on the results achieved, but not the data itself. This limits triangulation because secondary sources of data for comparison and verification are not as abundant as they would be were a database and monitoring reports readily available.

12. **The project does not have longitudinal quantitative data on the presence of POPs and other agrochemicals in the target areas.** These studies were conducted by ENDA and OSU at the beginning, but not at the end of the project, making it impossible to prove any change in the level of products in the two river basins. This was a major limitation and very challenging to overcome, given this is directly linked to the overall goal of the project and is the most direct measure of project success.

13. **FAO has implemented several projects with similar aims, activities and results.** This made it difficult for the mission to single out the results attributable to this project and those attributable to other FAO projects. This was particularly so because in some cases the geographic targeting was sometimes the same as well as the iterative implementation of the project during funding availability.

14. The most concerning aspect of the challenges affecting the data collection is the lack of monitoring data to triangulate with evaluation data and the lack of endline testing for POPs by OSU. While the outcome level findings and process level aspects of the project can be fully explored with the dataset, these two challenges limit the degree to which the mission can determine and attribute impact to the project.

2 The project

2.1 The context

15. The project is focused on the two principal river basins in the West African Sub-region: the Niger and Senegal River Basins. It addresses riverine contamination issues related mostly to irrigated farming activities, in the six riparian countries of the Senegal and Niger Rivers i.e. Benin, Guinea, Mali, Mauritania, Niger and Senegal. Agriculture in these six countries is dominated by smallholder plots with a mean size of approximately 0.5 ha. Trends in all six countries are towards increased use and dependence on agro-chemicals, which has, ironically, contributed to declining long-term agricultural productivity, environmental quality, and human well-being, through toxic contamination of food-chains and disruption of ecosystem services, such as natural pest suppression and pollination, as well as revenue loss due to contaminated export produce. Explosive outbreaks of pest problems are also often triggered by insecticide use (insecticide-induced pest resurgence). Other negative trends include decreasing soil fertility, contamination of waterways, detrimental shifts in aquatic ecosystems, and overall degradation of human and environmental health. The social and economic drivers leading to these unsustainable agricultural practices include a lack of awareness among communities regarding both the impacts and negative externalities associated with pesticide use, as well as a lack of awareness of feasible, sustainable and more profitable alternatives.

16. There was an urgent need to address the use of persistent and toxic pesticides, particularly Persistent Organic Pollutents (POPs), Persistent Toxic Substances (PTSs) and other banned pesticides in the Senegal River Valley. While recognizing that this is a "demonstration" project, the area of agricultural land targeted by the project is nonetheless important. The project aimed to train 30,000 farmers over 4 years in six countries for a total area of cultivated land estimated at almost 15,000 hectares.

17. The main socio-economic causes ("factors") underlying agro-ecological problems in member countries include historical inertia, inherited years of use of chemical pesticides, commercial industry pressures established for many years. This project falls within the 10 Operational Project on international waters (contamination) and 14 of the Operational Project on Persistent Organic Pollutents (POPs) and, in both cases, it aims to achieve Strategic Priority # 3 (Technology Demonstration innovative and cost).

18. All project partner countries are signatories to various sub-regional and international agreements related to pesticides, water, biodiversity and the environment, and have developed in accordance with these agreements, a set of laws, national strategies and action plans⁵.

2.2 Objectives and components

19. The development goal is to engender changes in farming practices and substantial reductions in the use of chemicals for pest control across the two river basins, while increasing production levels, profitability and sustainability through the introduction of specialized agricultural training for farmers, through capacity building within government agencies, non-governmental organizations and especially community-based farmers' organizations. By putting effective alternative methods at the disposal of small-scale and industrial growers through proven discovery learning methods; it is expected that they will be able to optimize decision-making regarding the appropriate use of land and water resources and the selection of appropriate agricultural practices in favour or improved environmental outcomes and agricultural productivity.

20. The project had five key components:

- Component 1: Awareness raising and baselines
- Component 2: Assessment of freshwater contaminants
- Component 3: Developing best practices
- Component 4: Developing networks
- Component 5: Project management

21. The project's logical framework is summarized in the following table:

Table 3. Project Components and Activities

⁵ The countries involved in the project have signed several international agreements and conventions to show their commitment to pollution prevention and reducing pesticide use. These agreements include: the Basel Convention on the control of transboundary movements of hazardous wastes and their disposal; the Rotterdam Convention on Prior Informed Consent (PIC) and the Stockholm Convention on POPs. The project helped to promote the ratification of the Stockholm Convention in three of the six countries (Niger, Mauritania and Guinea). At the African level, countries have endorsed the OAU Conventions on Plant Protection; the Inter-African Authorization Herbicides of the Bamako Convention, which prohibits the import of toxic waste, the International Convention on Biodiversity, and the FAO International Code of Conduct on the Distribution and Use of Pesticides. Effective and harmonized application of these conventions requires an understanding of their conditions and attitudes that enable local people to contribute to their success. Initiatives aimed at finding alternative and pesticide management are already underway.

Project Objective: To protect transboundary waters in the Niger and Senegal River Basins through elimination of POPs pesticide-use and substantial reduction and elimination of other toxic pesticides used in agriculture; while augmenting agricultural productivity and net economic benefits to farmers	
Outcomes	Activities
<p>Outcome 1: Awareness Raising and Establishing Community Baselines</p> <p>Stakeholder awareness is raised through establishment of baselines on pesticide use and farm-level production statistics at national and regional levels. Partnerships developed with government structures, NGOs and Farmer Organizations (FOs) at local, national and regional levels</p>	<p>Conduct consultation and planning meetings at all levels:</p> <p>Meet with CILSS CSP and CPH/AOC structures to discuss information exchanges</p> <p>Conduct baseline community surveys at 5 project sites in 6 countries</p>
<p>Outcome 2: Assessments of Freshwater Contaminants</p> <p>Stakeholders are alerted to the type and level of threat to humans and environment from pesticide-contaminated waters through the first high-quality assessment of the two principal rivers and associated irrigation and drainage systems</p>	<p>Sites specified for monitoring contamination in the Niger and Senegal Basins:</p> <p>Water samples taken and analysed in regional ecotox laboratories:</p> <p>An empirically based modelling approach explored as means to estimate relative risks to farmers (Human Health Risk Assessment) and elements of the aquatic environment, from exposure to pesticides.</p> <p>Results translated into curriculum suitable for use in Farmer Field Schools for discussion of risks to humans and threats to ecosystems;</p>
<p>Outcome 3: Developing Best Practices for Sustainable Agriculture;</p> <p>Toxic pesticide use is drastically curtailed, POPs pesticide-use is largely reduced or eliminated in target communities, and agricultural productivity and profitability are substantially increased in all three cropping systems (rice, vegetables, cotton) through participatory training and adoption of Best Practices for sustainable agriculture. Community-level pesticide-monitoring systems in place and examples of successful self-financed FFS seen in each country.</p>	<p>Hold first regional curriculum-development workshop:</p> <p>Conduct one full-season “Training-of-Trainers” (TOT) programmes in year one in each of the three new programme countries for rice: Guinea, Mauritania and Niger, using Master Trainers from Mali, Senegal and Benin;</p> <p>Conduct one full-season TOT programme in year two for in each of the three new programme countries for vegetables: Guinea, Mauritania and Niger, using Master Trainers from Mali, Senegal and Benin;</p> <p>Conduct Farmer Field Schools in each country;</p> <p>Develop pesticide use monitoring systems with target communities, through FFS alumni and village leaders;</p> <p>Conduct second curriculum development workshop in year 3 to share lessons learned and curriculum developed during the first two years of the project.</p>
<p>Outcome 4: Developing Networks</p> <p>Communities sharing the same river-basin hydrological resources communicate the results of Best Practices and contaminant reduction activities through inter-community communication and exchange networks.</p>	<p>Develop networks among villages in the same water-use areas (same/ shared river, irrigation and drainage systems):</p> <p>Develop networks among facilitators at local, provincial and regional levels</p>

22. The outcomes were expected to provide national and regional-level decision-makers with solid examples for addressing integrated development objectives and satisfying international treaty commitments. Outcomes are also expected to substantially lower pesticide use in the riverine communities—particularly the most toxic types, while at the same time substantially increasing yields and net revenues for farmers.

23. The project seeks ultimately “to protect transboundary waters in the Niger and Senegal River Basins through elimination of POPs pesticide use and substantial reduction and elimination of other toxic pesticides used in agriculture; while augmenting agricultural productivity and net

economic benefits to farmers”. It purposes to demonstrate best practices for contaminant prevention and increased agricultural productivity through participatory farmer-education approaches through the following specific objectives:

- a. Promote understanding of a range of environmental knowledge and issues, particularly those relating to the range of benefits from various ecosystem services, deriving from the riverine habitats, plus the specific threats posed by pesticides to the riverine habitat and therefore also to the health and well-being of the communities. Data from the water quality samples will be put into a “hands-on” adult-learning format for use in an FFS context to support this objective.
- b. Demonstrate feasible, economically and environmentally advantageous alternative production models. The main barrier to adoption of agricultural methods that prevent contamination of fields and waterways is lack of knowledge and skills in the communities. The hands-on educational approach of the FFS will help the farming communities demonstrate for themselves the feasibility of alternative, non-polluting methods.
- c. Develop a community-based pesticide monitoring system. This principal objective of the project involves farming communities surveying, monitoring and keeping track of trends in pesticide use in their own communities through the development of an appropriate system for accounting for pesticide use in the communities (type, quantities, points of sale origin, time of use, crop type, etc.). Adoption of the system will be motivated by enhanced understanding of health, economic and environmental costs and risks associated with pesticide use and further motivated by a hands-on appreciation of a range of economically advantageous alternatives.
- d. Create links among communities that share the same hydrological system flows (“upstream--downstream”) to enable farmer-to-farmer advocacy and the sharing of information and experience, particularly information on the impact of production models on the environment and the health of communities working and living in downstream areas.
- e. Disseminate tools for community-based action-oriented analysis and planning, for the future of the river basins.

2.3 Target areas/groups

24. The project targeted small farmers cultivating high value crops (rice, vegetables, cotton) that are primarily irrigated by the Senegal or Niger rivers and their tributaries. The decision to target these farmers, was based on the fact that they are the main users of pesticides in these countries and were thus exposed to these chemicals. Despite the fact that this was a pilot project, the scale of agricultural land targeted was nonetheless significant. The project aimed to train 30,000 farmers in six countries over 4 years for a total area of cultivated land estimated at almost 15,000 hectares. This is broken down as follows:

- **Benin:** the total area of land irrigated and used in the project’s areas of intervention was estimated at 19,700 ha, of which 1,266 ha are the subject of controlled irrigation (the remainder is under cultivation and in ‘lowlands’). Rice, vegetable crops and cotton are cultivated there. The amount of cotton produced in the project areas constitutes 35% of the total cultivated land in the country.
- **Guinea:** the total area under controlled irrigation within the project intervention area was estimated at just under 15,000 ha.
- **Mali:** the total area under controlled irrigation in the project area was almost 83,500 ha, out of a national total of 170,000 ha of irrigated land. The potential for irrigation (based on water flow estimates from the Niger river) was around 2 million hectares at the

project design phase. Rice, vegetable crops and cotton were all cultivated in the area covered by the project.

- **Mauritania:** the total area of potential agricultural land was estimated at almost 42,000 ha of which around 20,000 ha fell within the project area. Rice and vegetables were the main crops cultivated.
- **Niger:** The area of potentially irrigable land was estimated at 140,000 hectares along the Niger River Basin, of which 40,000 was cultivated and fell within the area of the project. Rice and vegetables were the only crops of interest to the project in Niger.
- **Senegal:** The area of potentially irrigable land was almost 500,000 ha, half of which was located in the Senegal River Valley. The project's area of intervention had a potential access of almost 94,320 ha that were currently being cultivated (the parastatal company, SAED, managed 40,066 ha, with private operators managing 48,254 ha). Rice and vegetable crops were the targets of this project.

2.4 Milestones/key dates in project design and implementation

25. The EP/INT/606/GEF project experienced a long, slow evolution. The pilot phase (PDF-B) began in 2003-2004. The 2004 design phase began in 2005 and the project was originally endorsed in June 2005 through GEF funding. The project was approved by UNEP on January 2009 and the actual start-up began on April 10th, 2009. The major consequence of this delay was the closure in June 2010 of the second phase of the Integrated Production and Pest Management project through the FFS, the 'twin' project that guaranteed essential co-funding for training and management activities in 3 countries (Senegal, Mali, and Benin), despite the fact that the GEF was to guarantee funding for environmental monitoring activities (sampling) in all target countries, and training in 3 others (Mauritania, Guinea, and Niger).

26. A workshop was held in Dakar on 14-15 January 2010, entitled "Launch of GEF project activities (EP/INT/606/GEF) for the Reduction of dependence on POPs and other chemical products through integrated production and pest management in the Senegal and Niger river valleys".

27. In November 2012, a midterm evaluation was completed. The actual project completion date was December 2014 as opposed to the planned completion date of December 2012.

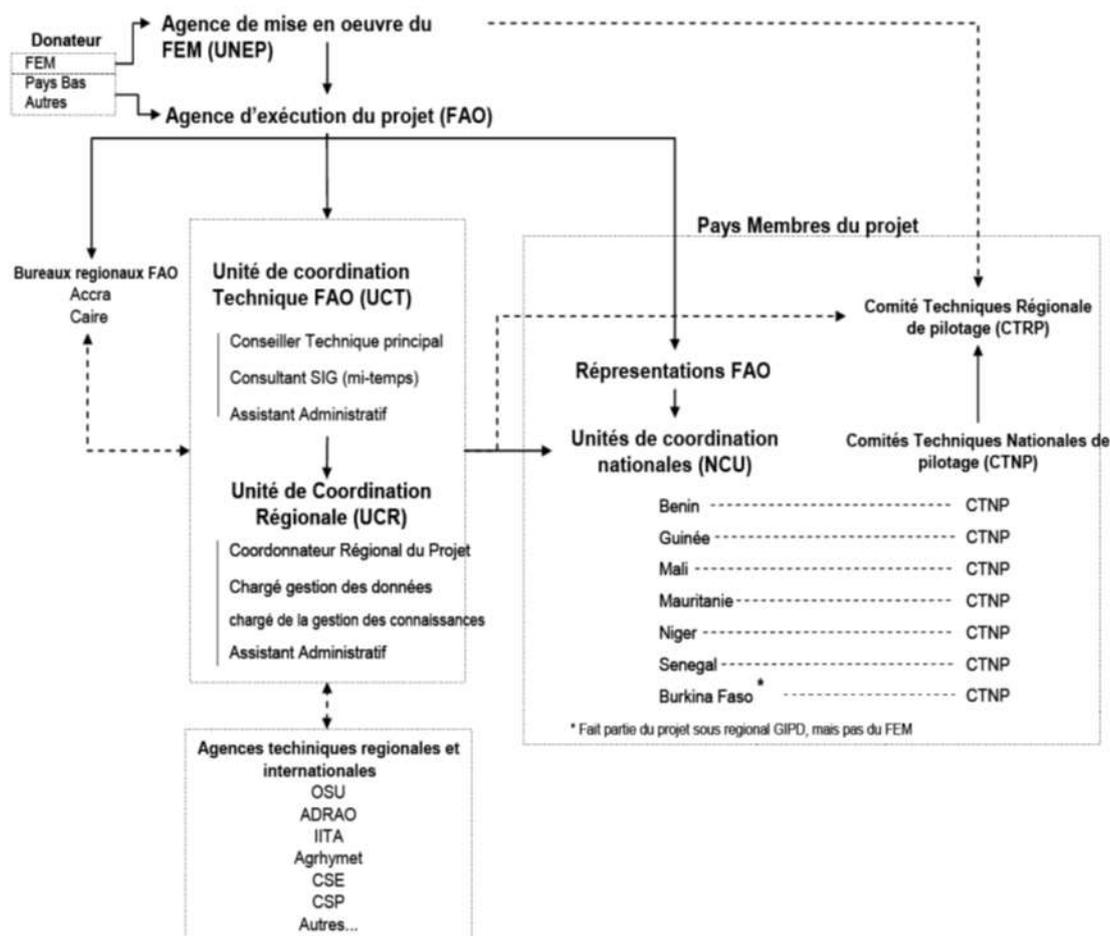
2.5 Implementation arrangements

28. **FAO** was the Executing Agency of the project, providing the overall co-ordination and technical backstopping of the project. FAO was responsible for the overall financial management of the project, ensuring the necessary human resources and equipment inputs were provided in a timely manner to ensure smooth implementation of the project and delivery of outputs, the submission of project progress and financial reports to UNEP/GEF.

29. To ensure that communication and coordination of project implementation was guaranteed at all levels, the project had created regional and national technical steering committees and a regional coordination mechanism to manage the work across borders and within each of the six participating countries. This was where the various stakeholders could come together to ensure that the various participants, implementers, authorities (local, national and regional) and technical partners were sharing information, harmonizing their efforts and maximizing return on investment. **The Regional Technical Steering Committee** was another stakeholder that was set up at the beginning of the project, comprising a representative each from UNEP, FAO, the participating countries' NTSC and relevant regional agencies. The RTSC was chaired on a rotating basis by the

member countries; a representative of FAO served as Executive Secretary. **Six National Technical Steering Committees** were set up at the beginning of the project, comprising a membership that were decided by each country's lead ministry. The National Technical Steering Committee was responsible for guidance related to the overall orientation of the national project as well as monitoring of the project execution to assure compliance with the project's logical frameworks and overall project documents.

30. As the GEF Implementing Agency, **UNEP** was responsible for overall project supervision to ensure consistency with GEF and UNEP policies and procedures, and provided guidance on linkages with related UNEP and GEF-funded activities. The UNEP/GEF Co-ordination monitored implementation of the activities undertaken during the execution of the project. The UNEP/GEF Co-ordination was also responsible for clearance and transmission of financial and progress reports to the GEF. The following figure depicts the institutional structure of the project:



2.6 Project financing

31. According to the project document, the total project cost (including PDF-B Phase) was \$ 9,305,340 (Table 1); \$ 999.683 were the initial costs incurred by governments in cash or in kind. FAO and its projects had contributed an amount both in cash and in kind totalling \$ 3,458,477, including \$ 2,800,000 from the IPPM FAO project funded by the Netherlands (GCP / RAF / 009 / NET), and \$ 267,000 from Sweden towards assessment of the environmental impact of locust control. GEF funding was \$ 4,105,330, excluding support of the PDF-B phase \$ 372 500. The funding for each component is outlined in Table 5. However the project document does not contain enough detailed

elements (e.g. more detailed activities or purchasing equipment, etc.) to thoroughly assess whether budget allocations were sufficient to achieve the desired results for each component.

Table 4: Project costs: Costs and funding (in millions \$ US)⁶

Source		Cost in \$
GEF	Project	4,105,330
	PDF A	
	PDF B	372,500
	Total GEF	4,477,830
Co-financing	Bilateral:	
	Netherlands	2,800,000
	Sweden	267,000
	Governments:	
	In cash	666,488
	In kind	333,244
	FAO (in kind)	391,428
	PDF-B Co-financing	369,350
Sub-Total Funds	4,827,510	
Total Project Costs		9,305,340

Table 5: Funding by component and source of funding⁵

Component	GEF		Co-financing				Grand Total (\$)
	\$	%	Govern. (\$)	Other (\$)	Total (\$)	% Co-financing	
1 ^{ere} : Awareness raising and establishment of baseline	805 076	53.2	250 000	456 930	706 930	46.8	1 512 006
2 ^{eme} : Evaluation / monitoring of water Pollutents	1 140 269	50.8	100 000	1 005 980	1 105 980	49.2	2 246 248
3 ^{eme} : Development of best practices	1 265 566	46.4	250 000	1 210 440	1 460 440	53.6	2 726 005
4 ^{eme} : Development of community networks	505 076	44.6	250 000	376 929	626 929	55.4	1 132 005
5 ^{eme} : Coordination and project management	389 344	41.1	149 683	408 198.4	557 881.4	58.9	947 225
Project Total	4 105 330	47.9	999 683	3 458 477	4 458 160	52.1	8 563 490

2.7 Project partners

32. Due to the complexity and nature of this regional multinational project there were multiple stakeholders at the local, national and regional levels. The project management structure diagram in the Prodoc illustrates this clearly. At the local level small scale farmers and agricultural producers in all six participating countries were the direct beneficiaries of the project, along with their national governments and regional and sub-regional governing bodies that were the sources of data and

⁶ Source: Document du program

targets of advocacy. At tertiary level there were multiple civil society and technical agencies (at national and regional levels) including OSU, West Africa Rice Development Association (WARDA/ADRAO), International Institute of Tropical Agriculture (IITA), to name but a few, that were involved in the implementation of the project, including the research, capacity building, advocacy and support to the community level pesticide monitoring system.

33. **Farmers** and their communities along the Senegal and Niger River basins were the final beneficiaries of the project's activities. The anticipation was that they would actively be involved in project implementation through observation, knowledge generation activities and visits they undertook throughout the project lifetime. Within each group of communities, a network of IPPM farmers' facilitators had been established and played a key role in disseminating the project approach and activities within and beyond their communities.

34. **A network of implementers** made of representative of pesticides dealers, laboratories, and local Non-Governmental Organizations (NGOs) was also to be established to help with the implementation of the project activities. Oregon State University was selected to be involved in the process of data collection, analysis and reporting carried out by the laboratories (CERES) in order to detect the toxicity of the waters.

2.8 Changes in design during implementation

35. Several changes have taken place in this project during the implementation phase.

36. It was not possible to mobilize the initial budget for the project before implementation. This contributed to elongating the project timeframe and several budget changes took place as contributions were mobilized. As a result, it took FAO almost twice the initial time period that was in the proposal to implement the project.

37. During the project implementation, CERES had several institutional crises that led to a rapid staff turn-over. It was therefore not possible to equip it to fully play its role in the acquisition and dissemination of knowledge regarding the sampling, analysis and communication of results. Most of the laboratory technicians who had been trained by OSU left the laboratory while the project was still in implementation. The management of the laboratory also saw high turn-over during the life of the project.

38. It was planned that the Farmers' Organizations (FO) sensitize their peer producers in their respective communities based on the results of the research conducted by OSU, which would detect the presence of POPs in the environment. This did not take place for reasons that will be explained later in this report. Based on discussions with project stakeholders, the project did not put the results into language and a style that could be easily understood by producers, which prevented their transmission to the target population. In fact that task falls within the risk communication component which was under budgeted in the proposal.

39. FFS Financial empowerment did not happen as planned in the original project document. In fact, there was no strategy in place to achieve this empowerment; the project was carried out without taking this dimension into account. Finally, the FOs' participation in planning and negotiation of partnerships did not happen. This component was included from the beginning as a measure of good governance and sustainability of the activities but in the end was not executed. The FOs were not represented in national or regional steering committees and the project has not

played a facilitating role in line with the conclusion of partnerships between FOs, government and NGOs.

2.9 Reconstructed Theory of Change of the project

40. The original project document did not contain a detailed description of the theory of change. Add to this the fact that the project was changed several times during its existence, with a clear but different objective each time leading to the project's general theory of change being spread over a number of documents. It was therefore necessary to collect and synthesize these documents in order to arrive at current reconstructed Theory of Change (TOC).

41. In its current form, the TOC's direct outputs are the organization of consultation meetings between different project stakeholders, the measurement of water toxicity levels in the two river basins, the FFS, community pesticide awareness raising networks, training of trainers, and the establishment of a general geo-referenced database of results.

42. It was expected that these outputs would deliver outcomes related to an increase in local actors and decision-makers' knowledge about the use of POPs and other agrochemical products, the reduction of use of these products within agriculture and the implementation of a sustainable funding system for FFS activities. Finally, it was expected that these results would eventually contribute to a sustainable, and significant, increase in producers' incomes and their standard of living.

43. Two determining elements were necessary, however, in order to obtain these results: continued funding of project activities and the large-scale participation of women in the project. Indeed, project funding was a problem as different donors did not always make funding available in time, which led to the project activities being spread out in terms of timing. Women, however, principally participated in the project as they were the majority participants in the target crops (rice and vegetables).

44. The West African Pesticide Risk Management Project was an evidence-based project; its theory of change and design benefitted from lessons learned and experiences from previous projects implemented by FAO and UNEP around pesticide use and water contamination. That evidence-based approach was illustrated by the project's emphasis on research and information sharing, which included baselines in participating communities and continued water assessment, throughout the Senegal and Niger River basins during the life of the project, to monitor contamination levels from toxic agro-chemicals. The data and information that emerged from the project's baselines, and continued and sustained monitoring serves two purposes: first as part of the curricula and secondly as part of the efforts to develop best practices for the farmer field schools.

45. The project aimed to develop curricula for farmer field schools through the target zones that cover everything from: (1) alternative methods for maintaining agricultural productivity without using harmful agrochemicals (2) the dangers of pesticides for health, (3) the economic consequences of their use, (4) water contamination and potential health consequences for affected communities, and (5) methodologies for creating community-based pesticide monitoring systems.

46. Capacity building was a major part of the project's pathway to building knowledge and empowering local communities through farmer field schools to lead the movement to reduce pesticide and harmful agrochemical use in their local communities. Advocacy with local, national and

regional stakeholders was also informed by the data emerging from baselines and research being conducted as part of the evidence-based approach of the project.

47. Information and data was expected to serve as the foundation for delivering convincing and inspiring messages that motivate local, national and regional stakeholders to action to abandon the use of harmful agrochemicals at the industrial and small scale farming levels. It was planned that advocacy would create the momentum required to establish networks at the local and regional levels to organize sustained collective action around diminishing the use of toxic agrochemicals Niger and Senegal River Basins.

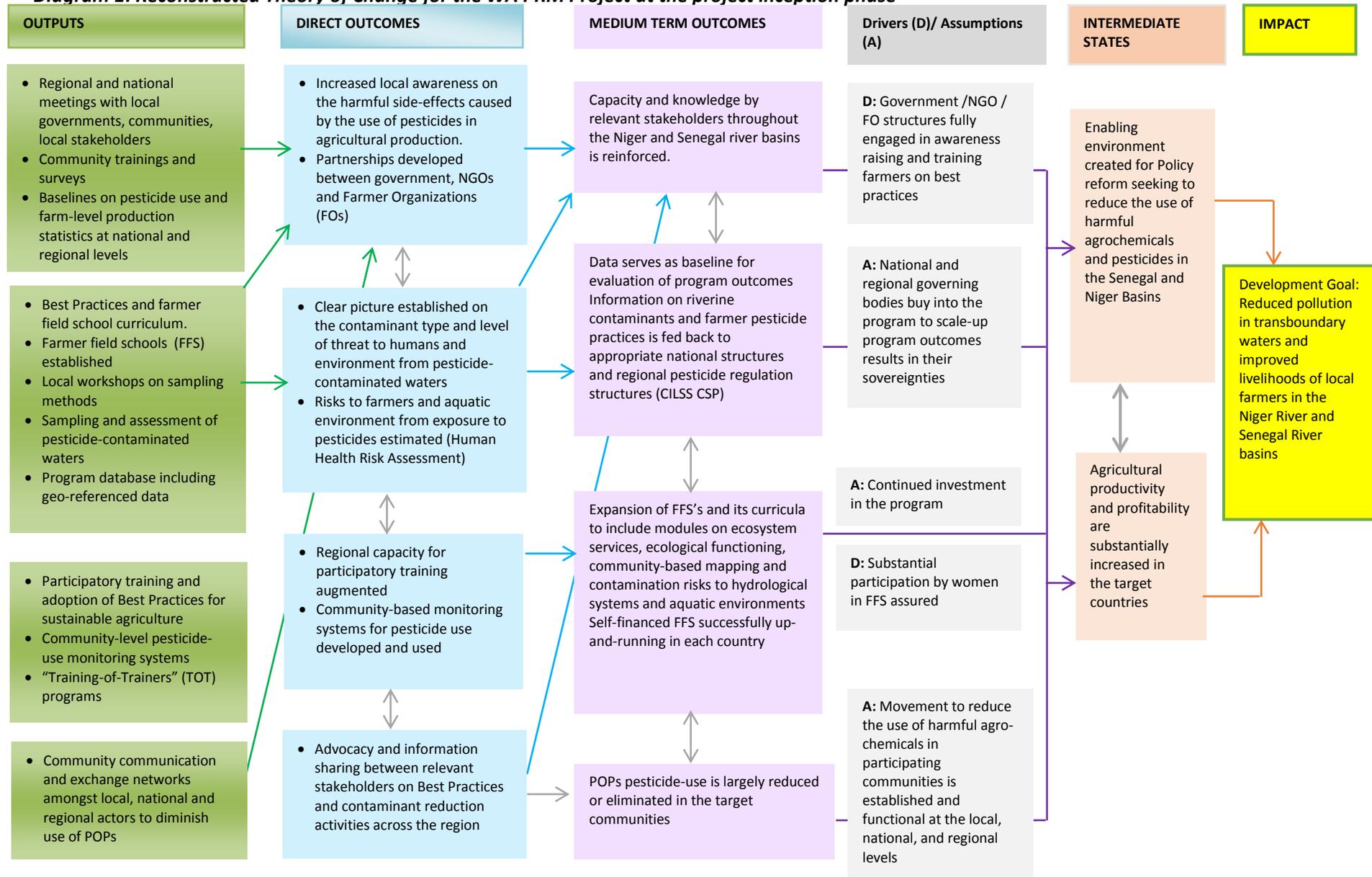
48. Due to the complexity of the project and its transnational context working across six countries, a complex platform had been established to provide solid leadership for the implementation of the project at the local, national and regional level, hence coordination was established through local partners, national technical steering committee and the regional technical steering committees which form the foundation for coordinating the work throughout the 6 countries, ensuring that there was synchronized implementation and learning occurring and that work at each level of the project was mutually reinforcing and sustaining.

49. The theory of change outlined during the design phase was changed following field work. Changes were necessary in order to take account of the realities of the project: some planned activities were not carried out, whereas others that were not taken into account initially were undertaken at a later stage. This meant that the outputs and outcomes included in the initial logical framework were not achieved while others that were not previously mentioned were achieved.

50. In terms of outputs, for example, there are currently no reliable national and regional statistics about pesticides, as at the end of the project. Furthermore, no community surveillance systems for pollution have been put in place. Although some participants benefited from exchange visits, it was not possible to identify a significant number of people/organizations who had exchanged information with the aim of reducing water pollution by pesticides.

51. The following diagram outlines the reconstructed theory of change :

Diagram 1: Reconstructed Theory of Change for the WA PRM Project at the project inception phase



3 Evaluation findings

3.1 Strategic relevance

52. The six project beneficiary countries are all located within the Senegal and Niger river basins. In the areas of intervention within these countries, the main activity is agriculture and livestock rearing. These areas, situated in river basins, therefore constitute potential reservoirs for the residue of chemical products used in human economic activity. Riverine areas tend to support the highest concentrations of natural biodiversity and it is also these areas where people concentrate to collect water for cooking and drinking, where they bathe and where domesticated animals are watered and bathed. In many West African countries, pesticide misuse and localized overuse causes serious damage to humans and the environment. Monitoring of occupational health effects and pesticide poisoning is poor or absent. Statistics and records on pesticide use are hard to come by, or are simply not available. Because of a lack of research, the actual impact of pesticides on the environment and human health has remained largely unknown.

53. Population growth, a lack of availability of clean irrigation and safe drinking water, and further intensification of agricultural production, has resulted in greater vulnerability to further degradation of already fragile ecosystems. The project targets small-holders working with high value crops (rice, vegetables and cotton), most of which are under irrigation by surface waters from the two major rivers in the region. The rationale for this choice is that these populations comprise the principal source of pesticide use in these countries and these communities are the principal populations and ecosystems at risk from water contamination. In establishing the levels of toxicity in water used by the local populations, the project provides a knowledge base to advocate for a reduction in the use of chemical products.

54. Trends in all six countries are towards increased use and dependence on agro-chemicals, which has, ironically, contributed to declining long-term agricultural productivity, environmental quality, and human well-being, through toxic contamination of food-chains and disruption of ecosystem services, such as natural pest suppression and pollination, as well as revenue loss due to contaminated export produce. Explosive outbreaks of pest problems are also often triggered by insecticide use (insecticide-induced pest resurgence). Other negative trends include decreasing soil fertility, contamination of waterways, detrimental shifts in aquatic ecosystems, and overall degradation of human and environmental health. The social and economic drivers leading to these unsustainable agricultural practices include a lack of awareness among communities regarding both the impacts and negative externalities associated with pesticide use, as well as a lack of awareness of feasible, sustainable and more profitable alternatives.

55. The field visits to the 6 participating countries and the resulting data confirmed and highlighted the fact that the project was wholly relevant and appropriate for the beneficiaries that were targeted in the Niger and Senegal river basins. Participants articulated many factors that demonstrated that the project was relevant.

56. Pesticides in terms of knowledge about types and potential side-effects are a problem for most agricultural producers. In general many beneficiaries felt a general lack of knowledge about the pesticides that are available locally. All producers felt that pesticides were critical to their work but felt they lack knowledge about critical aspects that would allow them to use appropriate pest prevention options and know the appropriate means by which to use them in terms of quantities, timing and application methods. More importantly they felt they did not have enough information about the products they should avoid and the potential negative consequences of their use. There were some extreme examples of the negative implications of the beneficiary communities' lack of knowledge about the use and application of pesticides.

57. Conversely, studies carried out by ENDA show in those cases where participants are aware of the danger of pesticide use, they were unaware of the alternative methods that could be used to improve

agricultural productivity and improve pest control. In addition, while pesticides are expensive for producers, the positive impact on lowering the amount of manual labor required to control pest and aggressive weeds in turn leads to short-term gains relative to productivity and lowered manual labor cost/time.

58. Recipient countries mainly depend on agriculture and the majority of their producers are illiterate, so the project was well placed, and indeed necessary to help them maintain a healthy agricultural sector that has increased productivity and is environmentally sound. More importantly, the health problems associated with pesticides and other agrochemicals are considerable and constitute true public health emergencies.

59. All countries have already established national commissions, and pesticide management was a key component of the regional initiative of ECOWAS and CILSS for the joint management of pesticides and agrochemicals. This demonstrates the relevance of the project at the national and regional levels as the project aligns with local, national and regional initiatives.

60. Many of the participating communities and countries have obsolete stocks of agrochemicals which they do not know what to do with or how to dispose of them. These stocks originated from previous projects such as OCLALAV (Regional initiative against birds and crickets) or private laboratories, and are often sold in local markets by corrupt agents. Hence, the project had a valuable opportunity to address the potential hazards posed by these out-dated stocks of pesticide.

61. The majority of the communities targeted by the project are on either the Senegal or Niger river basins, and river water is used for their domestic use, that allows the project to address the negative consequences of POPs use on communities that would be most affected by their use.

62. The project addresses both GEF OP#10—International Waters Contaminants and OP#14—POPs reduction. It was designed to develop local and national-level awareness-raising activities; conduct policy studies on national pesticide use patterns, and create links with national and regional pesticide legislative bodies. It intended to build capacity in a regional ecotoxicology laboratory, execute water quality assessment studies in six countries, run simulations on likely movement and fate of toxic chemicals in aquatic systems and estimate quantifiable risks to human health; at the same time help communities adopt improved, alternative production methods and community-based pesticide-monitoring systems and, finally, promote and develop local, national and regional networks of stakeholders interested in improving the current situation.

63. The project was extremely relevant in relation to the UNEP's mandate, and its policies and strategies, in that it detected sources of chemical contamination in the environment and put in place platforms and procedures for action on the part of governments. This encouraged governments to act in the short and medium term to considerably reduce the levels of surface water and groundwater contamination and thereby improve the health and standard of living of beneficiary populations.

64. The Project was directly aligned with the Bali Strategic Plan (BSP) as it enabled the capacity building of public institutions (governments) and their citizens, and compliance with international agreements regarding the use of dangerous chemical products in the environment. It was also closely aligned with the BSP as it introduced new technologies (cultivation methods). All six project beneficiary countries have already signed the Stockholm Protocol. By supporting them in this area and through (partial) direct funding of the project's implementation and commitments, the WAPRM also demonstrates its relevance to the BSP.

65. The project contributed to building national capacity in laboratory skills and the identification and measurement of POPs and other harmful agricultural products in the environment. It also contributed to

implementing a platform that (partially) brings together major stakeholders in the fight against environmental degradation due to POPs. By seeking alternatives to the use of chemical products in agriculture, the project ensured that it was better placed to respond to countries' commitments in the fight against the use of POPs.

66. While the project purports to have some interest in gender, the design did not have an explicit gender component. The project's accomplishments relative to gender were therefore relatively modest. The project focuses on rainfed crops but also on vegetable crops. The majority of people who cultivate rainfed crops in these countries are women. When selecting participants for FFS, it was required that facilitators comprise 50% women and 50% men. However, in practice this did not occur as the FFS groups were mostly comprised of women. However, apart from these two areas, there was no gender strategy to improve women's access to or control of project resources and benefits.

67. In the target countries, agriculture is largely practiced at the household level by small operators. By addressing the health problems through the reduction of the use of chemical products in agriculture the project is well-placed to defend these vulnerable actors, small farmers, in the six beneficiary countries. Participating communities were all informed at the beginning of project activities. The project implemented many FFS and participants in the FFS were all volunteers. The project was in line with the UN Declaration on the Rights of Indigenous People, and pursued the concept of free, prior and informed consent.

68. The work carried out by ENDA in establishing baselines in the six participating countries as well as training given by the CERES Locustox laboratory (Senegal) to laboratories in other countries in the detection of POPs is an example of South-South cooperation within the project. Furthermore, producers in Benin traveled to Niger to learn of the practices used by producers there, while producers from Guinea and Mauritania carried out exchange visits to Senegal to observe how the IPPM technique was put into practice.

69. Data analysis illustrates that the project is completely relevant and appropriate; its aim seeks to reduce the use of POPs and other agrochemicals in agriculture in the Niger and Senegal River basins and is highly relevant in the current context. It aligns politically, socially and economically with the needs of the local, national and regional targets. The project is relevant for governments, farmers and their communities.

Under relevance, the project is rated Satisfactory.

3.2 Achievement of Outputs

3.2.1 Component 1: Awareness raising and baselines

70. At the beginning of the project, several consultation meetings were held with governmental representatives in all participating countries, where community representatives as well as representatives of regulatory institutions for chemical products were selected to participate in those consultations. These meetings helped to inform potential stakeholders and to set up local, regional and national structures for the piloting of the project. It must be noted however that in all the national structures, no representatives of producers were included in the steering committees.

71. Environment and Development Action (ENDA) was subsequently sub-contracted by the project to run local awareness-raising sessions to determine trends in the use of chemical products in agriculture in all six countries. ENDA carried out qualitative data analysis of community-level use of pesticides and its impact on their health and environment. This analysis carried out by ENDA was to be combined with quantitative measurements of OSU, but unfortunately the project was unable to synchronize these two exercises due to a delay in receiving the funding for the second activity. Furthermore, the communities in

which ENDA carried out its studies are not always comparable to the areas in which CERES had implemented its surveys.

72. The project was somewhat successful in establishing clear baselines on pesticide contaminants in order to influence national studies and policy recommendations, however, it did not fully achieve its aims. Firstly, ENDA carried out qualitative diagnostics in all communities where the project was to be implemented. These consultations brought together producers to discuss topics related to pesticide use and the perceptions of producers regarding these products. ENDA diagnostic data was shared at the community level, thus enabling producers to share their views on agriculture.

73. In addition, OSU performed testing on samples originating from sites in Senegal, Mali and Mauritania. A passive sampling method was used to collect the water and transfer it to the lab for analysis. The analyses of the samples taken from the sites mentioned above showed the presence of certain chemicals in the water of the Senegal and Niger river basins. While these findings are important, the value of the data collected by OSU has still not been returned to the community level and even less so at the policy level. There is no evidence that OSU or ENDA's test results were used to reorient the project activities or by policy makers to formulate policies.

74. The project performance indicators, as described in the Results Framework do not have defined annual targets that each country should achieve. Subsequent phases of the project will have to aggressively use a more evidence-based approach to encourage national and regional actors to pursue more studies and policy recommendations.

3.2.2 Component 2: Assessment of freshwater contaminants

75. OSU received a portion of funds from the FAO project to conduct toxicology testing; as such they have signed a Memorandum of Understanding with the laboratory CERES Locustox Dakar to strengthen its capabilities in water sampling and contaminant/POPs testing. CERES Locustox received several OSU support missions and researchers were also trained at OSU on the PSD and other techniques for analysis. The CERES laboratory also received very useful equipment that enables it to do on-site analysis of pesticide residues. CERES scientists were trained in sample collection and analysis. However, their results were not always consistent with the results provided by OSU samples although their analysis proceeded simultaneously.

76. CERES was trained by OSU on the PSD for water toxicity levels. This training was subsequently carried out by CERES for laboratories in countries such as Mali, Niger, Guinea and Benin. In these five (5) countries sampling was carried out at different sites where rice was the main crop cultivated: 6 in Mali, in Guinea, 5 in Senegal, 13 in Niger and 4 in Benin. The passive sampling method is based on the implementation of membranes (LFT) which catch molecules of pesticides; these membranes are protected by cages and stay in the water for fifteen (15) days. Oregon State University assisted CERES Locustox in their extraction and the analysis of samples made in duplicate: half were analyzed by OSU and half by CERES.

77. CERES had signed protocols with laboratories at the country level to train in water sampling and testing methodology, including collection and transfer to laboratory without contamination. In Mali, the Central Veterinary Laboratory has for example been subcontracted to work with CERES in Mali sites. The same took place for Niger, Mauritania, and Benin. Laboratories contracted by CERES have not participated in the data analysis. Their role was limited to sampling. CERES scientists who participated in the project all claim to have mastered the sampling procedure. Their understanding of the analytical method is still somewhat limited; they do not appear to fully understand the method used to analyze data.

78. The project was successful at transferring skills to CERES in the scientific assessment of fresh water. While some opportunities remain to improve on this, the project was able to build a strong foundation for

capacity in water sampling and testing in the region. Below we chronicle some of the achievements of the project in relation to capacity building on water sampling and contaminant testing

3.2.3 Component 3: Developing best practices

79. The results of the Farmer Field Schools were mixed. There was some success in terms of Best Practices on agricultural productivity; however results were mixed regarding community level pesticide monitoring. Below we outline the highlights of the successes and challenges of the FFS approach under the project:

80. The project aimed to install several demonstration plots in beneficiary communities. On average each field involved 25 producers during two campaigns. Meetings on the ground with producers and other stakeholders that those who were involved in the project agree that the approach FFS approach contributes greatly to the knowledge of best agricultural practices and increasing production and productivity.

81. The methods that FFS has introduced and which have led to these results include, but are not limited to, planting with appropriate densities often limited to the reduction of the amount of seeds or plants per unit area. It is the same for the use of quality of seeds distributed by the project, the use of organic manure, the treatment and manufacturing of products based on neem (sometimes tobacco and pepper). Data documented by the project shows an increase in yields in demonstration plots.

82. Across all participating communities, the project promoted the reduction between 40 to 50% of the quantity of mineral fertilizers such as urea and NPK (Nitrogen Phosphorus Potassium), in contradiction with the recommendations made by the extension structures in most cases. The project automatically assumed that producers could grow their produce with reduced amounts of mineral fertilizers; however this assumption is not based on scientific evidence. The utilization of organic manure was however recommended everywhere and used in demonstration plots.

83. FFS were established in each of the six beneficiary countries. Each FFS was managed by a field facilitator. The field facilitators had direct contact with producers and generally set up two FFS growing seasons. Each FFS involved 25 producers during the campaign. Participant producers were expected to participate in FFS activities ranging from land preparation to post-harvest phase. FFS classes lasted between 3 and 5 hours, twice a week. In general, the FFS had an area of 0.25 hectares, half of which was dedicated to cultivation using farmers' existing practices and the other half applying the practical principles of IPPM. IPPM, as taught by facilitators, was based on a principle of reducing the amount of seed (reducing the density), urea and NPK, the intake of organic matter and the use of natural products based on neem in place of synthetic products to combat insects and other field pests. The use of synthetic products was only allowed as a last resort, if the natural product did not work. At the end of the campaign, in the absence of any extraordinary event, participants had noted an increase in production and a reduction in their production costs through a reduction in the amount of seed and fertilizer cost and other pesticides. It was then hoped that they would be convinced of the benefits of and apply the principles of IPPM in their fields, as well as encouraging other farmers in their neighbourhood to adopt the approach.

84. It should be noted that pesticide monitoring sessions at the community level were not held due to a lack of data and clear mechanisms by which these communities were to operate following cessation of the use of pesticides. The levy of water sample by CERES at certain points along the Senegal and Niger rivers continued for some time but the results were never passed on to producers. So even if POPs and other agro-chemicals were present in the water, the producers were unable to gain awareness about this.

85. The diagnosis made by ENDA at the beginning of the project was qualitative. They brought together producers of about 25 communities and attempted to describe the effects of POPs and other agrochemicals on their health and environment. Producers linked changing wellness and degrading their

environment to the use of these products, despite the lack of scientific evidence to establish this relationship. In addition, if the samples taken by OSU had been conducted repeatedly throughout the life of the project, this would have provided longitudinal data that could be used for comparison purposes, to allow for the successful evolution of the FFS effect on pesticide use monitoring and lowered levels of POPs use. As it stands, water samples from the river basins were only taken at the outset of the project.

86. The program succeeded in putting in place a geo-referenced database of all the sites at which sampling was carried out. Each geo-referenced site is available online. Note, however, that in the absence of ongoing sampling, the site is not currently up to date. Furthermore, although it gives the location of sites, analytical results are not always accessible.

87. In conclusion, the use of best practices, which included the use of organic mineral-fertilizer, plot spacing and density, and alternative POPs allowed FFS to be a vehicle through which participants could observe methods used to increase production in these plots without the use of POPs. However, while the FFS were effective at demonstrating best practices, adoption in the plots of the producers who did not participate in those FFS was a problem because of high input costs and the apparent lack of conviction producers held.

3.2.4 Component 4: Developing networks

88. In all participating countries, field facilitators were trained in the IPPM from the beginning of the project. Note that the facilitators were already part of the FAO system and the IPPM before the project, and they were re-deployed in this role with the arrival of the project. Following their training, these facilitators were responsible for the FFS in target villages. Around each FFS, the producers chosen were considered models in their communities. These producers then had to ensure the transmission of knowledge to other members of their communities. In Mauritania, Senegal, Mali and Niger where rice cultivation is carried out in community-managed plots, these facilitators had an easier task as they had smaller distances to cover. Similarly, networking between the producers trained, their groups and other environmental groups was relatively easy.

89. Most of the producers encountered in the field stated that they had learned from each other in the meetings regularly facilitated by the project. In Mali, women from the Niono group also stated that the simple fact of being able to go beyond their local area to meet other producers who have found solutions to the same problems was a good enough result from the project. Here we must recognize that the IPPM movement is now quite well-known in West Africa, thanks to the work of the FAO, and in the wake of this project.

3.2.5 Component 5: Project management

90. The project was able to implement the National Technical Steering Committees NTSC and the Regional Technical Steering Committees (RTSC). The NTSC was composed of State representatives and some institutions involved in the management of chemical products in the managements of chemical products in agriculture. These committees met regularly at the country level. Note that none of these committees included representatives of producers or vendors of chemical products. Furthermore, national groups involved in the regulation of pesticides were not included; for example, the director of the environment in Senegal responsible for this area was never involved in the planning or implementation of the project.

91. At the regional level, representatives of the NTSC and project staff trained the RTSC. This RTSC had three meetings during the lifetime of the project to approve work plans and guide actions. The NTSC meetings were not regular because of budgetary constraints and availability of some steering committee members.

Under achievement of outputs, the project is rated Satisfactory.

3.3 Effectiveness: Attainment of Objectives and Planned Results

92. The project TOC has been reconstructed based on the initial proposal, the subsequent revisions and the project activities that were undertaken. The following sections provide an analysis of the achievement of outcomes as defined in the reconstructed ToC, the likelihood of impact using the Review of Outcomes to Impacts approach and an assessment of the achievement of the formal project overall objective, purpose, goal and component outcomes.

3.3.1 Achievement of outcomes as defined in the reconstructed ToC

93. **Increased local awareness on the harmful side-effects caused by the use of pesticides in agricultural production:** It is evident, given the discussions organized on the ground that the producers are aware of the dangers posed by pesticides to their health and the environment. In each of the countries visited during this evaluation, producers outlined a range of problems encountered with the use of pesticides. Following the implementation of the project, they remarked on their own increased awareness of these effects as well as increased knowledge of alternative approaches that use natural products. The majority of producers encountered stated having used natural neem-based products before resorting to chemical pesticides. However, they also acknowledged that natural products are not always effective, and that it was only when they realized this that they resorted to chemical pesticides.

94. **Development of partnerships between government, NGOs and Farmer Organizations (FOs):** the project did not really work to develop partnerships between governments, NGO and FOs, despite the fact that this had been incorporated into the theory of change at the design stage of the project. In reality, issues such as disturbances due to the staggered disbursement of funds and staff turnover prevented the implementation of this element of the project.

95. **Clear picture established on the contaminant type and level of threat to humans and environment from pesticide-contaminated waters:** The project succeeded in its collaboration with OSU in establishing a fairly accurate picture within the given time frame of the level of water contamination resulting from particular products. This data is not longitudinal, and cannot attest to a reduction or an increase in the level of contamination. In addition, the collaboration with OSU aimed to train CERES technicians in sampling methods so that they may be able to carry this work out on their own in the future; in this regard, it served its purpose.

96. **Risks to farmers and aquatic environment from exposure to pesticides estimated (Human Health Risk Assessment) and Community-based monitoring systems for pesticide use developed and used:** The results of analysis carried out by OSU and CERES was not transmitted to communities or indeed to the national authorities of the countries in which testing had been carried out. Discussions revealed that this was because FAO was unable to hire qualified staff in a timely manner to communicate the information resulted from the analysis in a manner comprehensible to target stakeholders. Indeed, very little communication took place in this regard, and very little funds were allocated in the budget for this. Money had been allocated to carry out analysis, but not to communicate these findings at the community level. Finally, communities were unable to implement monitoring systems for pesticides in their environment.

97. **Regional capacity for participatory training augmented:** The capacity of CERES locustox to detect and analyse POPs has improved. In fact CERES Locustox did not have any previous experience with the use of the PSD methodology to detect POPs in the environment. With support from OSU, CERES locustox was able to acquire the capacity and to transmit it to its partners laboratories in Niger, Mali, Benin, Mauritania and Burkina Faso. It should nonetheless be noted that besides CERES locustox, none of the laboratories was involved in the analysis of the samples that were taken from the target zones. At the regional level,

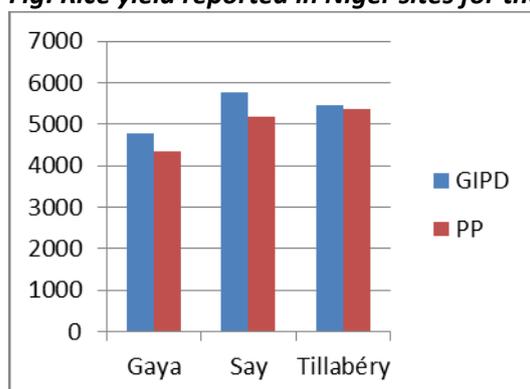
CERES as well as the veterinary laboratory in Burkina Faso do now have the capacity to train other laboratories on the PSD methodology.

98. **Community-based monitoring systems for pesticide use developed and used:** The community-based monitoring systems were supposed to be established and used following the detection of the POPs in the river basins. Unfortunately the results of the analysis have never been translated into a language that could be understood by communities (most of the community members have a low level of formal education). Therefore this component of the project has not been implemented.

99. Advocacy and information sharing between relevant stakeholders on best practices and contaminant reduction activities across the region: Nationally, the project succeeded in bringing together a range of stakeholders around the issue of pesticides in the environment. The project initiated and maintained debate around this issue throughout its lifetime, with a number of results. Several meetings on the subject were organized with regional and national stakeholders, in particular through regional steering committees. Note however the absence of producers, input sellers, national regulators for chemical products as well as the CILSS (the West Africa level regulator).

100. The majority of producers participating in the FFS had begun to apply the techniques taught by the project for seeding, integration of organic manure, and the search for alternative treatment based on natural products. They all claimed to have seen an increase in yields at their plots through the observation of best practices promoted by the project. In Niger, for example, in terms of rice FFS, the project reported an increase in yields as shown in the graph below for the 2010 campaign:

Fig: Rice yield reported in Niger sites for the FFS(GIPD) and conventional production system (PP)



Excerpt from the Niger Final report.

101. The same trend is observed in the other participating countries visited during the evaluation mission: Senegal, Mali, Mauritania, and Benin. The same is true of vegetable crops that were tested during the FFS.

Under achievement of outcomes, the project is rated moderately satisfactory.

3.3.2 Likelihood of impact using ROtI and based on reconstructed TOC

102. There is anecdotal evidence that participating communities have reduced the contamination of their waters due to the excessive use of pesticides, to a certain extent. The majority of participants also reported an increase in yields due to improved agricultural practices in the demonstration plots. Note however that this increase in yields and observation of practices took place within the FSS, which involved a limited number of producers (25 per CEP and one or two per community). This means that the people directly impacted by the project were not so numerous as to conclude that there may be a significant change in the level of water contamination. An improvement to their quality of life due to a reduction in the use of pesticides and the adoption of better agricultural practices could become a reality in the long

term if they continue to implement the practices they have learned. This is unlikely however, as three years after the project had ended (during the period of this evaluation) very few participants could convincingly demonstrate that they were implementing these techniques in their fields.

103. Although the FFS were implemented, no plan exists to ensure their financial autonomy. Indeed, although this component was introduced in the project design, nothing was done to achieve this result. During this evaluation, it was observed that all the FFS had ceased their activities. The FAO has however negotiated supplementary funding to implement more FFS in other areas with other producers.

104. The following table provides an analysis of the likelihood of impact achievement, using the Review of Outcomes to Impacts (ROtI) approach⁷.

Table 7. Summary of the Review of Outcomes to Impact

Project Objective		To protect transboundary waters in the Niger and Senegal River Basins through elimination of POPs pesticide-use and substantial reduction and elimination of other toxic pesticides used in agriculture; while augmenting agricultural productivity and net economic benefits to farmers					
Outputs	Outcomes (Reformulated)	Rating (D-A)	Intermediate States	Rating (D-A)	Impact	Rating (+)	Overall
Regional and national meetings with local governments, communities, local stakeholders Community trainings and surveys Baselines on pesticide use and farm-level production statistics at national and regional levels	Increased local awareness on the harmful side-effects caused by the use of pesticides in agricultural production. Partnerships developed between government, NGOs and Farmer Organizations (FOs)	B	Enabling environment created for Policy reform seeking to reduce the use of harmful agrochemicals and pesticides in the Senegal and Niger Basins	C	Reduced pollution in transboundary waters and improved livelihoods of local farmers in the Niger River and Senegal River basins		BC
Best Practices and farmer field school curriculum. Farmer field schools (FFS) established Local workshops on sampling methods Sampling and assessment of pesticide-contaminated waters Program database including geo-referenced data	Clear picture established on the contaminant type and level of threat to humans and environment from pesticide-contaminated waters Risks to farmers and aquatic environment from exposure to pesticides estimated (Human Health Risk Assessment)		Agricultural productivity and profitability are substantially increased in the target countries				
Participatory training and adoption of Best Practices for sustainable agriculture	Regional capacity for participatory training augmented Community-based						

⁷ Guidance material on Theory of Change and the ROtI approach is available from the Evaluation Office.

Project Objective	To protect transboundary waters in the Niger and Senegal River Basins through elimination of POPs pesticide-use and substantial reduction and elimination of other toxic pesticides used in agriculture; while augmenting agricultural productivity and net economic benefits to farmers						
Outputs	Outcomes (Reformulated)	Rating (D-A)	Intermediate States	Rating (D-A)	Impact	Rating (+)	Overall
Community-level pesticide-use monitoring systems "Training-of-Trainers" (TOT) programs	monitoring systems for pesticide use developed and used						
Community communication and exchange networks amongst local, national and regional actors to diminish use of POPs	POPs pesticide-use is largely reduced or eliminated in the target communities						
	Rating Justification: The B rating indicates that WA PRM's intended outcomes were delivered (mostly). While the risk associated with the use of POPs and other agrochemicals was established and known by the project, little has been done towards the dissemination of that knowledge among farmers and other key actors.		Rating Justification: The C rating reflects that measures that were designed to move towards Intermediate states have started and have produced only a few results in a few countries, but there is no indication of progressing towards long-term impact (which necessitates more farmers getting involved and a proper risk communication plan be crafted and implemented)		Rating Justification: The BC rating corresponds to Moderately Likely that the impacts will be achieved, in the long run; given the project approach to reduce the utilization of agrochemicals has been picked up by governmental bodies (at the national and regional levels) as part of their national agriculture concerns and priorities, which paves the way for a scaling-up.		

The project is rated Moderately Likely to achieve Impact.

3.3.3 Achievement of the formal project goal and planned objectives

105. The project had several planned objectives, namely the establishment of clear baselines regarding water toxicity by agrochemicals in the Senegal and Niger river basins, the establishment of community monitoring systems and the reinforcement of capacities for the CERES laboratory. The project goal was ***to protect transboundary waters in the Niger and Senegal River Basins through elimination of POPs pesticide-use and substantial reduction and elimination of other toxic pesticides used in agriculture, while augmenting agricultural productivity and net economic benefits to farmers.***

106. The project succeeded in achieving many of its proposed targets. Communities and authorities are more aware of the impact of pesticides, and in some countries such as Mali, Senegal and Mauritania they have begun to use the IPPM curriculum as part of a national dissemination scheme, or in new projects. Furthermore, CERES now has the knowledge and the ability to undertake sampling for POPs in water⁸. Note however that communities have been unable to instigate awareness-raising networks on the risks, based on scientific evidence. At the time of the consultant's field visit, producers could still recall the majority of the techniques learned but their application of these techniques in their fields was not always effective. We do not believe that in the long term, the situation will change solely due to the implementation of the project.

107. The project design is ambitious; seeking to impact change (reduction) in the use of harmful agrochemicals across six countries and two river basins is an impressive endeavour, which requires quite substantial and diverse interventions including capacity building, research and evidenced based advocacy, policy reform and community based monitoring systems, to work in concert in order to achieve sustainable impact.

108. A reduction in water contamination levels in the two rivers will be achieved through the continued implementation of similar, better planned actions. These actions must be supported by development partners, but as a basis for action, must originate from governments and the CILSS, in order to regulate the sale of pesticides and in order to work with producers on the correct and rational use of pesticides. At the moment, this is not yet the case.

109. The reduction of the presence of POPs in the environment targeted by the project was not achieved because the project staff could not always recognize the POPs in question, and analysis from the work of OSU does not identify an understandable way for the staff to do so. The same situation applied to other agrochemicals. OSU products detected by the analysis were not subsequently matched to specific commercial products in the field, which made it difficult to know exactly what the focus of awareness raising should have been. Consequently advocacy was ineffectual; just claiming all pesticides and POPs should be avoided. Under achievement of the formal project goal, the project is rated moderately unsatisfactory.

The project is rated Moderately Satisfactory under the effectiveness criteria.

3.4 Sustainability and replication

3.4.1 Socio-political sustainability

110. At the time of this evaluation, the project had ended three years ago. The structures that have been set up by the project no longer exist; national and regional committee no longer exist. FAO was nevertheless able to secure funding to continue the IPPM activities in some recipient countries, but not necessarily among the communities that were involved in the project.

111. At the policy level in Senegal and Niger, agricultural policies related to IPPM are in place; so in this regard the project's progress towards the desired impact will continue. Agriculture authorities have all referred to IPPM when developing or extending policies. The same applies in Mali, where the project has undoubtedly contributed to establishing greater awareness among public authorities on the potential negative impacts of using pesticides, particularly POPs.

⁸ It is not doing it at the moment due to a lack of funding

112. Regarding the CILSS, a regional committee was set up to regulate the use of agrochemical products in the ECOWAS. While the project was not directly involved in that, it offered an opportunity for a potential collaboration. This regional committee gives focus to the work carried out by national committees. These committees will work in the future to improve knowledge about these products and reduce their use by producers in beneficiary countries. This will also help to ensure the sustainability of the project's results.

113. There is no evidence regarding the involvement of the private sector in the implementation of the project activities.

114. Under the socio-political sub criteria, the project is rated Likely

3.4.2 Financial Resources

115. Project activities cannot continue without a clear funding plan. During the period of field work, all the FFS had stopped their work, and the national and regional committee meetings no longer took place. However, the FAO continues to promote the IPPM and to mobilize funds for this method. Note that the target areas for which these funds have been mobilized are not the same as the project areas, meaning that additional funding could not impact significantly on water toxicity levels in the basins of the two rivers. Apart from these FAO initiatives, there are currently no other sources of funding for the IPPM activities in the area of intervention.

116. The project was in a pilot phase. It reached a reduced number of producers in the two river basins. There was no clear funding plan at the end of the project, in order to continue to reach producers. Additional funding mobilized by the FAO will not directly reach the areas targeted by the project.

117. Participants who have been surveyed claimed that as a result of the project for the most part they now have a greater understanding of the IPPM technique and now employ farming methods that involve reduced amounts of agrochemicals, as it saves them money by reducing their production costs and increasing yields. So in this sense, the adoption of technology by the FFS participants within the demonstration plots, is unquestioned.

118. The project is rated 'unlikely' under the sustainability of financial resources sub criteria.

3.4.3 Institutional framework

119. It is important that governmental structures support future activities in order to reach the maximum possible number of producers. These structures are essentially those responsible for agriculture and the environment that are in direct contact with the producers on the ground and that also assist in the regulation of chemical products. The project is still in the pilot phase, and the scaling up phase has not yet begun and requires the greater involvement of governments in the target countries. The PICDCS, (Permanent Interstate Committee for Drought Control in the Sahel) has nonetheless set up a regional committee responsible for catalyzing efforts in this regard, although the makeup of the committee and its action plan have not yet been defined.

120. While the activities and interventions of the project have not been fully institutionalized, there are signs that participating national (ministries in charge of agriculture) and regional structures such as CILSS (The Permanent Interstate Committee for Drought Control in the Sahel) have initiated plans to do so.

121. The project seeks to reduce the presence of chemical products in the environment. These products are known to have a direct negative effect on the health of humans, animals and plants. With the awareness that has been made by the project, producers are more informed and aware of these negative effects. In the immediate and medium term it is clear that producers will seek to apply the learned

practices. However, it must be feared that in the long term, the proposed alternatives to control pests and other diseases may not be strong enough to combat them.

122. Producers participating in the FFS are now more aware of the dangers of agrochemicals on their health and on the environment. In general, people in target communities prefer the products of fields that did not use chemical pesticides. For example, in Mali, the project targets women through the project in Segou and Niono and reports that products from gardeners that do not use agrochemicals are selling faster than products from other producers. Producers who participated in the project have a better knowledge of agricultural practices that are beneficial for them. They know the needs of their plants in terms of nutrients, seed rate and know that they can save money by reducing the amount of chemical products used, in favor of natural products made with neem, for example. Several meetings with producers during these field visits reported a significant increase in their levels of production due to the implementation of good agricultural practices.

123. Producers who participated in the FFS all claim to have reduced the amount of mineral fertilizer used in their fields, appear to want to use organic manure and state that they have considerably reduced the use of pesticides in their fields. Most of them also state that they now practice planting in rows, and when available, use improved seed. It is clear that by applying these practices simultaneously, they certainly increased their yields in the FFS and were able to encourage others to do the same. In terms of their own fields, they appear to have chosen a particular combination of improved seeds and row planting. Producers participating in the FFS continue to use some of the easily accessible techniques taught by the project. These include the use of improved seeds and row planting, to facilitate weeding. However, the use of organic manure remains marginal as many communities do not have enough animals to provide manure; they also find the labour needed to create compost to be excessive.

124. The project strategies aimed at reaching other producers were not implemented beyond those who participated in the FFS. Because of this, it is difficult to make a direct correlation between the changes noted and the project activities. Furthermore, during field visits, it was not possible to meet with or witness the application of these technologies by producers other than those directly targeted by the project.

125. Under the Institutional framework sub criteria, the project is rated Likely.

3.4.4 Environmental sustainability

126. The techniques taught by the project are still applied by the majority of producers who participated in the farmer field-schools. During meetings with producers in participating communities all mentioned that they continued to apply the techniques they had learned during the FFS. It also appears that some producers who had not participated in the project are replicating best practices that they have seen in neighbouring fields. In addition, increased awareness of the manufacture of the natural product made from neem has been acknowledged by the majority of producers. In fact there is also a greater awareness among producers about the potential negative effects resulting from the use of agrochemicals on crops.

127. A number of producers who participated in the field schools said they were aware of the impact of agrochemicals on health and the environment. Of the producers who participated in the field schools the majority claim that they now use local neem-based products, soap, pepper or tobacco in the fight against pests in their fields in place of chemicals. However, many participants claimed that they used the synthetic products when the natural product did not work. Hence, suggesting that while some progress has been achieved in urging direct beneficiaries to abandon the use of POPs and other harmful agrochemicals, these gains have yet to be fully achieved as there is still some tendency for the participants to return to previously used agricultural methods when alternative methods are not seen to be effective or are not available in the local markets.

128. Under the environmental sustainability sub criteria, the project is rated Likely.

3.4.5 Catalitic role and replication

129. Anecdotal evidence regarding the success of the project was highlighted at the national level; two government representatives in Senegal and Niger reported using the concepts and theories of the project in the development of new projects or policies and the national extension scheme adopted by the state.

130. FAO continues to promote IPPM, with the support of several other donors such as the Spanish Cooperation, and the European Union, in Mali, Senegal, Niger and Mauritania. In Senegal, the Ministry of Agriculture claims to have used the principles of IPPM promoted by the project in the design of new agricultural policies and projects. In Niger, the Director of Agriculture revealed plans for the pending launch of a national IPPM curriculum largely influenced by the project. In Mali, authorities from the Ministry of Agriculture have included IPPM within the design of their new agricultural projects.

131. Under the catalytic role and replication sub criteria, the project is rated Satisfactory.

Under the sustainability and replication criteria, the project is rated Unsatisfactory.

3.5 Efficiency

132. The project put in place a regional-level structures and national teams to support its implementation. All the national teams were based in the ministries of agriculture in beneficiary countries, sharing the same offices in most cases. This was a way for the project to optimize collaboration with these structures. In addition, the project signed protocols with ministries of agriculture to use its technicians on the ground. Aside from two or three individuals who were directly contracted by the FAO, the project worked with agricultural technicians from governmental agencies, an excellent initiative from the point of view of reducing operating costs.

133. The identification of model producers (group of producers who have the means and desire to follow the IPPM techniques and would be trained to train peer producers) to be trained before training other producers was also a technique used by the project in order to reduce costs.

134. The project's theory of change was articulated around the producer, who was aware of the impact of POPs and other agrochemicals on the environment. The project assumed that alternative methods would be known to the producers, and that these would come to replace the use of POPs and agrochemical products. Furthermore, the project assumed that reducing the use of these POPs would reduce the concentration of POPs in the Senegal and Niger rivers. The model, as described in the project document and summarized above, has clear logic and is quite convincing. The relationship between the activities provided for and assumptions made seems to be directly related to the reduction of the concentration of POPs and agrochemicals in the environment.

135. In reality, planning and funding have impeded the team's ability to implement the project while respecting the theory of change as defined in the project documents, due to the staggering of funding, and the small number of producers and demonstration sites in the project⁹. **Funding for the different elements and components was allocated and distributed at differing points throughout the project duration.**

⁹ For example the project was not able to do the lab testing of waters immediately following the ENDA qualitative baseline consultations.

Hence, activities were implemented iteratively as funding for the project was allocated and dispersed over the years of project implementation. As such the project's objectives were not quantitatively linked to the tranches of funding available but to overall project goals. Therefore the theory of change as it pertains to the timing and implementation of the various elements of the project was not fully respected, and as such may have diluted the impact/effect of the project.

136. The WA PRM was a pilot project. The consultant did not hear of or observe on the ground any similar project aiming to reduce contamination by POPs in the two river basins using the IPPM approach. This is also the reason why it was necessary to train laboratory staff in the detection of these products with the Passive Sampling Device (PSD) technic. This makes it difficult to compare the efficiency of the project with others of the same type. The project will therefore remain a benchmark for following projects.

Under the Efficiency criteria, the project is rated Satisfactory.

3.6 Factors and processes affecting project performance

3.6.1 Preparation and readiness.

137. During the design phase, CERES Locustox appeared to be the only laboratory in West Africa capable of detecting POPs in the two river basins. CERES Locustox was selected and trained by OSU. Following laboratories capable of carrying out this work in each country were identified at the national level. Partners chosen at the national level also included departments of agriculture in each of the beneficiary countries. These partners were well-chosen and appeared to be able to carry out the work properly. Note however, that their involvement in the project design was minimal. All the partners on the ground appeared to be unanimous in this regard. They were enrolled in the project as sub-contractors. Budgetary tradeoffs were made by project management without real consultation.

138. The objectives of the PRM were all clearly defined. The partners had a clear understanding of their roles and responsibilities in the project. However, a number of factors contributed to the project ultimately not being implemented as planned. On the other hand, although the objectives were defined, they were not quantified for the project and its implementing partners. The fact that the project did not have more databases following its completion made it impossible to provide a closer analysis of this element.

139. However, the capacities of partners appear to have been well evaluated at the beginning of the project. None of the laboratories had experience in detecting and analysing POPs in the environment. ENDA is well known for its ethnographic research in rural West Africa, and OSU is a reference in the PSD and research into POPs. The FAO has long experience in the promotion of biological agriculture and the IPPM.

140. Under the preparation and readiness sub criteria, the project is rated Satisfactory.

3.6.2 Project implementation and management.

141. The project interventions, assumptions and outputs are consistent with the intended impact in theory, however, there were several factors that inhibited the project's original theory of change from being implemented as laid out in project documents. This is evidenced by the foundation of the project design and was confirmed and reinforced during field work. The key factors linked to the project's challenges vis-à-vis the alignment of its interventions, assumptions and outputs with intended project impact are highlighted below:

142. The project was designed by first identifying the negative effects of POPs and other agrochemicals on human beings and their environment. Testing was then conducted to confirm their presence in some of the target communities¹⁰. This was a critical step as it serves as the foundation of the project and the “raison d’être” for project and all resulting interventions and outputs. The identification work was overseen by ENDA and OSU, in accordance with their mandates in the participating countries.

143. Once the presence and effects of POPs and agrochemicals was identified, farmers were encouraged to set up two different demonstration plots, in the first they were to farm using their existing standard methods and a second plot using the those methods proposed by the project which limited or excluded the use of POPs and other harmful agrochemicals, where alternative methods are engaged to control pest and increase crop productivity. The demonstration plots were installed and each involved on average 5 producers. The aim was that at the time of harvest, producers should be able to see the benefit associated with the abandonment of their harmful practices and the adoption of a method of cultivation without the use of pesticides and with less fertilizer.

144. The project’s complexity required a straightforward yet multi-layered management structure to ensure that support and oversight is provided at local, national and regional levels impacting on all of the project components and elements.

145. FAO was appointed by UNEP as the implementing partner at the field level. As implementing lead, the approaches taken by FAO for the implementation were similar, with minor changes depending on the country. Generally one to two staff from FAO coordinated the project implementation and a public partner led the IPPM activities. FAO signed protocols with facilitators to conduct these activities, established shared goals and motivated the facilitators through a small stipend each month for transport and meals.

146. One of the strengths of the project coordination units was that they were usually based in the national agriculture department; this has helped to provide the project with strong institutional partners and helped to apply the IPPM principles.

147. While the project had several national technical committees and regional technical committees to guide the project, they did not provide a strong foundation for solid implementation, as unfortunately the committees were not fully functional. For example, there were very few instances where the committees were able to fully play their role, particularly considering the number of challenges the project had to overcome. The committees were unable to make recommendations regarding budget allocation when it was realized that the project needed an appropriate budget for risk communication activities. They were unable to redirect the project focus after it was discovered that POPs were a lesser problem than other chemicals in the agricultural systems. The same thing happened when CERES was going through significant challenges that impacted on its functional ability.

148. The project management structures were well thought out and would in theory lead to strong implementation; however, in reality they were not as functional or efficient in practice.

149. The absence of scientific data on the presence of POPs and agrochemicals at the beginning and the end of the project in both rivers has not provided evidence that the activities and project strategy resulted in the reduction of the prevalence of POPs and agrochemical products in the environment.

¹⁰ Water testing was done from selected sample points within the group of the project target communities.

150. Therefore, while the project was well designed, evidence-based and had a strong and well defined theory of change, it was not implemented in respect of the principles and plans laid out in the theory of change, due to various factors including timing, chronology and coordination. Some elements of the project were abandoned meaning that only some of the components were implemented as funding for those components became available. Hence the impact that may have been gained through synchronization of the varying components and interventions was lost.

151. Under the project implementation and management sub criteria, the project is rated Moderately Satisfactory.

3.6.3 Stakeholder participation, cooperation and partnerships

152. The project incorporates several partnerships, including the national agricultural services in all countries where it was implemented, ENDA (for basic qualitative analysis), and OSU (for quantitative scientific analysis of water samples and building the capacity of the CERES laboratory).

153. The partners selected are a priori the right partners, as their mission and vision appear to be in line with those of the project. At the national level, agricultural services are generally responsible for the dissemination of good agricultural practices. Their involvement in the project can popularize more technical routes recommended by the project. Because resources were limited, it seems that these agricultural services were efficient in the implementation.

154. ENDA Pronat is a research-based entity that also promotes sustainable modes of cultivation and was thus a very good project partner. OSU seems to have the ability to carry out its mission of strengthening the capacity of the CERES laboratory in detecting and analysing agrochemical residues in both rivers. National departments of agriculture were all involved in the project from the design phase. However in order to achieve the overall objective of the project, it would have been important to involve early national committees of pesticide regulations, CILSS (the regional committee for the regulation of pesticides) and the national environmental services. These institutions were not involved in the project and yet they are crucial in determining and adopting agricultural policies that focus on the use of practices that do not damage the environment.

155. The project established good working relationships with national institutions responsible for agriculture in the target countries. The establishment of these working relationships is the basis for the institutionalization of activities and the philosophy of the project. For example, project offices are usually located in the agriculture departments. This allowed state services to be aware of project activities and to plan their own activities in accordance with those of the project.

156. There has therefore been good coordination between the project and Departments of Agriculture at the central level and at the field level. The technicians who worked to encourage the adoption of IPPM were technicians of the agriculture service or parastatal institutions in the field. By training these technicians in the IPPM technique, the project ensured the sustainability of some components to a certain degree.

157. Public institutions became convinced of the merits of the project and worked to adopt the technical itineraries promoted by the project. Several examples of the use of the techniques taught by the project at the level of state services were obtained during the field phase. In Mali, however, in the area of Segou, the parastatal company in charge of cotton production continued to promote intensive cotton cultivation and did not want to support the adoption of IPPM in the area. The institution's grievances were that the natural product containing neem was not totally effective in ridding cotton plants of pests. In addition, they recommend the use of chemical fertilizers beyond the limits recommended by the project. Therefore, even though technicians attended project meetings, the technology was not fully adopted at

the producer level in the area of influence. Resistant producers did not receive subsidized inputs, which limited the long-term influence on their agricultural practices.

158. The project did not establish partnerships with the private sector. Input sellers, importers of agrochemicals or other private actors in the agricultural sector were not involved in the project. There was no mention of collaboration with these actors in any of the participating countries. In fact, the project design did not include collaboration with or provide benefits to these actors.

159. Under the Stakeholders participation cooperation and partnerships, the project is rated Moderately satisfactory.

3.6.4 Communication and public awareness

160. Producers who participated in the FFS were from neighboring communities. By learning new techniques and applying them in their own fields, they contributed to the dissemination of project methods and technologies as their neighbors and collaborators were exposed through their own fields.

161. The listening clubs set up by the project seem to have worked early on, but their impact is difficult to assess as there are no monitoring data on which conclusions could be based. However meetings were held and this contributed to the dissemination of information in the surrounding communities.

162. Community monitoring groups that were supposed to meet, discuss and take action on a community level were never formed. In fact, even if these groups had been formed, they would not have had much to talk about as the results of analysis conducted by OSU were not shared with these groups. The messages transmitted by the project were not always uniform and/or clear. When some communities talk about organic farming concepts they also discuss reducing doses of fertilizers and pesticides without scientific basis. This prevented the proper transfer of project ideas.

163. Even though the budget allocated to the project was almost completely dispersed, some of the project activities did not go as planned because of the timing and the lack of dissemination and appropriate communication of lab results resulting from the work of OSU and CERES Locustox at the community level. Therefore, the expected results of these activities were not achieved, especially those associated with the risk communication objectives and the self-financing of the FFS. It was not possible to demonstrate how the project has reached a wider public beyond the 25 people involved in each FFS.

164. Under the communication and public awareness sub criteria, the project is rated Unsatisfactory.

3.6.5 Country ownership and driven-ness

165. In all the countries visited, it was observed that structures responsible for agriculture were largely involved in the implementation of the project, with the exception of Benin. These structures all left the project to their local offices and facilitated the enrolment of their technicians in the FFS activities. At the ministerial level, national steering committees were all set up. These committees brought together the majority of their functionaries and other stakeholders involved in the regulation and use of chemical products in agriculture.

166. In Niger, Mali and Senegal, the authorities went further by seeking to adopt the IPPM as a curriculum in the training of farmers; the same applied in Mauritania. In Guinea, the project experienced slightly less success due to political instability in the country during the implementation period; the government was changed several times, while made ongoing ministerial support difficult to secure.

167. The project is rated Satisfactory under the country ownership and driven-ness

3.6.6 Financial planning and management

168. Partners on the ground appear to be of the same opinion, that the disbursement of funds was a big issue and prevented the timely implementation of the project activities. Although the funds were earmarked for the implementation and functioning of the FFS, the management standards put in place by FAO use to require a lot of time by involving a number of long processes which translated into delays in the implementation of the FFS activities.

169. Added to that is the lack of flexibility in the reallocation of budgetary lines. For example, OSU has mentioned several times during the lifetime of the project, the need for a budgetary reallocation that would take into account risk communication needs and thus participate in maximizing results obtained, but has never been able to obtain approval.

170. The recruitment of project staff seems to have been conducted in a transparent manner following the process of publication of the Terms of Reference and the selection of a finalists. The same occurred in the selection of consultants used by the project. Regarding partners, recruitment did not fall under the direct remit of the project. Procurement also appears to have been carried out properly in beneficiary countries, which approved project spending before purchasing goods or services. Note however that in Mauritania, problems related to procurement that led to the conduct of an independent audit that recommended the repayment of some amounts used by the country that were not eligible for reimbursement.

171. The sub criteria Financial planning and management is rated Moderately satisfactory.

3.6.7 Supervision, guidance and technical backstopping

172. The management of the project was led by a regional management unit based in FAO Senegal. This unit was responsible for coordinating the work done by all the participating countries at the national levels. The regional unit was represented on the ground by national units that were often housed within the departments of agriculture of participating countries alongside FAO staff, to allow better collaboration between the two entities (this was not the case in Senegal).

173. National and regional units were oriented in their work by the national committees and regional referral committee, which met twice a year to review the project progress and offer further guidance. These committees were not fully functional but greatly contributed to the facilitation of strategic choices when it came to particular activities. Administrative procedures were dependent on FAO, which has often been the source of many problems for the disbursement of funds to be used to implement the activities. FAO procedures are considered cumbersome and largely inadequate, even by its own staff.

174. UNEP provided technical support to FAO throughout the project lifetime. UNEP was responsible for the project design and ultimately responsible for the performance of the project. While several objectives have been met during implementation, there were still several challenges that were not addressed throughout the project lifetime, and that ultimately impacted the project performance in a negative way. Among those challenges were the need to allocate sufficient resources to the risk communication component, the lack of follow-up that was needed after the first set of results from the water testing was available, the problems in the project M&E system (developed in the following section),...

175. The supervision, Guidance and technical backstopping sub criteria is rated satisfactory.

3.6.8 Monitoring and evaluation

M&E Design

176. The project had a logical framework that was designed for the allotment of the complete funding package. This logical framework was not revised when funding was dispersed in intervals, which ultimately affected the quality of project implementation with respect to the sequence implicit in the theory of change. Indicators were defined for each result level but annual targets were not defined for each country.

177. The indicators in the logical framework were not smart enough which made their measurement very difficult. Most of them included words that were ambiguous and that needed to be explained further as footnotes or in detailed Indicators performance sheets, which was not done. Finally the wording of some of the performance indicators was not done adequately; some of them read like outputs, others are objective statements.

178. At the country level a national steering committee was set up as well as a regional committee, at the regional level. Both platforms included the majority of players in the project except for beneficiaries. Farmers were not members of the National and Regional Technical Steering committees (NTSCs and RTSC). In addition, at the national level the cost associated with the meetings of the NTSCs made it difficult to hold the meetings regularly.

179. M&E design sub criteria is rated moderately satisfactory.

M&E Budgeting and funding of M&E activities

180. The project had set aside sufficient fund for its M&E at the national level. FAO had sufficient funds to monitor the work that was done by the subcontractors in the field. It is nonetheless worth noting that at the field level most partners that have been met mentioned the fact that they did not have an adequate funding to closely monitor the farmers. Typically the monitoring activities were limited to the FFS and would not be done on the farmers' plots or on the plots of those who replicated the techniques. The project had an adequate budget for baseline, mid-term and final evaluation which have all been completed. The lack of resources have nonetheless prevented the final evaluation to include water testing which would have allowed the project to say if there were a reduction in water toxicity compared to the toxicity level at the beginning of the project.

181. The sub criteria M&E budgeting and funding of M&E activities is rated moderately satisfactory.

M&E Implementation

182. The project was managed by a PMU based in Senegal, as well as FAO, which oversaw monitoring and general management. During the evaluation phase, the staff of the regional unit as well as many local staff were already demobilized because the project had already ended at this stage.

183. Data related to the FFS was collected regularly by implementing partners and transmitted to the national level, where it was consolidated and transmitted to the regional level. Very little verification of the quality of the data transmitted by the partners occurred. Since the data was not transmitted in the same format it is assumed that the consolidation was minimal and basic. It essentially concerned the number of Farmer Field Schools established and the number of producers participating in the activities. In some countries data on the productivity of the systems in place is available.

184. The mission was unable to access data with consolidated tables regarding the FFS and their productivity. The project had no available database that could be used for verification. Therefore it is near impossible to systematically express the project outputs and services delivered in quantitative terms. Field interviews indicate that different countries had regular progress reports but were not uniform. Each country generated a report but no clear mechanism was put in place for reporting and data management.

185. M&E implementation is rated moderately satisfactory.

In general the WA PRM project has an overall Moderately Satisfactory rating.

4 Conclusions and Lessons Learned

4.1 Conclusions

186. The misuse of pesticides is a reality in the production systems of the basins of the Senegal and Niger rivers. Producers have always been aware of this, as well as governments and partners working in the field of public health and food security. Despite several conferences and numerous commitments on the part of governments, very little concrete action has been taken to quantify environmental contamination and accurately detect the impact on public health and on the environment. The activities carried out under the project during baseline studies in collaboration with ENDA, as well as awareness-raising activities carried out through the FFS helped to create and maintain awareness among producers of the dangers of pesticides. Through the guidance committees, the project enrolled a range of stakeholders, even if it did not function to an optimal degree.

187. The collaboration with OSU enabled the training of CERES technicians in water sampling techniques to detect certain chemicals through the PSD. OSU carried out a number of capacity building activities with CERES and other laboratories during the project to train them in the PSD technique and in the analysis of results. The laboratories involved in the project all experienced significant changes, particularly with regard to staff turnover. CERES went through a period of turbulence that impacted on its ability to continue the work at hand.

188. This collaboration therefore remained fragmented and incomplete as the results of the measures applied were never presented in a form accessible to communities and other non-scientific stakeholders, and were never disseminated. This was due to the fact that an adequate budget was not allocated for the transmission of results and the communication of risks and the staff mobilized by the FAO are also unable to carry this out adequately.

189. The use of an alternative neem-based product to combat insects in the field seemed to have attracted some interest and had some success. Most producers who were involved in the FFS are familiar with such products. Depending on the area, the product may be made from grains of neem that contain azadirachtin¹¹, known for its ability to repel certain insects. The product's effectiveness is limited as the producers do not generally know the optimal dosages to use and want to apply it to all the problems affecting their plants. Azadirachtin is effective in repelling some insects but is completely ineffective in combating bacteria or viruses. Producers tend to rely on the neem-based product as a solution for all their problems, following their training by the FFS.

190. FAO also appears to have communicated the idea, via the FFS and the IPPM, that all pesticides are bad and should not be used (or at least, only in very small quantities and as a last resort). This does not correspond to reality and may sometimes result in a loss of income for the producers due to extra costs incurred related to phytosanitary problems. Also the idea that all fertilizer rates should be reduced in all

¹¹ Azadirachtin, a chemical compound belonging to the limonoid group, is a secondary metabolite present in neem seeds.

production systems is not accurate and should not be promoted by this project. In fact, good research combining the use of organic materials with mineral fertilizers in a reasonable doses in a range of production systems would be an adequate response from the environmental point of view as well as being more profitable for the producer.

191. It is true that in the field, producers receive very little tailored advice on the use of chemical pesticides. These problems must be solved not only through a reduction of the use of these products but also through mass education enabling producers to better master the recommended approaches. The same applies in relation to chemical fertilizers, as sustained use of this type of fertilizer that does not take account of the differences in soil fertility level is irrational. In this regard the project should also seek to firstly understand soil nutritional needs, and compare them with official recommendations before highlighting the doses to be applied in the FFS and in producers' fields. Having said that, encouraging producers to use natural techniques to protect and restore soil fertility is undoubtedly a good thing and the project has achieved much in this regard in the areas of intervention.

192. Community awareness-raising work by community members did not take place, as the results of the technical analysis undertaken was not communicated to them. The project's scaling up strategy was largely based on this component in order to reach the maximum number of people in neighbouring communities, and this did not occur, and so the project remained at the pilot stage. FFS participants in nearby communities were reached through networks developed by the project. Some of them even benefited from exchange visits with communities in other regions of the country. This facilitated discussion about common problems so that they may learn from each other's experiences.

193. The toxicity of the water in the Senegal and Niger river basins are far more important than the defined acceptable threshold for each chemical compound: The analysis of the water samples from the participating communities showed that POPs were present at low levels in the environment, the major discovery was that the level and breadth of chemical use was much higher than ever anticipated in West Africa. The project was instrumental in proving this, which has brought quite a bit of attention to this emerging and continuing problem in the participating countries.

194. The detailed rating of the project is given in the following table:

Table 8. Summary of Ratings for the Evaluation Criteria

Criterion	Independent Evaluator's (IE) Assessment	IE Rating	Evaluation Office (EO) Assessment	EO Rating
A. Strategic relevance	The WA PRM is highly relevant to the needs of the beneficiary countries and the UNEP priorities. By trying to reduce the use of POPs and other agrochemicals, it addresses the needs of several communities along the Senegal and Niger river basins. Most of these communities recognize the need for such a project but were provided little support by their governments and partners. The project did not develop and implement a proper gender strategy although it ended up reaching more women than men.	S	The project is highly relevant to regional environmental needs including all six countries of the Senegal and Niger basins, GEF operational programmes (OP 12 and OP14), relevant expected outcomes of the UNEP MTS 2010-2013 and 2014-2017.	HS
B. Achievement of outputs	Many of the project outputs have been achieved. The WA PRM was nonetheless not successful in setting up community-level pesticide-use monitoring systems. Consequently, activities related to the detected risk-communication were not implemented and none of their respective outputs reached	S	EO concurs	S
C. Effectiveness: Attainment of project objectives and results		MS	EO concurs	MS

Criterion	Independent Evaluator's (IE) Assessment	IE Rating	Evaluation Office (EO) Assessment	EO Rating
<i>1. Achievement of direct outcomes</i>	<p>Most direct outcomes linked to the planned and achieved outputs, were achieved. The capacity and knowledge of relevant stakeholders (farmers, governmental bodies, laboratories, etc.) throughout the Niger and Senegal river basins were reinforced, A clear picture was established on the contaminant type and level of threat to humans and environment from pesticide-contaminated waters</p> <p>Risks to farmers and aquatic environment from exposure to pesticides were estimated (Human Health Risk Assessment) but unfortunately not communicated.</p>	MS	EO concurs	MS
<i>2. Likelihood of impact</i>	Governments in Senegal, Mali, Niger and Mauritania had started to adopt IPPM in their national training curriculum for farmers. CILSS at the regional level is increasingly working towards better regulation in the use of agrochemicals. It is expected that in the long run, the impact will be achieved by enrolling more farmers in similar programs and by securing stronger government support.	ML	EO concurs	ML
<i>3. Achievement of project goal and planned objectives</i>	AT the time of this evaluation, there was no indication of a significant reduction in the level of water toxicity due to the project activities. Similarly, the increase of production is marginal to date. Nonetheless because of an increase interest showed by governments and CILSS the regional partner, it is expected that the goal will be achieved in the future.	MU	Indeed, elimination of POPs pesticide-use and substantial reduction/elimination of toxic pesticides used in agriculture in the project area was not achieved because the original design was too ambitious and the scale of the effort needed too large compared to the time and budget of the project. We must however also acknowledge that the project did manage to do commendable job, within the available resources, of setting up a foundation on which further work on attaining the stated goal can be based.	MS
D. Sustainability and replication		U	As per the UNEP Evaluation Office guidelines, all the dimensions of sustainability are deemed critical. Therefore, the overall rating for sustainability will be the lowest rating on the separate dimensions	U
<i>1. Financial</i>	The project did not develop a sustainability plan that addresses the future financial needs. At the time of the evaluation, none of the FFS was functioning due to financial issues.	U	EO concurs	U
<i>2. Socio-political</i>	The project approach has received support from the governments and other development partners such as the European Union (EU).	L	EO concurs	L

Criterion	Independent Evaluator's (IE) Assessment	IE Rating	Evaluation Office (EO) Assessment	EO Rating
<i>3. Institutional framework</i>	The project had good relationships with the agriculture authorities in beneficiary countries, they shared the same offices and use the same extension workers. If the funding is mobilized again, the activities will likely continue.	L	The sustainability of outcomes in this project requires the greater involvement of governments in the target countries; it appears there was no succession planning for the structures set up by the project as these no longer exist at national level. This notwithstanding, there does seem to be evidence of policy development related to IPPM in Senegal, Niger and Mali.	ML
<i>4. Environmental</i>	The Project promoted the reduction of the use of agrochemicals and sought to define alternative methods to be used against plants pests and diseases. It also sought to establish the level of toxicity of the waters in both the Senegal and Niger river basins for policy programming. Both actions are highly beneficial to the environment. The alternative methods proposed to farmers were nonetheless not always successful and needed to be tested and refined in collaboration with laboratories and research institutes.	L	EO concurs, adding to this the fact that FAO continues to promote IPPM activities in the general project area	L
<i>5. Catalytic role and replication</i>	FAO was able to mobilize additional funding from the EU and the Spanish government after the GEF funding, to disseminate IPPM in additional locations. Even if those funding are limited they prove there is potential interest of development partners in the method.	S	EO concurs	S
E. Efficiency	National and regional committees were put in place to guide the project. The WA PRM used the extension workers used by governmental bodies to implement the FFS, which was a cost effective measure. The training of trainers' approach that was adopted did also permit to reach more farmers at a lower cost.	S	EO concurs	S
F. Factors affecting project performance				
1. Preparation and readiness	Government bodies and most stakeholders were largely consulted during the design phase. The farmers did not fully participate in the design of the project though. The implementing partners selected at the beginning of the project had the interest and were willing to improve their capacity to achieve the planned objectives	S	The project design appears to have been quite ambitious with respect to the time and financial resources available. The project managed to do a commendable task in setting up the ground work, but the findings imply that the complexity and nature of the problem was largely underestimated (as is also reflected in the delivery of planned outputs).	MS
2. Project implementation and management	The project had put in place several mechanisms to ensure a smooth implementation and management. Activities were disrupted due to the inadequate resource	MS	The project team appears to have made notable efforts to adapt to the challenges, although these efforts were	S

Criterion	Independent Evaluator's (IE) Assessment	IE Rating	Evaluation Office (EO) Assessment	EO Rating
	mobilisation plan.		impeded by time and funding limitations, and weaknesses in the project design	
3. Stakeholders participation and public awareness	The NTSC and RTSC were put in place and did meet regularly. Farmers were not part of those two platforms and at the country level the NTSC did not function as expected.	MS	The findings imply that awareness raising was sufficient. With regards to participation, the FFS approach is in itself a local-level participatory method. Findings also imply that the project facilitated several meetings and participants were able to interact with people from other communities as a result.	S
4. Country ownership and driven-ness	Governments of beneficiary countries have started to roll out IPPM as part of their national farmer training curriculum. At the time of this evaluation, none of the government had directly involved its own financial resources for scaling up though.	S	EO concurs	S
5. Financial planning and management	The project had a good financial plan and management. The budget needed to implement the activities was not availed on time, hence several adaptation measures that were put in place to address that. Mauritania had suspicion of fund mismanagement which was later proved in an audit report done by FAO.	MS	EO concurs	MS
6. UNEP supervision and backstopping	UNEP provided technical assistance and backstopping to FAO during implementation. Delays were noted from time to time regarding the feedback that had to come from UNEP.	S	EO concurs	S
7. Monitoring and evaluation		MS	EO concurs	MS
<i>a. M&E Design</i>	The consultant was not able to retrieve the M&E operating manual of the project and at the time of this evaluation, the monitoring data that was collected throughout the project lifetime was not available either. The project had an inception report and a midterm evaluation report though and this evaluation is the final of the group that attempts to learn from and documents the project experience.	MS	EO concurs	MS
<i>b. Budgeting and funding for M&E activities</i>	The project had set aside sufficient fund for its M&E at the national level. FAO had sufficient funds to monitor the work that was done by the subcontractors in the field. It is nonetheless worth noting that at the field level most partners that have been met mentioned the fact that they did not have an adequate funding to closely monitor the farmers. The lack of resources have nonetheless prevented the final evaluation to include water testing which would have allowed the project to say if there were a reduction in water toxicity compared to the toxicity level at the beginning of the project	MS	EO concurs	MS

Criterion	Independent Evaluator's (IE) Assessment	IE Rating	Evaluation Office (EO) Assessment	EO Rating
<i>c. M&E Plan Implementation</i>	<p>Indicators were defined for each and the logframe results levels. The annual targets for each country were not systematically documented which made it difficult to say if the project annual performances were met in each country.</p> <p>The NTSC and RTSC have met regularly to discuss the project performance and plans (although without the main actors: the farmers). At the country level, the NTSCs meeting attracted expenses that could not be regularly met which explains the flaws noted in the plan.</p>	MS	EO concurs	MS
Overall project rating		MS	<p>A weighted scoring approach, giving greater priority to the 'Effectiveness' and 'Sustainability' criteria and sub-criteria, yields a moderately satisfactory overall rating. This notwithstanding, the efforts of the project team is readily acknowledged for the gains it did achieve towards meeting the formal project goal and objectives. According to the findings presented in the report, this project was an innovation in West Africa and the importance of its work on POPs and other agrochemicals was ultimately recognized by the scientific community.</p>	MS

4.2 Lessons Learned

195. Several lessons have emerged from this evaluation and the implementation of the project:

196. **Sustained awareness-raising increases stakeholders' interest in pilot projects:** The project can be credited with having established awareness around the use and negative effect of POPs and other harmful agrochemicals in agricultural production systems. In all the participating countries, authorities have expressed their support for the project activities and have begun to take steps to adopt the philosophy of the project. This is the case in Senegal and Niger where IPPM is actually being promoted as part of the national agricultural extension curriculum. It is the same in Mauritania and Mali.

197. The project was an innovation in West Africa and the importance of its work on POPs and other agrochemicals was ultimately recognized by the scientific community. The project results were highlighted during a two-day meeting of the British Royal Society, where three papers from the project were presented

before a public audience and other scientists from around the world¹². Those papers were later published in late 2013 in the Philosophical Transactions of the Royal Society, Ser. B

198. **The lack of risk communication experience and funding hinders the achievement of planned objectives:** Neither FAO, nor ENDA/CERES had risk communication experience, and that hindered the project because, the data was collected but FAO and ENDA/CERES did not have the expertise to communicate information to communities in ways that they could understand. FAO needed to invest more into finding methods for communicating the information in an appropriate form to communities. It had no in-house expertise for that at the time of the project implementation; the project needed a communications/ popular mobilization expert to connect the lab to the field to use the data and educate and mobilize the population.

199. Adequate budgeting of the risk communication activities was necessary to achieve greater results and would cost at least a third of the budget. While the budget was modified several times during implementation, at no point in time did the project team substantially amend it to integrate the risk communication component that would have operationalized the detection of the POPs. In fact it seems the project did not understand the distinction between the pilot and the application on a larger/wider scale to create a stronger evidence base for the presence and potential harmful effects of POPs for participating communities. It is estimated that the project needed to devote at least 1/3 of its budget to the risk communication component to be at optimum levels.

200. The lack of effective alternative methods to combat pests and diseases leads to sustained use of POPs and other toxic agrochemicals: FFS approach is saying that all chemicals are bad and no distinction seems to be made. This was a challenge as the participants continued to use pesticides and herbicides because they were not provided with effective alternatives and clarification on which pesticides/herbicides are most toxic, and their degrees of toxicity.

201. It is was a **mistake for the project to follow an approach that promotes the use of neem for any sort of disease and pest in farmers plots**. Neem the primary alternative proposed in the FFS is not good for diseases, weeds and certain pest, so the alternative FFS proposed was not a comprehensive solution for producers needs. It is harder to regain farmers' confidence once they try and fail when using a recommended practice. The project was trying to be completely anti-pesticides when this may not have been appropriate in some circumstances, so FAO should be encouraged to create a better link between the lab and the FFS as a means of making projects like this one more effective.

4.3 Recommendations

202. For similar projects, it will be important to make sufficient provisions in the budget for the risk communication component. The rule of thumb could be that one third of the project budget be kept aside for that important component. In this case although the problem regarding the risk communication financing was raised early enough during implementation, it appeared that the budget modifications did not take them into account for unknown reasons. It will be useful in the future to build in FAO projects a certain level of flexibility that could accommodate similar challenges/issues.

¹² 1) Anderson et. al., from OSU and CERES Locustox, regarding the outcome of capacity building with CERES, the methods development undertaken, and the results, related to the water sampling with Passive Sampling Device (PSD) technology in 19 watersheds in the 6 program countries; 2) Jepson et. al., from OSU, FAO and ENDA, related to the monitoring of farmer pesticide use and calculations of risk to environmental and human health indicators in the 6 program countries; 3) Settle, et. al., from FAO, regarding the outcomes of training using Farmer Field Schools and the reduction of pesticide use by farming communities.

203. The messages passed in the FFS should be based on FAO long experience in promoting FFS but also on verifiable scientific data. IPPM should not rule out the use of chemicals in the production systems. FAO should work with laboratories to identify the least dangerous chemicals that could both respond to producers needs and cause the least damage possible to the environment.

204. To increase the use of biological products to combat pests and weeds, FAO should partner with laboratories to identify the best available products that farmers could use and define the optimal dosage and mode of utilization.

205. Progress has been made in monitoring and evaluation during implementation but a lot of opportunities were missed because of the lack of proper M&E in the project. FAO needs to ensure that any project that will be implemented in the future has appropriate baseline information, well-defined targets, and SMART indicators from project inception. These outputs and outcomes should reflect the project logic and key results without becoming too entrenched in the project management details. This also means making investments to ensure the competency of FAO staff and partners in M&E.

206. Although the project ended three years ago, at the time of this evaluation, FAO was not able to produce any database that could be used to do the final evaluation and back up its achievement claims. It is important to put in place a comprehensive monitoring, evaluation and learning system at the start of the project and maintain the system /keep the records until at least five years after the project has ended because most impact evaluations are executed between the time a project ends and the fifth year after completion.

207. It was fortunate that the majority of producers in the FFS were female but in the future, gender needs to be more systematically incorporated into the design phase. For future projects of a similar nature, UNEP and FAO must clearly articulate a gender strategy with milestones and timelines that are integrated into the larger project strategy from the outset. Technical expertise and staff should be brought on board to manage and ensure progress on the gender indicators across the project.

208. It is important that clear baselines be established for the most common use agrochemicals in each country. The project was successful in enrolling a certain number of laboratories in the region and building their capacity to detect those products in the environment. In designing future projects, UNEP and FAO should initially list and categorize all the chemicals that are used in the project countries and start establishing baselines of contamination levels. The baselines would then be used for public policy purposes.

5 Annexes

5.1 Annex I. Evaluation TORs

Terminal Evaluation of the UNEP program

“Reducing Dependence on POPs and other Agro-Chemicals in the Senegal and Niger River Basins through Integrated Production, Pest and Pollution Management”

(Short name: West African Pesticide Risk Management – WA/PRM)

PROGRAM BACKGROUND AND OVERVIEW

Program General Information

Table 1. Program summary

UNEP PIMS ID:	GF/4030-02-19	IMIS number:	GFL/2732-02-4572
GEF program ID:	1420	Program Type:	Full Size Program (FSP)
Sub-program:	Ecosystem Management	Expected Accomplishment(s):	(a) Use of the ecosystem approach in countries to maintain ecosystem services and sustainable productivity of terrestrial and aquatic systems is increased
GEF OP #:	Joint - OP#10: Contaminants and OP#14: POPs	GEF Focal Area(s):	International Waters and Persistent Organic Pollutents
GEF Strategic Priority/Objective:	IW-3 and POP-3	UNEP PoW Output(s):	PoW 313 Output: Tools, technical support and partnerships to improve integrated water resource management including water quality using the ecosystem approach
GEF approval date:	March 2009	UNEP approval date:	20 January 2009
Executing Agency:	UN FAO	Participating countries	Benin, Guinea, Mali, Mauritania, Niger, Senegal
UNEP division/Unit:	Division of Environmental Policy Implementation (DEPI), Biodiversity/Land Degradation And Francophone Africa Focal Point, GEF Unit	Program Partners	Oregon State University (OSU) USA; ENDA Tiers Monde, Senegal; CERES Locustox, Senegal; participating governments
Expected Start Date:	March 2009	Actual start date:	April 2009
Planned completion date:	December 2012	Actual completion date:	December 2014
Planned program budget at approval:	\$ 9,305,340	Expected MSP/FSP co-financing:	\$ 4,827,510
GEF Allocation:	\$ 4,919,830	Actual expenditures entered in IMIS as of 30 June 2014	\$ 4,061,762.66
First Disbursement:	\$ 200,000.00 (25.03.09)	Disbursements as of 30 June 2014	\$ 4,061,762.66
No. of revisions:	4	Date of last Steering Committee meeting:	January 2014
Mid-term review/ evaluation (actual date):	August - September 2012	Terminal Evaluation (actual date):	July 2015

Program rationale

The program is focused on the two principal river basins in the West African Sub-region: the Niger and Senegal River Basins. It addresses riverine contamination issues related mostly to irrigated-farming activities, in the six riparian countries of the Senegal and Niger Rivers i.e. Benin, Guinea, Mali, Mauritania, Niger, Senegal. Agriculture in these six countries is dominated by small-holder plots on the order of a mean size of approximately 0.5 ha.

The Senegal River is a transboundary water source that originates in Guinea and serves parts of Guinea, Mali, Mauritania and Senegal. . It forms a natural border between Senegal, Mali and Mauritania. There is an urgent need to address the use of persistent and toxic pesticides, particularly Persistent Organic Pollutants (POPs), Persistent Toxic Substances (PTSs) and other banned pesticides in the Senegal River Valley. In the recent past, the total pesticide load on rice in the Senegal Valley has increased 8-10 times with gross misuse and overuse of extremely harmful substances on horticulture. Pollution caused by agricultural production poses a serious threat to the aquatic environment, including transboundary waters, and to human health. Risks will increase with further intensification and expansion of agriculture in the valley. Because of its global significance, the delta of the Senegal River was designated as a UNESCO World Heritage site.

The Niger River Basin resembles the Senegal River Basin in that it is also a transboundary river that originates in Guinea. The Niger River crosses Mali and Niger and forms the border between Niger and Benin. It comprises a number of protected sites, including three Ramsar sites in the Niger River Delta, and the UNESCO World Heritage Site "W" National Park in Niger (which is also a Ramsar site). The Niger River Basin includes important agricultural zones responsible for over 500,000 ha of cotton production per year, and over 70,000 ha rice irrigation schemes.¹³ Regionally, the two river basins are home to upwards of 50% of the European migratory birds that move to and from Africa each year (program area encompasses 5 Ramsar sites in total).

Riverine areas support the highest concentrations of natural biodiversity and it is also these areas where people concentrate to collect water for cooking and drinking, where they bathe and where domesticated animals are watered and bathed. In many West African countries, pesticide misuse and localised overuse causes serious damage to humans and the environment. Monitoring of occupational health effects and pesticide poisoning is poor or absent. Statistics and records on pesticide use are hard to come by, or are simply not available. Because of a lack of research, the actual impact of pesticides on the environment and human health has remained largely unknown. Population growth, a lack of availability of clean irrigation and safe drinking water, and further intensification of agricultural production, has resulted in greater vulnerability to further degradation of already fragile ecosystems.

The program targets small-holders working with high-value crops (rice, vegetables and cotton), most of which are under irrigation by surface waters from the two major rivers in the region. The rationale for this choice being that these populations comprise the principal source of pesticide use in these countries and these communities are the principal populations and ecosystems at risk from water contamination.

Trends in all six countries are towards increased use and dependence on agro-chemicals, which has, ironically, contributed to declining long-term agricultural productivity, environmental quality, and human well-being, through toxic contamination of food-chains and disruption of ecosystem services, such as natural pest suppression and pollination, as well as revenue loss due to contaminated export produce. Explosive outbreaks of pest problems are also often triggered by insecticide use (insecticide-induced pest resurgence). Other negative trends include decreasing soil fertility, contamination of waterways, detrimental shifts in aquatic ecosystems, and overall degradation of human and environmental health. The social and economic drivers leading to these unsustainable agricultural practices include a lack of awareness among communities regarding both the impacts and negative externalities associated with pesticide use, as well as a lack of awareness of feasible, sustainable and more profitable alternatives.

Each of the countries is signatory to a diverse array sub-regional and international agreements related to pesticides, water, biodiversity and the environment, and have developed, in accordance with these, a variety of national laws, strategies and action plans. This program relates both to GEF Operational Program #10 International Waters (Contamination) and Operational Program #14 Persistent Organic Pollutants and in both cases focusing on Strategic Priority #3 (Demonstration of innovative and cost-efficient technologies). Also, because the program aims to prevent the contamination of biologically rich aquatic systems, home to internationally protected habitat, it will have benefits in the area of biodiversity.

FAO initiated a model of decentralized, participatory training approach for groups of small-scale farmers called "Farmer Field Schools". The model has been actively developed on the African continent since the late 1990s. The Integrated Production and Pests Management program (IPPM), through the FFS model, emphasizes a hands-on, experiment-based understanding of the physical, biological and ecological mechanisms underlying improved production methods, including soil-fertility management and alternative methods for pest control, while also developing topics related to social and economic issues. The program is part of a larger program of farmer training for which over 100,000 farmers have been targeted for season-long training; hence, the program will have outcomes that reach a much wider audience. It is expected that farmers will transfer the lessons learned from the IPPM/FFS approach to their own land holdings.

Program objectives and components

The development goal is to introduce a new form of agricultural training for farmers, through capacity building within government agencies, non-governmental organizations and especially community-based farmers' organizations, which will engender major changes in farming practices and substantial reductions in the use of chemicals for pest control, while increasing production levels, profitability and sustainability. By putting effective alternative methods at the disposal of grower communities through proven discovery learning methods, it is expected that they will be able to optimise decision-making regarding the appropriate use of land and water resources and the selection of appropriate agricultural practices.

The program's overall objective is to protect transboundary waters in the Niger and Senegal River Basins through elimination of POPs pesticide-use and substantial reduction and elimination of other toxic pesticides used in agriculture; while augmenting agricultural productivity and net economic benefits to farmers.

It purposes to demonstrate best practices for contaminant prevention and increased agricultural productivity through participatory farmer-education approaches through the following **specific objectives**:

- i. Promote understanding of a range of environmental knowledge and issues, particularly those relating to the range of benefits from various ecosystem services, deriving from the riverine habitats, plus the specific threats posed by pesticides to the riverine habitat and therefore also to the health and well-being of the communities. Data from the water-quality samples will be put into a "hands-on" adult-learning format for use in an FFS context to support this objective.

¹³ Program Document, 27.11.2002

- ii. Demonstrate feasible, economically and environmentally advantageous alternative production models. The main barrier to adoption of agricultural methods that prevent contamination of fields and waterways is lack of knowledge and skills in the communities. The hands-on educational approach of the FFS will help the farming communities demonstrate for themselves the feasibility of alternative, non-polluting methods.
- iii. Develop a community-based pesticide-monitoring system. This principal objective of the program involves farming communities surveying, monitoring and keeping track of trends in pesticide use in their own communities through development of an appropriate system for accounting for pesticide use in the communities (type, quantities, points of sale origin, time of use, crop type, etc.). Adoption of the system will be motivated by enhanced understanding of health, economic and environmental costs and risks associated with pesticide use and further motivated by a hands-on appreciation of a range of economically advantageous alternatives.
- iv. Create links among communities that share the same hydrological system flows (“upstream--downstream”) to enable farmer-to-farmer advocacy and the sharing of information and experience, particularly information on the impact of production models on the environment¹⁴ and the health of communities working and living in downstream areas.
- v. Disseminate tools for community-based action-oriented analysis and planning, for the future of the river basins.

The program addresses both OP#10—International Waters Contaminants and OP#14—POPs reduction. It was designed to develop local and national-level awareness-raising activities; conduct policy studies on national pesticide use patterns, and create links with national and regional pesticide legislative bodies. The program intended to build capacity in a regional ecotoxicology laboratory, execute water-quality assessment studies in six countries, run simulations on likely movement and fate of toxic chemicals in aquatic systems and estimate quantifiable risks to human health; at the same time help communities adopt improved, alternative production methods and community-based pesticide-monitoring systems and, finally, promote develop local, national and regional networks of stakeholders interested in improving the current situation.

The program’s results framework was organised around the following key components:

Component 1: Awareness raising and baselines

Component 2: assessment of freshwater contaminants

Component 3: Developing best practices

Component 4: Developing Networks

Component 5: Program management

The outcomes were expected to provide national and regional-level decision-makers with solid examples for addressing integrated development objectives and satisfying international treaty commitments. Outcomes are also expected to substantially lower pesticide use in the riverine communities—particularly the most toxic types, while at the same time substantially increasing yields and net revenues for farmers. The program’s logical framework is presented in Table 2 overleaf:

¹⁴ Especially for market gardening and cotton that generally exhibit substantially higher pesticide loads.

Table 2: Logical Framework

Program Objective	To protect transboundary waters in the Niger and Senegal River Basins through elimination of POPs pesticide-use and substantial reduction and elimination of other toxic pesticides used in agriculture; while augmenting agricultural productivity and net economic benefits to farmers	
Outcomes	Activities	Objectively Verifiable Indicators
<p>Outcome 1: Awareness Raising and Establishing Community Baselines</p> <p>Stakeholder awareness is raised through establishment of baselines on pesticide use and farm-level production statistics at national and regional levels. Partnerships developed with government structures, NGOs and Farmer Organizations (FOs) at local, national and regional levels</p>	<ol style="list-style-type: none"> 1. Conduct consultation and planning meetings at all levels: <ol style="list-style-type: none"> 1.1. Conduct first regional planning meeting with Regional Technical Steering Committee (RTSC) to review details of program start-up plan; 1.2. Conduct 6 National PSC meetings; 1.3. Conduct site visits to meet with local governments, communities and other local stakeholders to inform them of the program; 2. Meet with CILSS CSP and CPH/AOC structures to discuss information exchanges 3. Conduct baseline community surveys at 5 program sites in 6 countries: <ol style="list-style-type: none"> 3.1. Establish survey partners with local appropriate community-based organizations and seek community members to participate as additional surveyors ; 3.2. Conduct joint training for survey and agree on survey form and content; 3.3. Conduct survey and compile results; 3.4. Conduct water quality tests to detect pesticide levels in collaboration with partner laboratories and ENDA; 3.5. Bring overall results back to the communities for review and validation 	<ul style="list-style-type: none"> • Appropriate government structures, NGOs and Farmers Organizations fully engaged in conducting participatory training for farmers in sustainable best practices by 2013; • Overall picture of riverine contaminant levels, types and data on farmer pesticide practices provided by program feedback to appropriate national structures and regional pesticide regulation structures (CILSS CSP); • Baselines established for 12-18 communities and results discussed. Data serves also as baseline for evaluation of program outcomes at mid-term and end of program (M&E);
<p>Outcome 2: Assessments of Freshwater Contaminants</p> <p>Stakeholders are alerted to the type and level of threat to humans and environment from pesticide-contaminated waters through the first high-quality assessment of the two principal rivers and associated irrigation and drainage systems</p>	<ol style="list-style-type: none"> 4. Sites specified for monitoring contamination in the Niger and Senegal Basins: <ol style="list-style-type: none"> 4.1. Sampling plan devised together with ecotox technical contractor (OSU), NCU, RCU, FAO and regional ecotox labs staff; 4.2. Ecotox consultant (OSU) visits general target areas and meets with appropriate government services to gather water-flow and chemical-use data; 4.3. NCU and consultant presents sampling plan to NTSC for approval; 5. Water samples taken and analysed in regional ecotox laboratories: <ol style="list-style-type: none"> 5.1. National teams trained on sampling methods by partner ecotox laboratory staff members in country-level workshops; 5.2. Samples taken from field, processed for mailing and sent to partner ecotox laboratories; 5.3. Samples analysed by partner ecotox laboratories and results entered into program database; 6. An empirically based modelling approach explored as means to estimate relative risks to farmers (Human Health Risk Assessment) and elements of the aquatic environment, from exposure to pesticides. 7. Results translated into curriculum suitable for use in Farmer Field Schools for discussion of risks to humans and threats to ecosystems; 	<ul style="list-style-type: none"> • A clear picture of contaminant levels along the Senegal and Niger rivers provided by water samples in at least 12-18 locations in six countries; • Overall program progress and outcomes provided to governments and others from program database including geo-referenced data; • Relative risks to farmers and aquatic environment from exposure to pesticides estimated from an empirically based model; • Novel curriculum suitable for use in Farmer Field Schools in Sub-region and beyond derived from contaminant analysis and modelling effort.
<p>Outcome 3: Developing Best Practices for Sustainable Agriculture;</p> <p>Toxic pesticide use is drastically curtailed, POPs pesticide-use is largely reduced or eliminated in target communities, and agricultural productivity and profitability are substantially increased in all three cropping systems (rice, vegetables, cotton) through participatory training and adoption of Best Practices for sustainable agriculture. Community-level pesticide-monitoring systems in place and examples</p>	<ol style="list-style-type: none"> 8. Hold first regional curriculum-development workshop: <ol style="list-style-type: none"> 8.1. Present and review existing curricula for the sub-region; 8.2. Create subject-matter sub-groups to address each of the following new topics: <ol style="list-style-type: none"> 8.2.1. Pesticide toxicity to humans and the aquatic environment; 8.2.2. Economic implications of pesticide use; 8.2.3. Water-borne and vector-borne Diseases; 8.2.4. Development of Community-based Pesticide-monitoring system 9. Conduct one full-season "Training-of-Trainers" (TOT) programs in year one in each of the three new program countries for rice: Guinea, Mauritania and Niger, using Master Trainers from Mali, Senegal and Benin; 	<ul style="list-style-type: none"> • Farmer Field School curricula expanded to include modules on ecosystem services, ecological functioning, community-based mapping and contamination risks to hydrological systems and aquatic environments by 2013; • Regional capacity for participatory training augmented by total of 150 "technician" trainers and 300 farmer trainers by 2013; • Substantial participation by women in FFS assured: at least 50% in market gardening, 30%

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Outcomes	Activities	Objectively Verifiable Indicators
of successful self-financed FFS seen in each country.	<ol style="list-style-type: none"> 10. Conduct one full-season TOT program in year two for in each of the three new program countries for vegetables: Guinea, Mauritania and Niger, using Master Trainers from Mali, Senegal and Benin; 11. Conduct Farmer Field Schools in each country; 12. Develop pesticide use monitoring systems with target communities, through FFS alumni and village leaders; 13. Conduct second curriculum development workshop in year 3 to share lessons learned and curriculum developed during the first two years of the program. 	<p>in rice and 20% in cotton by 2013;</p> <ul style="list-style-type: none"> • Community-based monitoring systems for pesticide use developed and used by all 12-18 target communities by 2013 • At least two new FFS conducted by local farmer-facilitators in neighbouring communities by 2012. At least 3 self-financed FFS successfully up-and-running in each country by 2012.
<p>Outcome 4: Developing Networks Communities sharing the same river-basin hydrological resources communicate the results of Best Practices and contaminant reduction activities through inter-community communication and exchange networks.</p>	<ol style="list-style-type: none"> 14. Develop networks among villages in the same water-use areas (same/ shared river, irrigation and drainage systems): <ol style="list-style-type: none"> 14.1. Conduct "Open door" days at the end of each FFS, in which neighbouring communities are invited to witness and discuss outcomes of FFS training, including the nature of toxic risks from pesticides, the existence and increased benefits from alternative methods, and establishment of community-based monitoring systems; 14.2. Farmer-Trainers (FT) to work with Technician-Trainers (TT) in neighbouring villages in new FFS aimed at expanding scope of training to eventually include entirety of water-use area; 14.3. Annual "Open door" meetings to be held at larger administrative levels for benefit of prefecture and department-level local government and communities; 14.4. Representatives elected from target water-use areas meet to discuss possible outcomes of program on larger scales of the river basin; 15. Develop networks among facilitators at local, provincial and regional levels: <ol style="list-style-type: none"> 15.1. Local workshops held at each level, beginning with the local levels, with representatives chosen to attend workshops next level up; 15.2. Newsletter developed for benefit of facilitators and farming communities 	<ul style="list-style-type: none"> • Communities disseminate experiences and knowledge gained during program to neighbouring communities in the form of at least one "open door" (inter-community meeting) per location; • Networks of IPPM farmer facilitators maintain quality and timeliness of information to farmers through exchanges at local, provincial, national and sub-regional levels.

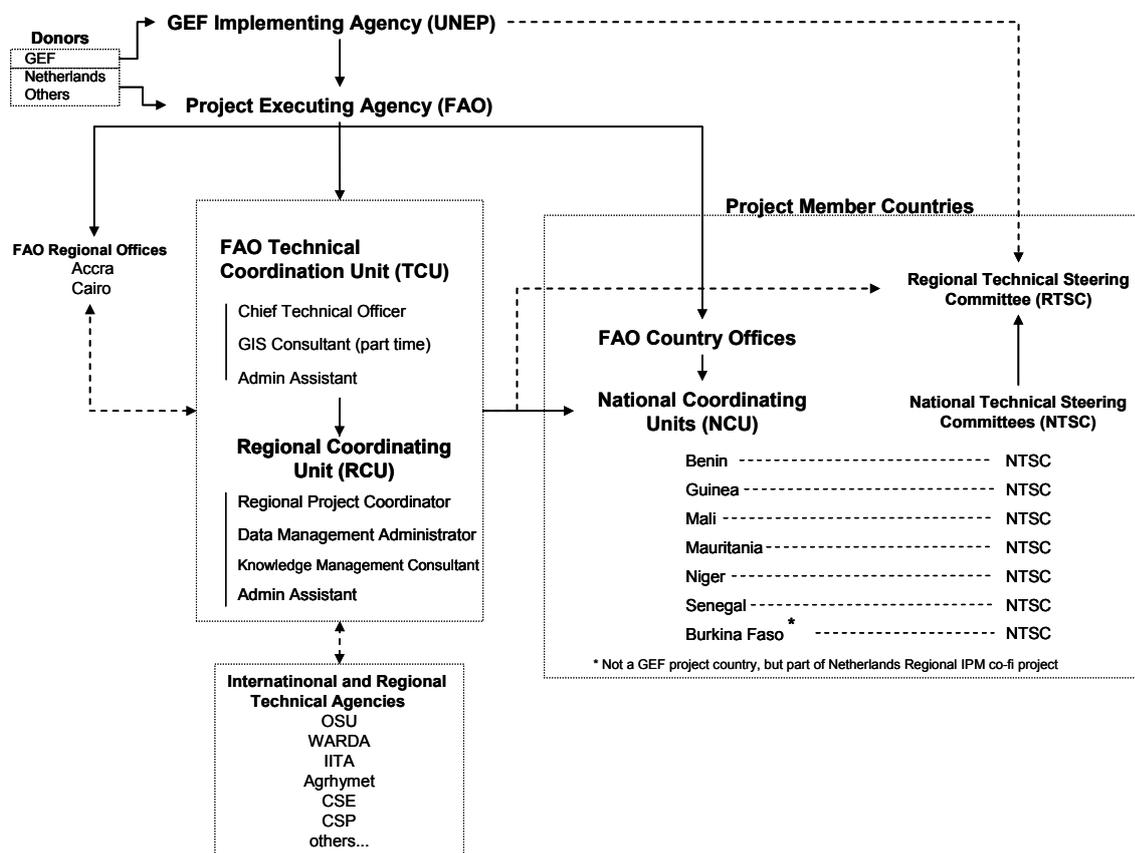
Executing Arrangements

FAO was the Executing Agency of the program providing the overall co-ordination and technical backstopping of the Program. In executing capacity, FAO was responsible for, inter alia, the overall financial management of the program, ensuring the necessary human resources and equipment inputs are provided in a timely manner to ensure smooth implementation of the program and delivery of program outputs, the submission of program progress and financial reports to UNEP/GEF. UNEP, as the GEF Implementing Agency, was responsible for overall program supervision to ensure consistency with GEF and UNEP policies and procedures. UNEP provided guidance on linkages with related UNEP and GEF-funded activities.

A FAO Technical Coordination Unit (TCU) monitored implementation of the activities undertaken during the execution of the program, and was responsible for clearance and transmission of financial and progress reports to UNEP/GEF. A Regional Coordination Unit (RCU) was set up in the FAO office in Dakar Senegal, comprised of a Regional Program Coordinator (RPC) under the immediate supervision of the Chief Technical Officer in Rome (CTA), and a Regional Program Administrative Assistant (RPAA), among other general service staff. FAO established in each country a National Coordination Unit (NCU) to maintain records of program activities and program expenditures at all levels. National Program Coordinators (NPC) were also chosen in the countries by FAO, working under the direct supervision of Regional Program Coordinator (RPC) and the national Representation of the FAO.

National Technical Steering Committees (NTSC) were set up at the beginning of the program comprising a membership decided by each country's lead ministry. Regional Technical Steering Committee (RTSC) were also set up comprising representatives from UNEP, FAO, the participating countries' NTSC and other relevant regional agencies. The steering committees acted as technical and policy advisors to the program and provided assistance on required agreements and arrangements for program execution.

Figure 1: Institutional Framework



Program Cost and Financing

Program revisions were undertaken for various reasons, amongst which included the need to reflect the GEF Trust Fund's actual expenditures and unspent funds, to extend the program as recommended in the Mid-term Review report, to rephrase the total unspent funds arising from years 2010-2012 to subsequent years in light of budgeted requirements, and to relocate funds between budget lines according to the recommendations of the Mid-term Review and work plan revisions.

The amended total program cost was USD 8,563,490 of which GEF financing was USD 4,919,830 and co-financing was USD 4,827,510. The breakdown of program financing from GEF and co-financing sources is presented in Table 3 below.

Table 3: Amended Program Cost and Financing Plan Summary

Item	US\$	%
GEF Trust Fund	4,105,330	47.9
Co-financing		
FAO (in kind)	391,428	
Governments – in cash	333,244	
Governments – in cash	666,488	
Bilateral - Netherlands	2,800,000	
Bilateral - Sweden	267,000	
Sub-total Co-Financing	4,458,160	52.1
Total Program Cost	9,305,340	100

Implementation Issues

Among the main program implementation issues has been the relatively ambitious nature of the objectives and targets vis-à-vis the resources (time, finances, capacity, etc.) available. Another key challenge to program implementation was related to the political unrest in some of the program countries, coupled with incompatible national policies that conflict with the program's objectives (e.g. conflicting national policies that challenge the program's aim in reducing use of harmful agro-chemicals). The state of security, in Mauritania for instance, did not favour rapid implementation of program activities and production of planned outputs.

A deployment plan for sampling compounds of concern was developed on 28th August, 2013 at a meeting between Oregon State, CERES and FAO, Senegal. However, staffing changes at the CERES laboratory prevented progress with this part of the program. CERES Locustox was not any longer a functioning entity in regard to this program due to the fact that all program staff that were trained extensively during this program have left for new jobs, including the Executive Director of the laboratory, who is now the Secretary General to the Minister of Agriculture for Senegal. Two campaigns for data collection and lab analysis for example, were undertaken in an effort to encourage learning and exchange between Oregon University and Senegal, however the recurrent staff turn-over made coordination between the two parties quite difficult. Staff turn-over resulted in a lack of continuity in outcome achievement, and brings into question the ability of the Africa counterpart to sustainably support highly technical activities in local labs.

One of the unanticipated findings towards the end of this program has been the difficulty of communicating in a balanced, responsible and effective manner, the nature of the risks posed to farmers and farm communities by the pesticides in use and as measured by the surveys. The risk levels for humans and biodiversity (in fields sprayed with agrochemical compounds such as methamedaphos) were exceedingly high in many places, which created a moral obligation for the program to act to further raise awareness of the situation at all levels. Recommendations by the committee for a follow-on program included a more extensive sampling of the river systems.

In addition to the aforementioned challenges, the visibility of UNEP as the program's implementing agency was not sufficient; there was notably greater visibility and recognition by program beneficiaries for FAO and other program partners than there was for UNEP. The poor visibility of UNEP's role in the program may be a consequence of the program design and perhaps due in part to the sub-contracting arrangements with the partner institutions that did not purposefully publicize UNEP as a key player.

Objective and Scope of the Evaluation

In line with the UNEP Evaluation Policy¹⁵ and the UNEP Program Manual¹⁶, the Terminal Evaluation is undertaken at completion of the program to assess program performance (in terms of relevance, effectiveness and efficiency), and determine outcomes and impacts (actual and potential) stemming from the program, including their sustainability. The evaluation has two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote operational improvement, learning and knowledge sharing through results and lessons learned among UNEP and the main program partners (i.e. FAO; Benin, Ministry of Agriculture; Guinea, Ministry of Agriculture and Environment; Mali, Ministries of Agriculture and Environment (joint); Mauritania, Ministry of Agriculture and Environment; Niger, Ministries of Agriculture and Environment (joint); Senegal, Ministry of Agriculture). Therefore, the evaluation will identify lessons of operational relevance for future program formulation and implementation, especially for the existing Integrated Production and Pest Management/Farmer Field School (IPPM/FFS) program in the sub-region.

It will focus on the following sets of **key questions**, based on the program's intended outcomes, which may be expanded by the consultant as deemed appropriate:

To what extent did the program succeed in engaging and developing partnerships with governmental structures to raise awareness on issues and threats related to pesticide use and Persistent Organic Pollutents?

¹⁵ <http://www.unep.org/eou/StandardsPolicyandPractices/UNEPevaluationPolicy/tabid/3050/language/en-US/Default.aspx>

¹⁶ http://www.unep.org/QAS/Documents/UNEP_Program_Manual_May_2013.pdf

Terminal Evaluation of the West African Pesticide Risk Management Program

Did the program succeed in establishing clear baselines on pesticide contaminant loads as a basis for national studies and policy recommendations? To what degree of success did the program build capacity in scientific assessment of freshwater contaminants?

Did the 'Farmer Field Schools' approach effectively demonstrating **Best Practices for agricultural production**, improving community-level pesticide-monitoring, and enhancing agricultural productivity and profitability?

Did the program successfully disseminate its experiences and knowledge gained to neighbouring communities in the same water-use areas, through its **community networks** of IPPM farmer facilitators, Farmer-Trainers and Technician-Trainers?

To what degree has the program established institutional capacity to co-ordinate regional interventions, monitor program impacts, and disseminate and exchange information?

What were the most effective coordination and management strategies used by the program and what were the key drivers and assumptions required to influence the achievement of planned its outcomes and development goal?

Overall Approach and Methods

The Terminal Evaluation of the Program will be conducted by independent consultant under the overall responsibility and management of the UNEP Evaluation Office in consultation with the UNEP Task Manager and the Sub-program Coordinators of the Chemicals and Waste Sub-program.

It will be an in-depth evaluation using a participatory approach whereby key stakeholders are kept informed and consulted throughout the evaluation process. Both quantitative and qualitative evaluation methods will be used to determine program achievements against the expected outputs, outcomes and impacts. It is highly recommended that the consultant maintains close communication with the program team and promotes information exchange throughout the evaluation implementation phase in order to increase their (and other stakeholder) ownership of the evaluation findings.

The findings of the evaluation will be based on the following:

(a) A desk review of:

Relevant background documentation, inter alia UNEP Medium-term Strategy (MTS) 2010-13 and MTS 2014-17 and relevant Programs of Work (2010-11, 2012-2013 and 2014-2015), relevant policies and legislation, including program background information available on relevant publications and websites;

Program design documents (including minutes of the program design review meeting at approval); Annual Work Plans and Budgets or equivalent, revisions to the program (Program Document Supplement), the logical framework and its budget;

Program reports such as Program Implementation Review (PIR) reports, financial reports, progress reports from collaborating partners, meeting minutes, relevant correspondence etc.;

Program outputs (e.g. impact studies, baseline data / GIS databases, surveys, technical reports, training curriculum, workshop reports, M&E systems, etc.)

MTR or MTE of the program

Any other documentation of relevance to the desk review exercise.

Interviews (individual or in group) with:

UNEP Task Manager

Program management team

UNEP Fund Management Officer;

Program partners, including FAO; Benin, Ministry of Agriculture; Guinea, Ministry of Agriculture and Environment; Mali, Ministries of Agriculture and Environment; Mauritania, Ministry of Agriculture and Environment; Niger, Ministries of Agriculture and Environment; Senegal, Ministry of Agriculture

Relevant resource persons.

Surveys: the data collection may entail the use of questionnaires or online surveys.

Field visits: depending on funds availability, the evaluation will entail missions to Senegal, Niger and Benin to visit pilot sites and to consult with program stakeholders.

Other data collection tools as deemed appropriate.

Key Evaluation principles

Evaluation findings and judgements should be based on **sound evidence and analysis**, clearly documented in the evaluation report. Information will be triangulated (i.e. verified from different sources) to the extent possible, and when verification was not possible, the single source will be mentioned. Analysis leading to evaluative judgements should always be clearly spelled out.

The evaluation will assess the program with respect to a **minimum set of evaluation criteria** grouped in six categories: (1) Strategic Relevance; (2) Attainment of objectives and planned result, which comprises the assessment of outputs achieved, effectiveness and

likelihood of impact; (3) Sustainability and replication; (4) Efficiency; (5) Factors and processes affecting program performance, including preparation and readiness, implementation and management, stakeholder participation and public awareness, country ownership and driven-ness, financial planning and management, UNEP supervision and backstopping, and program monitoring and evaluation; and (6) Complementarity with the UNEP strategies and programs. The evaluation consultant can propose other evaluation criteria as deemed appropriate.

Ratings. All evaluation criteria will be rated on a six-point scale. However, complementarity of the program with the UNEP strategies and programs is not rated. Annex 3 provides guidance on how the different criteria should be rated and how ratings should be aggregated for the different evaluation criterion categories.

In attempting to attribute any outcomes and impacts to the program intervention, the evaluators should consider the difference between *what has happened with, and what would have happened without, the program*. This implies that there should be consideration of the baseline conditions and trends in relation to the intended program outcomes and impacts. It also means that there should be plausible evidence to attribute such outcomes and impacts to the actions of the program. Sometimes, adequate information on baseline conditions and trends is lacking. In such cases this should be clearly highlighted by the evaluators, along with any simplifying assumptions that were taken to enable the evaluator to make informed judgements about program performance.

As this is a terminal evaluation, particular attention should be given to learning from the experience. Therefore, the “Why?” question should be at front of the consultant’ minds all through the evaluation exercise. This means that the consultant need to go beyond the assessment of “what” the program performance was, and make a serious effort to provide a deeper understanding of “why” the performance was as it was, i.e. of processes affecting attainment of program results (criteria under category F – see below). This should provide the basis for the lessons that can be drawn from the program. In fact, the usefulness of the evaluation will be determined to a large extent by the capacity of the consultant to explain “why things happened” as they happened and are likely to evolve in this or that direction, which goes well beyond the mere review of “where things stand” at the time of evaluation.

A key aim of the evaluation is to encourage reflection and learning by UNEP staff and key program stakeholders. The consultant should consider how reflection and learning can be promoted, both through the evaluation process and in the communication of evaluation findings and key lessons.

Communicating evaluation results. Once the consultant has obtained evaluation findings, lessons and results, the Evaluation Office will share the findings and lessons with the key stakeholders. Evaluation results should be communicated to the key stakeholders in a brief and concise manner that encapsulates the evaluation exercise in its entirety. There may, however, be several intended audiences, each with different interests and preferences regarding the report. The Evaluation Manager will plan with the consultant which audiences to target and the easiest and clearest way to communicate the key evaluation findings and lessons to them. This may include some or all of the following; a webinar, conference calls with relevant stakeholders, the preparation of an evaluation brief or interactive presentation.

Evaluation criteria

Strategic relevance

The evaluation will assess, in retrospect, whether the program’s objectives and implementation strategies were consistent with global, regional and national environmental issues and needs.

The evaluation will assess whether the program was in-line with the GEF International Waters (IW) and Persistent Organic Pollutents (POPs) focal areas’ strategic priorities and operational programs (i.e. IW- OP#14, and POPS- OP#10).

The evaluation will also assess the program’s relevance in relation to UNEP’s mandate and its alignment with UNEP’s policies and strategies at the time of program approval. UNEP’s Medium Term Strategy (MTS) is a document that guides UNEP’s program planning over a four-year period. It identifies UNEP’s thematic priorities, known as Subprograms (SP), and sets out the desired outcomes [known as Expected Accomplishments (EAs)] of the SubPrograms. The evaluation will assess whether the program makes a tangible/plausible contribution to any of the EAs specified in the MTS 2010-13 and 2014-17. The magnitude and extent of any contributions and the causal linkages should be fully described.

The evaluation should assess the program’s alignment / compliance with UNEP’s policies and strategies. The evaluation should provide a brief narrative of the following:

1. *Alignment with the Bali Strategic Plan (BSP)¹⁷*. The outcomes and achievements of the program should be briefly discussed in relation to the objectives of the UNEP BSP.
2. *Gender balance*. Ascertain to what extent program design, implementation and monitoring have taken into consideration: (i) possible gender inequalities in access to and the control over natural resources; (ii) specific vulnerabilities of women and children to environmental degradation or disasters; and (iii) the role of women in mitigating or adapting to environmental changes and engaging in environmental protection and rehabilitation. Assess whether the intervention is likely to have any lasting differential impacts on gender equality and the relationship between women and the environment. To what extent do unresolved gender inequalities affect sustainability of program benefits?
3. *Human rights based approach (HRBA) and inclusion of indigenous peoples issues, needs and concerns*. Ascertain to what extent the program has applied the UN Common Understanding on HRBA. Ascertain if the program is in line with the UN Declaration on the Rights of Indigenous People, and pursued the concept of free, prior and informed consent.
4. *South-South Cooperation*. This is regarded as the exchange of resources, technology, and knowledge between developing countries. Briefly describe any aspects of the program that could be considered as examples of South-South Cooperation.

¹⁷ <http://www.unep.org/GC/GC23/documents/GC23-6-add-1.pdf>

Based on an analysis of program stakeholders, the evaluation should assess the relevance of the program intervention to key stakeholder groups.

Achievement of Outputs

The evaluation will assess, for each component, the program's success in producing the program outputs and milestones as presented in Table 2 above, both in quantity and quality, as well as their usefulness and timeliness.

Briefly explain the reasons behind the success (or failure) of the program in producing its different outputs and meeting expected quality standards, cross-referencing as needed to more detailed explanations provided under Section F (which covers the processes affecting attainment of program results). Were key stakeholders appropriately involved in producing the program outputs?

Effectiveness: Attainment of Objectives and Planned Results

The evaluation will assess the extent to which the program's objectives were effectively achieved or are expected to be achieved.

The **Theory of Change** (ToC) of a program depicts the causal pathways from program outputs (goods and services delivered by the program) through outcomes (changes resulting from the use made by key stakeholders of program outputs) towards impact (long term changes in environmental benefits and living conditions). The ToC will also depict any intermediate changes required between program outcomes and impact, called 'intermediate states'. The ToC further defines the external factors that influence change along the major pathways; i.e. factors that affect whether one result can lead to the next. These external factors are either drivers (when the program has a certain level of control) or assumptions (when the program has no control). The ToC also clearly identifies the main stakeholders involved in the change processes.

The evaluation will reconstruct the ToC of the program based on a review of program documentation and stakeholder interviews. The evaluator will be expected to discuss the reconstructed ToC with the stakeholders during evaluation missions and/or interviews in order to ascertain the causal pathways identified and the validity of impact drivers and assumptions described in the ToC. This exercise will also enable the consultant to address some of the key evaluation questions and make adjustments to the ToC as appropriate (the ToC of the intervention may have been modified / adapted from the original design during program implementation).

The assessment of effectiveness will be structured in three sub-sections:

- (b) Evaluation of the **achievement of outcomes as defined in the reconstructed ToC**. These are the first-level outcomes expected to be achieved as an immediate result of program outputs. For this program, the main question will be to what extent the program has contributed to: (i) awareness raising and establishing baselines; (ii) assessments of freshwater contaminants; (iii) developing best practices; (iv) developing community networks; and (v) program coordination and management. Additional questions would be to what extent the program has contributed to regional policy-level outcomes, and also the likelihood that countries will seek support for follow-on activities based on the model of the program.
- (c) Assessment of the **likelihood of impact** using a Review of Outcomes to Impacts (ROtI) approach¹⁸. The evaluation will assess to what extent the program has to date contributed, and is likely in the future to further contribute, to [intermediate states], and the likelihood that those changes in turn lead to positive changes in the natural resource base, benefits derived from the environment and human well-being.

Evaluation of the **achievement of the formal program overall objective, overall purpose, goals and component outcomes** using the program's own results statements as presented in the Program Document¹⁹. This sub-section will refer back where applicable to the preceding sub-sections (a) and (b) to avoid repetition in the report. To measure achievement, the evaluation will use as much as appropriate the indicators for achievement proposed in the Logical Framework (Logframe) of the program, adding other relevant indicators as appropriate. Briefly explain what factors affected the program's success in achieving its objectives, cross-referencing as needed to more detailed explanations provided under Section F. Most commonly, the overall objective is a higher level result to which the program is intended to contribute. The section will describe the **actual or likely contribution** of the program to the objective.

The evaluation should, where possible, disaggregate outcomes and impacts for the key program stakeholders.

Sustainability and replication

Sustainability is understood as the probability of continued long-term program-derived results and impacts after the external program funding and assistance ends. The evaluation will identify and assess the key conditions or factors that are likely to undermine or contribute to the persistence of benefits. Some of these factors might be direct results of the program while others will include contextual circumstances or developments that are not under control of the program but that may condition the sustainability of benefits. The evaluation should ascertain to what extent follow-up work has been initiated and how program results will be sustained and enhanced over time. The reconstructed ToC will assist in the evaluation of sustainability, as the drivers and assumptions required to achieve higher-level results are often similar to the factors affecting sustainability of these changes.

Four aspects of sustainability will be addressed:

- (d) **Socio-political sustainability**. Are there any social or political factors that may influence positively or negatively the sustenance of program results and progress towards impacts? Is the level of ownership by the main stakeholders sufficient to allow for the program results to be sustained? Are there sufficient government and other key stakeholder awareness, interests, commitment and incentives to address the

¹⁸ Guidance material on Theory of Change and the ROtI approach is available from the Evaluation Office.

¹⁹ Or any subsequent **formally approved** revision of the program document or logical framework.

principal root causes underlying the existing agro-ecological and contaminant problems along the transboundary waterways in the six participating countries? Did the program conduct 'succession planning' and implement this during the life of the program? Was capacity building conducted for key stakeholders?

Financial resources. To what extent are the continuation of program results and the eventual impact of the program dependent on financial resources? What is the likelihood that adequate financial resources²⁰ will be or will become available to use capacities built by the program? Are there any financial risks that may jeopardize sustenance of program results and onward progress towards impact?

Institutional framework. To what extent is the sustenance of the results and onward progress towards impact dependent on issues relating to institutional frameworks and governance? How robust are the institutional achievements such as governance structures and processes, policies, sub-regional agreements, legal and accountability frameworks etc. required to sustaining program results and to lead those to impact on human behaviour and environmental resources, goods or services?

Environmental sustainability. Are there any environmental factors, positive or negative, that can influence the future flow of program benefits? Are there any program outputs or higher level results that are likely to affect the environment, which, in turn, might affect sustainability of program benefits? Are there any foreseeable negative environmental impacts that may occur as the program results are being up-scaled?

Catalytic role and replication. The *catalytic role* of UNEP interventions is embodied in their approach of supporting the creation of an enabling environment and of investing in pilot activities which are innovative and showing how new approaches can work. UNEP also aims to support activities that upscale new approaches to a national, regional or global level, with a view to achieve sustainable global environmental benefits. The evaluation will assess the catalytic role played by this program, namely to what extent the program has:

- (e) *catalyzed behavioural changes* in terms of use and application, by the relevant stakeholders, of capacities developed;
- provided *incentives* (social, economic, market based, competencies etc.) to contribute to catalyzing changes in stakeholder behaviour;
- contributed to *institutional changes*, for instance institutional uptake of program-demonstrated technologies, practices or management approaches;
- contributed to *policy changes* (on paper and in implementation of policy);
- contributed to sustained follow-on financing (*catalytic financing*) from Governments, private sector, donors etc.;
- created opportunities for particular individuals or institutions ("*champions*") to catalyze change (without which the program would not have achieved all of its results).

Replication is defined as lessons and experiences coming out of the program that are replicated (experiences are repeated and lessons applied in different geographic areas) or scaled up (experiences are repeated and lessons applied in the same geographic area but on a much larger scale and funded by other sources). The evaluation will assess the approach adopted by the program to promote replication effects and determine to what extent actual replication has already occurred, or is likely to occur in the near future. What are the factors that may influence replication and scaling up of program experiences and lessons?

Efficiency

The evaluation will assess the cost-effectiveness and timeliness of program execution. It will describe any cost- or time-saving measures put in place in attempting to bring the program as far as possible in achieving its results within its (severely constrained) secured budget and (extended) time. It will also analyse how delays, if any, have affected program execution, costs and effectiveness. Wherever possible, costs and time over results ratios of the program will be compared with that of other similar interventions.

The evaluation will give special attention to efforts by the program teams to make use of/build upon pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programs and programs etc. to increase program efficiency. For instance, the evaluation will consider how well other information sources (on global and regional environmental status and trends, and on the costs and benefits of different policy options) accessible to the different target audiences have been tapped, and how the program ensured the complementarity of its process and products to other assessment processes and information sources, to avoid duplication of efforts. Was there sufficient information about the assessment capacity of collaborating institutions and experts and about other capacity building initiatives, to limit and target training and technical support to what was really needed, avoiding duplication?

Factors and processes affecting program performance

Preparation and readiness. This criterion focusses on the quality of program design and preparation. Were program stakeholders²¹ adequately identified and were they sufficiently involved in program development and ground truthing e.g. of proposed timeframe and budget? Were the program's objectives and components clear, practicable and feasible within its timeframe? Were the capacities of executing agencies properly considered when the program was designed? Was the program document clear and realistic to enable effective and efficient implementation? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to program implementation? Were counterpart resources (funding, staff, and facilities) and enabling legislation assured? Were adequate program management arrangements in place? Were lessons from other relevant programs properly incorporated in the

²⁰ Those resources can be from multiple sources, such as the national budget, public and private sectors, development assistance etc.

²¹ Stakeholders are the individuals, groups, institutions, or other bodies that have an interest or 'stake' in the outcome of the program. The term also applies to those potentially adversely affected by the program.

program design? What factors influenced the quality-at-entry of the program design, choice of partners, allocation of financial resources etc.? Were any design weaknesses mentioned in the Program Review Committee minutes at the time of program approval adequately addressed?

Program implementation and management. This includes an analysis of implementation approaches used by the program, its management framework, the program's adaptation to changing conditions, the performance of the implementation arrangements and partnerships, relevance of changes in program design, and overall performance of program management. The evaluation will:

- (f) Ascertain to what extent the program implementation mechanisms outlined in the program document have been followed and were effective in delivering program milestones, outputs and outcomes. Were pertinent adaptations made to the approaches originally proposed?
- Evaluate the effectiveness and efficiency of program management and how well the management was able to adapt to changes during the life of the program.
- Assess the role and performance of the teams and working groups established and the program execution arrangements at all levels.
- Assess the extent to which program management responded to direction and guidance provided by the UNEP Task Manager and program steering bodies including the national and sub-regional technical steering committees (NTSCs and RTSCs).
- Identify operational and political / institutional problems and constraints that influenced the effective implementation of the program, and how the program tried to overcome these problems.
- Stakeholder participation, cooperation and partnerships.** The Evaluation will assess the effectiveness of mechanisms for information sharing and cooperation with other UNEP programs and programs, external stakeholders and partners. The term stakeholder should be considered in the broadest sense, encompassing both program partners and target users (such as the riverine communities in the 6 riparian countries of the Senegal and Niger rivers, national- and regional-level policy makers, governmental organisations, NGOs, farmer organisations, research institutions, etc.) of program products. The TOC and stakeholder analysis should assist the evaluators in identifying the key stakeholders and their respective roles, capabilities and motivations in each step of the causal pathways from activities to achievement of outputs, outcomes and intermediate states towards impact. The assessment will look at three related and often overlapping processes: (1) information dissemination to and between stakeholders, (2) consultation with and between stakeholders, and (3) active engagement of stakeholders in program decision making and activities. The evaluation will specifically assess:
- (g) the approach(es) and mechanisms used to identify and engage stakeholders (within and outside UNEP) in program design and at critical stages of program implementation. What were the strengths and weaknesses of these approaches with respect to the program's objectives and the stakeholders' motivations and capacities?
- (h) How was the overall collaboration between different functional units of UNEP involved in the program? What coordination mechanisms were in place? Were the incentives for internal collaboration in UNEP adequate?
- (i) Was the level of involvement of the Regional, Liaison and Out-posted Offices in program design, planning, decision-making and implementation of activities appropriate?
- (j) Has the program made full use of opportunities for collaboration with other programs and programs including opportunities not mentioned in the Program Document? Have complementarities been sought, synergies been optimized and duplications avoided?
- (k) What was the achieved degree and effectiveness of collaboration and interactions between the various program partners and stakeholders during design and implementation of the program? This should be disaggregated for the main stakeholder groups identified in the inception report.
- (l) To what extent has the program been able to take up opportunities for joint activities, pooling of resources and mutual learning with other organizations and networks? In particular, how useful are partnership mechanisms and initiatives (such as the IPPM/FFS farmer networks, IPPM farmer facilitators, agriculture networks in the sub-region), to build stronger coherence and collaboration between participating organisations?
- (m) How did the relationship between the program and the collaborating partners (institutions and individual experts) develop? Which benefits stemmed from their involvement for program performance, for UNEP and for the stakeholders and partners themselves? Do the results of the program (strategic programs and plans, monitoring and management systems, sub-regional agreements etc.) promote participation of stakeholders, including users, in environmental decision making?

Communication and public awareness. The evaluation will assess the effectiveness of any public awareness activities that were undertaken during the course of implementation of the program to communicate the program's objective, progress, outcomes and lessons. This should be disaggregated for the main stakeholder groups identified in the inception report. Did the program identify and make use of existing communication channels and networks used by key stakeholders? Did the program provide feedback channels?

Country ownership and driven-ness. The evaluation will assess the degree and effectiveness of involvement of government / public sector agencies in the program, in particular those involved in program execution and those participating in the national and sub-regional steering committees, community-based monitoring for pesticides, institutionalization of participatory educational approaches (e.g. FFS), national monitoring for water quality, and development of communications networks.

- (n) To what extent have Governments assumed responsibility for the program and provided adequate support to program execution, including the degree of cooperation received from the various public institutions involved in the program?
- How and how well did the program stimulate country ownership of program outputs and outcomes?

Financial planning and management. Evaluation of financial planning requires assessment of the quality and effectiveness of financial planning and control of financial resources throughout the program's lifetime. The assessment will look at actual program costs by activities compared to budget (variances), financial management (including disbursement issues), and co-financing. The evaluation will:

- (o) Verify the application of proper standards (clarity, transparency, audit etc.) and timeliness of financial planning, management and reporting to ensure that sufficient and timely financial resources were available to the program and its partners;
- (p) Assess other administrative processes such as recruitment of staff, procurement of goods and services (including consultant), preparation and negotiation of cooperation agreements etc. to the extent that these might have influenced program performance;

Present the extent to which co-financing has materialized as expected at program approval (see Table 1). Report country co-financing to the program overall, and to support program activities at the national level in particular. The evaluation will provide a breakdown of final actual costs and co-financing for the different program components (see tables in Annex 4).

Describe the resources the program has leveraged since inception and indicate how these resources are contributing to the program's ultimate objective. Leveraged resources are additional resources—beyond those committed to the program itself at the time of approval—that are mobilized later as a direct result of the program. Leveraged resources can be financial or in-kind and they may be from other donors, NGO's, foundations, governments, communities or the private sector.

Analyse the effects on program performance of any irregularities in procurement, use of financial resources and human resource management, and the measures taken UNEP to prevent such irregularities in the future. Determine whether the measures taken were adequate.

Supervision, guidance and technical backstopping. The purpose of supervision is to verify the quality and timeliness of program execution in terms of finances, administration and achievement of outputs and outcomes, in order to identify and recommend ways to deal with problems which arise during program execution. Such problems may be related to program management but may also involve technical/institutional substantive issues in which UNEP has a major contribution to make.

The evaluators should assess the effectiveness of supervision, guidance and technical support provided by the different supervising/supporting bodies including:

- (q) The adequacy of program supervision plans, inputs and processes;

The realism and candour of program reporting and the emphasis given to outcome monitoring (results-based program management);

How well did the different guidance and backstopping bodies play their role and how well did the guidance and backstopping mechanisms work? What were the strengths in guidance and backstopping and what were the limiting factors?

Monitoring and evaluation. The evaluation will include an assessment of the quality, application and effectiveness of program monitoring and evaluation plans and tools, including an assessment of risk management based on the assumptions and risks identified in the program document. The evaluation will assess how information generated by the M&E system during program implementation was used to adapt and improve program execution, achievement of outcomes and ensuring sustainability. M&E is assessed on three levels:

- (r) *M&E Design.* The evaluators should use the following questions to help assess the M&E design aspects:

Arrangements for monitoring: Did the program have a sound M&E plan to monitor results and track progress towards achieving program objectives? Have the responsibilities for M&E activities been clearly defined? Were the data sources and data collection instruments appropriate? Was the time frame for various M&E activities specified? Was the frequency of various monitoring activities specified and adequate?

How well was the program logical framework (original and possible updates) designed as a planning and monitoring instrument?

SMART-ness of indicators: Are there specific indicators in the logframe for each of the program objectives? Are the indicators measurable, attainable (realistic) and relevant to the objectives? Are the indicators time-bound?

Adequacy of baseline information: To what extent has baseline information on performance indicators been collected and presented in a clear manner? Was the methodology for the baseline data collection explicit and reliable? For instance, was there adequate baseline information on pre-existing accessible information on global and regional environmental status and trends, and on the costs and benefits of different policy options for the different target audiences? Was there sufficient information about the assessment capacity of collaborating institutions and experts etc. to determine their training and technical support needs?

To what extent did the program engage key stakeholders in the design and implementation of monitoring? Which stakeholders (from groups identified in the inception report) were involved? If any stakeholders were excluded, what was the reason for this?

Arrangements for evaluation: Have specific targets been specified for program outputs? Has the desired level of achievement been specified for all indicators of objectives and outcomes? Were there adequate provisions in the legal instruments binding program partners to fully collaborate in evaluations?

Budgeting and funding for M&E activities: Determine whether support for M&E was budgeted adequately and was funded in a timely fashion during implementation.

M&E Plan Implementation. The evaluation will verify that:

the M&E system was operational and facilitated timely tracking of results and progress towards programs objectives throughout the program implementation period;

PIR reports were prepared (the realism of the Task Manager's assessments will be reviewed)

Half-yearly Progress & Financial Reports were complete and accurate;

the information provided by the M&E system was used during the program to improve program performance and to adapt to changing needs.

The Consultant

For this evaluation, the evaluation team will consist of one independent Consultant. Details about the specific roles and responsibilities of the consultant are presented in Annex 1 of these TORs. The following expertise and experience is required:

Advanced university degree in environmental sciences, agricultural sciences, or other relevant field.

Evaluation experience, including of large, regional or global programs and using a Theory of Change approach;

Broad understanding of protection of international waters bodies, pesticides risks and management, biodiversity issues, land degradation, agricultural sciences, hazardous chemicals including POPs and wastes, capacity building and policy development.

Knowledge of the UN system (previous consultancy work with UNEP is desirable);

Fluency in both written and oral English²²; working knowledge of French language is required.²³

Attention to detail and respect for deadlines;

Minimum 15 years of professional experience.

The Consultant will coordinate data collection and analysis, and the preparation of the main report for the evaluation. S/He will ensure that all evaluation criteria and questions are adequately covered.

By undersigning the service contract with UNEP/UNON, the consultant certifies that s/he has not been associated with the design and implementation of the program in any way which may jeopardize their independence and impartiality towards program achievements and program partner performance. In addition, s/he will not have any future interests (within six months after completion of the contract) with the program's executing or implementing units.

Evaluation Deliverables and Review Procedures

Inception Report

The evaluation consultant will prepare an **inception report** (see Annex 2(a) of TORs for guidelines on the Inception Report outline) containing a thorough review of the program context, program design quality, a draft reconstructed Theory of Change of the program, the evaluation framework and a tentative evaluation schedule.

It is expected that a large portion of the desk review will be conducted during the inception phase. It will be important to acquire a good understanding of the program context, design and process at this stage. The review of design quality will cover the following aspects (see Annex 7 for the detailed program design assessment matrix):

Strategic relevance of the program

Preparation and readiness;

Financial planning;

M&E design;

Complementarity with UNEP strategies and programs;

Sustainability considerations and measures planned to promote replication and up-scaling.

The inception report will present a draft, desk-based **reconstructed Theory of Change** of the program. It is vital to reconstruct the ToC *before* most of the data collection (review of progress reports, in-depth interviews, surveys etc.) is done, because the ToC will define which direct outcomes, drivers and assumptions of the program need to be assessed and measured – based on which indicators – to allow adequate data collection for the evaluation of program effectiveness, likelihood of impact and sustainability.

The inception report will also include a **stakeholder analysis** identifying key stakeholders, networks and channels of communication. This information should be gathered from the Program document and discussion with the program team.

The **evaluation framework** will present in further detail the overall evaluation approach. It will specify for each evaluation question under the various criteria what the respective indicators and data sources will be. The evaluation framework should summarize the information available from program documentation against each of the main evaluation parameters. Any gaps in information should be identified and methods for additional data collection, verification and analysis should be specified. Evaluations/reviews of other large assessments can provide ideas about the most appropriate evaluation methods to be used.

²² Evaluation reports will be submitted in English

²³ The evaluation reports shall be presented in English however the national language of the country being evaluated may be used for stakeholder consultations and surveys as necessary

Effective **communication strategies** help stakeholders understand the results and use the information for organisational learning and improvement. While the evaluation is expected to result in a comprehensive document, content is not always best shared in a long and detailed report; this is best presented in a synthesised form using any of a variety of creative and innovative methods. The evaluator is encouraged to make use of multimedia formats in the gathering of information e.g. video, photos, sound recordings. Together with the full report, the evaluator will be expected to produce a **2-page summary of key findings and lessons** (please refer to annex 10).

The inception report will also present a **tentative schedule** for the overall evaluation process, including a draft program for the country visit and tentative list of people/institutions to be interviewed. The inception report will be submitted for review and approval by the Evaluation Office before the any further data collection and analysis is undertaken.

[Optional] When data collection and analysis has almost been completed, the evaluation consultant will prepare a short **note on preliminary findings and recommendations** for discussion with the program team and the Evaluation Reference Group. The purpose of the note is to allow the evaluation consultant to receive guidance on the relevance and validity of the main findings emerging from the evaluation.

Preparation of the main report

The main evaluation report should be brief (around 50 pages – excluding the executive summary and annexes), to the point and written in plain English. The report will follow the annotated Table of Contents outlined in Annex 2. It must explain the purpose of the evaluation, exactly what was evaluated and the methods used (with their limitations). The report will present evidence-based and balanced findings, consequent conclusions, lessons and recommendations, which will be cross-referenced to each other. The report should be presented in a way that makes the information accessible and comprehensible. Any dissident views in response to evaluation findings will be appended in footnote or annex as appropriate. To avoid repetitions in the report, the authors will use numbered paragraphs and make cross-references where possible.

Review of the draft evaluation report

The evaluation consultant will submit a **“zero draft”**²⁴ to the UNEP EO and revise the draft following the comments and suggestions made by the EO. Once a draft of adequate quality has been accepted, the EO will share it with the Task Manager as a **“first draft”** report, who will alert the EO in case the report would contain any blatant factual errors. The Evaluation Office will then forward the first draft report to the other program stakeholders, in particular the UNEP GEF Unit, FAO Senegal, National Program Coordinator, the NTSCs and RTSC, and national focal points for their review and comments. Stakeholders may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions. It is also very important that stakeholders provide feedback on the proposed recommendations and lessons. Comments would be expected within two weeks after the draft report has been shared. Any comments or responses to the draft report will be sent to the UNEP EO for collation. The EO will provide the comments to the evaluation consultant for consideration in preparing the final draft report, along with its own views.

The evaluation consultant will submit the **“final draft”** report no later than 2 weeks after reception of stakeholder comments. The consultant will prepare a **response to comments**, listing those comments not or only partially accepted by them that could therefore not or only partially be accommodated in the final report. They will explain why those comments have not or only partially been accepted, providing evidence as required. This response to comments will be shared by the EO with the interested stakeholders to ensure full transparency.

Submission of the final evaluation report. The **final report** shall be submitted by Email to the Head of the Evaluation Office. The Evaluation Office will finalize the report and share it with the interested Divisions and Sub-program Coordinators in UNEP. The final evaluation report will be published on the UNEP Evaluation Office web-site www.unep.org/eou.

As per usual practice, the UNEP EO will prepare a **quality assessment** of the zero draft and final draft report, which is a tool for providing structured feedback to the evaluation consultant. The quality of the report will be assessed and rated against the criteria specified in Annex 3.

The UNEP Evaluation Office will assess the ratings in the final evaluation report based on a careful review of the evidence collated by the evaluation consultant and the internal consistency of the report. Where there are differences of opinion between the evaluator and UNEP Evaluation Office on program ratings, both viewpoints will be clearly presented in the final report. The UNEP Evaluation Office ratings will be considered the final ratings for the program.

At the end of the evaluation process, the Evaluation Office will prepare a Recommendations Implementation Plan in the format of a table to be completed and updated at regular intervals by the Task Manager. After reception of the Recommendations Implementation Plan, the Task Manager is expected to complete it and return it to the EO within one month. (S)he is expected to update the plan every six months until the end of the tracking period. As this is a Terminal Evaluation, the tracking period for implementation of recommendations will be 18 months, unless it is agreed to make this period shorter or longer as required for realistic implementation of all evaluation recommendations. Tracking points will be every six months after completion of the implementation plan.

Logistical arrangements

This Terminal Evaluation will be undertaken by one independent evaluation consultant contracted by the UNEP Evaluation Office. The consultant will work under the overall responsibility of the UNEP Evaluation Office and will consult with the EO on any procedural and methodological matters related to the evaluation. It is, however, the consultant’s individual responsibility to arrange for his/her travel, visa, obtain documentary evidence, plan meetings with stakeholders, organize online surveys, and any other logistical matters related to the

²⁴ This refers to the earliest, completed main report that will be submitted by the consultant(s) for review by the EO before transitioning to a ‘first draft’ that meets an acceptable standard and that can be circulated for external review.

assignment. The UNEP Task Manager and program team will, where possible, provide logistical support (introductions, meetings etc.) allowing the consultant to conduct the evaluation as efficiently and independently as possible.

Schedule of the evaluation

Table 7 below presents the tentative schedule for the evaluation.

Table 7. Tentative schedule for the evaluation

Milestone	Tentative timelines
Consultant recruitment and contracting process	July 2015
Inception and Kick off meetings	September 2015
Final Inception Report	September 2015
Evaluation Missions	October 2015
Telephone interviews, surveys etc.	October 2015
'Zero' draft report	November 2015
First Draft Report shared with UNEP Program Manager	November 2015
[Revised] First Draft Report shared with program team	December 2015
Draft Report shared with external stakeholders	December 2015
Final Report and 2-page summary of key findings and lessons	December 2015 – January 2016

5.2 Annex II. List of people met and interviewed

N°	Name	Agency	Location	Telephone/email
1	Paul Jepson ***	OSU (Oregon State University) Lead Scientist	Corvalis /Oregon /USA	1-541-737-9082 jepsonp@science.oregonstate.edu
3	Chakirou Lawani ***	National Coordinator GEF/POPs	Benin	+229 97081436 chakiroulawani@yahoo.fr
12	Ranaou Maazou ***	National Coordinator GEF/POPs	Niger	+227 96964266
13	Ibrahim Hama	National Coordinator GEF/LDCF (new FFS program)	Niger	+227 91503256 ibrahimAboubacar.hama@fao.org
	SEID, Ms FATOUMA DJAMA	FAO Representative, Mali	Mali	FAO-ML@fao.org +223 20226333 end_of_the_skype_highlighting
14	Kelema Daniel Simeon	Direction Nationale Agriculture	Bamako /Mali	00223 76304493 danielkelema@yahoo.fr
15	Balla Sissoko	Ministère Environnement	Bamako /Mali	+223 76479032 balsissoko@yahoo.fr
16	Mohamed Soumare ***	National Coordinator GEF/POPs	Bamako /Mali	66790475 msoumare03@yahoo.fr
18	William Settle	FAO /ROME CTA/budget holder	Italie /Rome	william.settle@fao.org
20	Makhfousse Sarr ***	National Coordinator GEF/POPs	Dakar / Sénégal	makhfousse.sarr@fao
21	Dogo Seck ***	Ex Administrator of CERES-LOCUSTOX Currently Secretary General of Agriculture	Dakar / Sénégal	338344294
23	Baba Gadji	CERES-LOCUSTOX Chief Lab technition	Dakar / Sénégal	7761675974 cereslocustox@cereslocustox.org
25	Mamadou Sow ***	ENDA /PRONAT	Rufisque / Sénégal	mamadaboso@yahoo.fr
	Farmers		Senegal	

N°	Name	Agency	Location	Telephone/email
			Mali Niger Benin Mauritania	
	Arouna SANGARE	Directeur Régional Agriculture Segou	Segou, Mali	
	Idrissa SERRE		Point focal DRA	
	Issa DIARRA		Formateur Service Semencier National	
	Mahamane MAIGA		Chef Division Formation et Conseil Rural Office du Niger	
	Alassaane Ag HAMBA		Point focal GIPD Office Riz Ségou	
	Mme Touré Kadiatou DIARRA	Agent LCV		
	Mme Cissé Alimata BERTHE	Chef Service contrôle Qualité LCV		
	Boubacar A.MAIGA	Chef Laboratoire LCV		
	Balla SISSOKO	Point focal Convention de Stockholm DNACPN		
	2 groups of producers in Mali 2 groups of producers in Senegal 2 groups of producers in Benin 2 groups of producers in Mauritania 2 groups of producers in Niger			

5.3 Annex III. Bibliography

Reports

- 1420 Niger Senegal Rivers IPPM PIR 2013
- 1420 Niger Senegal Rivers PIR 10 final
- 1420 Niger Senegal Rivers PIR 2012 Final
- 1420 Niger Senegal Rivers PIR 2014 Final
- Fin IW Niger Senegal Rivers PIR 2011
- GEF Senegal Niger Rivers inception report final
- GFL 4A39 PAG minutes replacements
- GFL 4A39 Jul-Dec 12
- Output Production and pest management
- Terminal report
- Final report by FAO
- List of contacts

Prodocs and revisions

- Ag pesticides in Senegal Niger Rivers 25012008
- CEO endorsement Senegal Niger fin
- Closing Rev.N3-311205
- GFL-4A39 Legal instruments Annexes
- GFL-4A39 Rev 1
- GFL 4A39 Rev 2
- Mid term review report
- Revised workplan 2014

Letters and Memos

- GFL 4A39 CEO endorsement
- GFL 4A39 Trustee commitment letters

CERES reports

- CERES LOA 2010 PR45859
- CERES LOA final report
- Rapport de mission Mali et Guinee final

Consultants reports

- Linking FFS CEC Niger
- Rapport final capitalization GIPD

Country final reports

- Guinee final report GEF GIPD
- Niger rapport final draft 1 projet GIPD
- Rapport mauritanie Avril 2014

ENDA reports

- Combined perimeter web summaries
- LOA PR4303 Rapport Enda GEF 2011 final

OSU reports

- Laboratory standard operating procedures
- Environmental risk scorecards
- GEF OSU LOA QA lab training report 2008
- HHRA OSU report Aug 2009 final
- HHRA in Pont Gendarme ppt
- Dietary risk assessment final report
- OSU data analysis 2011 Un FAO Results 9-29-11
- 2011 Analytical OSU CERES QC results June 20
- Executive summary OSU 2012
- Final summary laboratory capacity building OSU 2012
- OSU certificates of analysis fall spring 2011-2
- LOA EU final report OSU 2014
- Blaustein lifeline dietary risk assessment modelling in Wet Africa

Peer reviewed publications

- Settle and Garba 2011 IJAS2010-59
- Phil and Trans R. Soc B-2014 Settle
- 2012 Krupnic ag systems on farm paper SRI
- Phil Trans R Soc B 2014-Jepson
- Jepson et al. 2013 electronic Supplementary materials
- Phil.Trans.R Soc B 2014 Anderson
- Anderson et al. 2013 supplementary materials
- Silicon Wristband study Draft 2015

Regional Steering committees' reports

- GEF Senegal Niger Rivers RSCM and inception report final
- Compte rendu Reunion CRP 27 et 28 juin 2011
- Rapport de revue a mi parcours 2012 fin
- Rapport reunion comite regional de pilotage GEF 2014

5.4 Annex IV. Summary co-finance information and a statement of program expenditure by activity

Program revisions were undertaken for various reasons, amongst which included the need to reflect the GEF Trust Fund’s actual expenditures and unspent funds, to extend the program as recommended in the Mid-term Review report, to rephrase the total unspent funds arising from years 2010-2012 to subsequent years in light of budgeted requirements, and to relocate funds between budget lines according to the recommendations of the Mid-term Review and work plan revisions.

The amended total program cost was USD 8,563,490 of which GEF financing was USD 4,919,830 and co-financing was USD 4,827,510. The breakdown of program financing from GEF and co-financing sources is presented in Table 3 below.

Table 3: Amended Program Cost and Financing Plan Summary

Item	US\$	%
GEF Trust Fund	4,105,330	47.9
Co-financing		
FAO (in kind)	391,428	
Governments – in cash	333,244	
Governments – in cash	666,488	
Bilateral - Netherlands	2,800,000	
Bilateral - Sweden	267,000	
Sub-total Co-Financing	4,458,160	52.1
Total Program Cost	9,305,340	100

5.5 Annex V. Response to Comments on the Draft Review

Comments received on the first draft and how they were addressed

#	Text	Comments received from the four (4) FAO reviewers	Response from the consultant
5	Budgets for some activities such as routine testing of samples originating from the two river basins were very limited; as a result, there is no data regarding water contamination by harmful agrochemicals and POPs.	La mise en œuvre du projet a permis de générer des données par les enquêtes réalisées par ENDA et les analyses faites par OSU et CERES. Ces données ont permis de développer des outils d'évaluation des risques sur la santé humaine et sur l'environnement. Des publications scientifiques ont été faites (y compris par Royal Society ce qui atteste de l'intérêt scientifique de l'approche)	The paragraph has been rephrased as follows: "Budgets for some activities such as routine testing of samples originating from the two river basins were very limited; as a result, there is not enough data regarding water contamination by harmful agrochemicals and POPs at the end of the project. Unfortunately, this limits the ability to measure the impact of the project on achieving its goal of reducing the presence of harmful agrochemicals and POPs."
8	The reduction of the presence of POPs in the environment targeted by the project was not achieved because the project staff could not always recognize the POPs in question and analysis from the work of Oregon State University (OSU) does not identify an understandable way for the staff to do so. The same situation applied to other agrochemicals. OSU products detected by the analysis were not subsequently matched to specific commercial products in the field, which made it difficult to know exactly what the focus of awareness raising should have been. Consequently advocacy was	<p>This paragraph is not correct. The reduction of the presence of POPs was not achieved because the original design was too ambitious and the scale of the effort needed too large compared to the time and budget of the project, as noted in point #5</p> <p>The project did not, as a rule, claim that "all pesticides should be avoided" quite the contrary. In fact, the project generated quite a bit of controversy by advocating a "middle ground" in this respect, generating a short list of the most high-risk (not always the most highly hazardous) pesticides and advocating that this list should be the first target for reductions. All POPs, however, should be avoided.</p> <p>Subsequent work by OSU, soon to be published, did in fact link local brand-names to high-risk pesticides and developed simple communication tools and conducted pilot training and evaluation efforts in Senegal. Again, the challenges and scale are such that more time and funding is needed to carry on with the appropriate next steps, which</p>	The paragraph has been rephrased as follows: "The reduction of the presence of POPs was not achieved because the original design was too ambitious and the scale of the effort needed too large compared to the time and budget of the project. In addition, the project staff could not always detect the presence of POPs in the agrochemicals used by farmers because they were sold in different shapes, colors and containers without proper packaging and with no brand-name. That made it difficult to link the commercial products to the presence of POPs."

#	Text	Comments received from the four (4) FAO reviewers	Response from the consultant
	<p>ineffectual; just claiming all pesticides and POPs should be avoided.</p>	<p>include refining communication tools and extending training throughout the FFS networks.</p> <p>This is not accurate. The sampling devices were biased towards sampling POPs – and these were detected (e.g. DDT, Heptachlor), but no management steps are possible for legacy compounds. AND, as the paper published in the Royal Society Journal shows, we developed the first multi-scale risk assessment that explicitly connects uses of specific commercial products to risks at the village, national and regional scales, and all of this was cross referenced to the compounds detected in water.</p> <p>il ya lieu de revoir cette partie. Les résultats d’analyses montrent les pesticides issus des échantillons prélevés. Le consultant a-t-il comparé avec des nouvelles molécules trouvées sur le terrain au cours de sa mission ?</p> <p>On parle de quel staff? Je pense que les coordonnateurs du projet sont du domaine de la protection des végétaux et reconnaissent les POPs. Le personnel de ceres a une connaissance dans ce domaine et plusieurs de ses techniciens ont effectué des voyages d’études à OSU.</p>	
10	<p>Neither FAO, nor Environment Development Action / Regional Centre for Research in Ecotoxicology and Environmental Safety (ENDA/CERES Locustox), had risk communication experience, and that hindered the project because, the data was collected but FAO and ENDA/CERES did not have the expertise to communicate information to communities in ways that they could understand. FAO</p>	<p>It is correct that neither ENDA nor FAO had experience in risk communication and greatly underestimated the expertise needed or the requirements for time and budget. This expertise however does not exist in the region. As noted above, this risk communication component was at least started towards the end of the project, under alternative funding sources and successfully carried out by OSU as a pilot in Senegal. This can therefore be considered a partial success of the programme, in that the partners (OSU) arrived at an understanding of what would be needed to effectively do the risk communication part, and succeeded in providing and testing a successful model that could be built on.</p>	<p>The following sentence has been added to the text:</p> <p>“It should nonetheless be noted that the risk communication component was at least started towards the end of the project, under alternative funding sources”.</p>

#	Text	Comments received from the four (4) FAO reviewers	Response from the consultant
	needed to invest more into finding methods for communicating the information in an appropriate form to communities.	<p>The development of a risk communication program requires community consultation, as well as high quality risk assessment, and given the fact that the risk assessments were completed towards the end of the project, a pilot risk communication program was developed and conducted under the auspices of the GEF program, but with some co-funding, and this project is continuing.</p> <p>Il ya lieu de signaler les données générées par les enquêtes et les analyses ont été traitées et ont servi à élaborer des outils d'évaluation des risques. Une activité sur la communication sur les risques a été bien menée par la FAO et OS au Sénégal.</p>	
11	While the budget was modified several times during implementation, at no point in time did the project team substantially amend it to integrate the risk communication component that would have operationalized the detection of the POPs. In fact it seems the project did not understand the distinction between the pilot and the application on a larger/wider scale to create a stronger evidence base for the presence and potential harmful effects of POPs for participating communities. It is estimated that the project needed to devote at least 1/3 of its budget to the risk communication component to be at optimum levels	<p>The comment is somewhat unfair/unrealistic. The project budget was inadequate in several areas, not just risk communication. While we agree that the full challenge and cost of an effective risk communication component was not adequately anticipated, such an understanding and strategy was arrived at by the end of the project and, as previously discussed, early efforts in this regard were made at and after the end of the project. This could not have happened without the preliminary work done on environmental</p> <p>La sensibilisation sur les pesticides par ENDA constitue une composante du projet. ENDA a réalisé l'étude de base et a effectué une restitution au niveau communautaire dans les pays bénéficiaires.</p> <p>Le projet a élaborer des outils de communication sur le risques avec les résultats analyse des eaux et de données des enquêtes de base. Dans le cadre de ce projet il fallait d'abord générer l'information à communiquer et les outils qu'il faut pour les communiquer, sur quoi le projet a beaucoup travaillé. La communication sur le risque est certes importante</p>	The consultant agrees with the comments from FAO which do not contradict with the finding. It is accepted by both the consultant and FAO that the ineffectiveness of the risk communication is largely due to a lack of understanding of the challenges and costs of such undertaking.
13	FFS approach is saying that all chemicals are bad and no distinction	this is not correct or fair. The FFS approach has never been to say that all pesticides are "bad". Biological pesticides for one are	FFS approach is saying that chemical pesticide use should be avoided. Chemical use in the FFs

#	Text	Comments received from the four (4) FAO reviewers	Response from the consultant
	<p>seems to be made. This was a challenge as the participants continued to use pesticides and herbicides because they were not providing effective alternative and not clarifying which pesticides/herbicides are most toxic and their degrees of toxicity</p>	<p>part of the approach. Chemical pesticides use is accepted if other measures fail, within an IPM approach. As noted above, only at the end of the project did we have sufficient data to point to a short list of chemical pesticides that could objectively be assessed as posing the greatest risk in the region and in the context of how they are used and who is using them (and by extension, only at this time could anyone point to the least-risk alternative chemical pesticides). This was a highly sophisticated effort unprecedented in the region or on the continent. Simply put, the project needed more time and resources, but was very much on the right track.</p> <p>Now that effective risk assessment tools have been developed, it is possible to create more effective FFS curriculum that differentiates pesticides by risk. There has certainly been an issue with improving training of facilitators in the past, but the new tools make a number of education themes possible that could not have been addressed before.</p> <p>Je ne pense que ce message est donné dans les FFS. Ce qui est dit dans les FFS est de privilégier l'observation et l'analyse de l'agroécosystème afin de reconnaître les ravageurs et les ennemis naturel pour utilise de façon efficient les produits chimiques. En faisant ces observation et effectuer des traitement préventifs à base de produits alternatifs, on peut réduire l'utilisation de pesticides et dans certains cas boucler un cycle de culture sans faire recours aux pesticides.</p>	<p>model is only accepted after the neem-based mixture turns out to be ineffective.</p>
14	<p>At the end of this evaluation, the following key recommendations are made to improve programing in this domain for the future: For similar projects, it will be important to make sufficient provisions in the budget conversant to the ground-breaking and ambitious</p>	<p>Before communicating on risks, the risks have to be known. This required the development of the Passive Sampling Device (PSD) tool which has been a real innovation in the sampling and analysis of residues in water; data had then to be generated and analyzed. So having 1/3rd of the budget on risk communication would not have done much good in a 4-5 year project. this rule of thumb would largely underestimate the complexity of the challenge.</p> <p>ENDA did implement participatory tools to</p>	<p>The risk was known. That is the reason why the project existed. The proposal had extensively communicated about the need to take action regarding the use of POPs in agriculture and its subsequent impact on human health and on the environment.</p> <p>Agree with the ENDA comment but the recommendation is still valid. In the future, there should be adequate budgeting for the risk communication component</p>

#	Text	Comments received from the four (4) FAO reviewers	Response from the consultant
	objectives of the project, and in particular on the risk communication component. The rule of thumb could be that one third of the project budget be kept aside for that important component.	share results of the testings and risks with communities in beneficiary countries. However this activity is a first sensitization which is not sufficient to help communities comprehend risks which is very complex issue both in terms of content and in the ways to get concepts accross. Appropriate methodologies were developed subsequently by OSU with support from FAO on alternative funding sources and this work is used to date. Again the issues were budget and time limitations.	for similar project.
15	The messages passed in the FFS should be based on FAO long experience in promoting FFS but also on verifiable scientific data. Integrated Production and Pest Management (IPPM) should not rule out the use of chemicals in the production systems. FAO should work with laboratories to identify the least dangerous chemicals that could both respond to producers needs and cause the least damage possible to the environment.	Yes, yet this does not stand on its own, but rather this is the “flip side of the coin” of identifying the most high-risk chemical practices. It remains a question if it will ever be cost effective or sustainable to try to bring laboratories in the region up to the level needed for the task (still none exist at this time). L’approche FFS dispose d’un guide de formation qui permet aux producteurs d’avoir une connaissance des bonnes pratiques agricoles, y compris l’utilisation des alternatives aux pesticides de synthèse. Le travail avec les laboratoires pourrait s’inscrire dans une vérification des résidus de pesticides dans certaines matrices à la suite de la formation des producteurs dans les FFS.	Agree with both comments from FAO. The point raised by the consultant is still valid though.
16	Increase the use of biological products to combat pests and weeds, FAO should partner with laboratories to identify the best available products that farmers could use and define the optimal dosage and mode of utilization.	The problem is not so much in identifying the biological pesticides (with research institutes rather than with labs), but rather in ramping up production and distribution and controlling pesticide costs to meet the demand raised through FFS. This becomes more of a political and commercial problem.	The paragraph has been rephrased as follows: “Increase the use of biological products to combat pests and weeds, FAO should partner with laboratories and research institutes to identify the best available products that farmers could use and define the optimal dosage and mode of utilization. FAO should also work with national/regional policy makers in ramping up production and distribution and controlling of pesticides to meet the demand raised through FFS
18	Table 2. Summary of Evaluation Criteria Ratings	The rankings are generally considered too strict, given the breadth and complexity of the objectives and issues at hand, and the state of the science findings and tools developed, which are unprecedented on	Agree. But the ranking is a result of the analysis done under each sub criteria and criteria.

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		<p>the continent. What was accomplished was actually enthusiastically groundbreaking. The FAO, UNEP and OSU consider that in all fairness an overall S ranking would do better justice to the work undertaken.</p> <p>A follow-on project at this time, with major focus on risk communication would be well considered.</p>	
18	<p>All direct outcomes linked to the planned and achieved outputs, were achieved. The capacity and knowledge of relevant stakeholders (farmers, governmental bodies, laboratories, etc.) throughout the Niger and Senegal river basins were reinforced.</p> <p>A clear picture was established on the contaminant type and level of threat to humans and environment from pesticide-contaminated waters</p> <p>Risks to farmers and aquatic environment from exposure to pesticides estimated (Human Health Risk Assessment) but not communicated.</p>	Deserves S ranking	<p>MS is more appropriate in this case because the project failed to communicate on the risks and did not succeed in establishing “Community-level pesticide-monitoring systems in place and examples of successful self-financed FFS seen in each country” as stated in Outcome 3. Consequently the paragraph has been reformulated as follows:</p> <p>“Most direct outcomes linked to the planned and achieved outputs, were achieved. The capacity and knowledge of relevant stakeholders (farmers, governmental bodies, laboratories, etc.) throughout the Niger and Senegal river basins were reinforced.”</p>
18	<p>Likelihood of impact: Governments in Senegal, Mali, Niger and Mauritania had started to adopt IPPM in their national training curriculum for farmers. CILLS at the regional level is increasingly working towards better regulation in the use of agrochemicals. It is expected that in the long run, the impact will be achieved by</p>	Deserves S ranking in our view given the assessment made in this evaluation, and the subsequent work done by OSU with FAO support on risk communication with other funding sources	<p>MS is more appropriate in this case because The number of people involved in the FFs is too small to induce a reduction in the toxicity of the water in the river basins. The results obtained at the governmental level is what was positive here otherwise it would have been totally unsatisfactory.</p>

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	enrolling more farmers in similar programs and by securing stronger government support.		
18	Achievement of project goal and planned objectives: At the time of this evaluation, there was no indication of a significant reduction in the level of water toxicity due to the project activities. Similarly, the increase of production is marginal to date. Nonetheless because of an increase interest showed by governments and CILSS the regional partner, it is expected that the goal will be achieved in the future.	The project goal was far too ambitious and essentially unattainable given the timeframe and budget. It is questionable whether the goal will in fact be achieved in the future, given the counter-forces of the chemical industry and the lack of infrastructure at all levels.	Agree with the comment from FAO. The goal was way too ambitious.
18	Sustainability and replication: The project did not develop a sustainability plan that addresses the future financial needs. At the time of the evaluation, none of the FFS was functioning due to financial issues.	This was not an expectation. The goal was never to maintain funding for specific FFS, although a limited number of "self-financed" FFS were attempted. FFS are a training approach and not meant to become permanent organizations. However new FFS projects can be found in each and every project country, expanding into a broader arena of agriculture (including climate change adaptation) and providing a growing network into which the lessons from this project can and should be introduced. While the project is not the sole responsible for the growing popularity of FFS projects, it did contribute to growing awareness of the value of the approach and should be recognized for this.	The consultant does not agree with this comment. Outcome 3 in the project result framework is clear on this point. It reads: "Developing Best Practices for Sustainable Agriculture; Toxic pesticide use is drastically curtailed, POPs pesticide-use is largely reduced or eliminated in target communities, and agricultural productivity and profitability are substantially increased in all three cropping systems (rice, vegetables, cotton) through participatory training and adoption of Best Practices for sustainable agriculture. Community-level pesticide-monitoring systems in place and examples of successful self-financed FFS seen in each country"
18	Budgeting and funding for M&E activities: The project had set aside sufficient fund for its M&E at the national	The idea of testing waters before and after found in the original project design concept was essentially naive. Only when engaging OSU as a partner, well after the PDF-B phase and the project design and	That is true but that was something that was put in the proposal and that has never been changed during implementation.

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	<p>level. FAO had sufficient funds to monitor the work that was done by the subcontractors in the field. It is nonetheless worth noting that at the field level most partners that have been met mentioned the fact that they did not have an adequate funding to closely monitor the farmers. The lack of resources have nonetheless prevented the final evaluation to include water testing which would have allowed the project to say if there were a reduction in water toxicity compared to the toxicity level at the beginning of the project</p>	<p>approval, did the team come to understand this. It would have taken a budget of tens-of-millions of dollars, and a decade of work to accomplish this goal.</p>	
77	<p>Trends in all six countries are towards increased use and dependence on agro-chemicals, which has, ironically, contributed to declining long-term agricultural productivity, environmental quality, and human well-being, through toxic contamination of food-chains and disruption of ecosystem services, such as natural pest suppression and pollination, as well as revenue loss due to contaminated export produce.</p>	<p>Au vu de l'échelle d'intervention, de la durée du projet, l'intervention de la FAO doit être considérée comme un projet catalytique montrant un moyen de gérer les produits agrochimique par les communautés de base à travers des outils et l'approche FFS</p>	<p>We do not agree with this comment. The project goal and strategy are indicated in the prodoc and that is the basis of the evaluation.</p>
91	<p>The work carried out by ENDA in establishing baselines in the six participating countries as well as</p>	<p>Les maitres formateurs du Bénin, Mali et Sénégal ont aidé à introduire les champs écoles respectivement au Niger, Guinée et Mauritanie à travers la formations des techniciens de ces pays comme</p>	<p>Correct. We are on the same page on this one.</p>

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	<p>training given by the CERES Locustox laboratory (Senegal) to laboratories in other countries in the detection of POPs is an example of South-South cooperation within the project. Furthermore, producers in Benin traveled to Niger to learn of the practices used by producers there, while producers from Guinea and Mauritania carried out exchange visits to Senegal to observe how the IPPM technique was put into practice.</p>	<p>facilitateurs pour la formation des producteurs. Les maitres formateurs ont ensuite assuré le suivi des facilitateurs formés par des missions de terrains dans ces pays et l'animation de sessions de recyclage</p>	
94	<p>ENDA was subsequently sub-contracted by the project to run local awareness-raising sessions to determine trends in the use of chemical products in agriculture in all six countries. ENDA carried out qualitative data analysis of community-level use of pesticides and its impact on their health and environment. This analysis carried out by ENDA was to be combined with quantitative measurements of OSU, but unfortunately the project was unable to synchronize these two exercises. Furthermore, the communities in which ENDA carried out its studies are not always comparable to the</p>	<p>non , les deux structures ont travaillé ensemble. Les données générées par l'enquête de base conduite par ENDA ont été analysées et ont contribué à l'élaboration d'outils d'évaluation des risques environnementaux PRIME par OSU</p>	<p>Because of delay in mobilizing the funding for the different activities, ENDA did not carry its baseline at the same time OSU/CERES were undertaking the water analyses.</p>

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	areas in which CERES had implemented its surveys.		
96	<p>In addition, OSU performed testing on samples originating from sites in Senegal, Mali and Mauritania. A passive sampling method was used to collect the water and transfer it to the lab for analysis. The analyses of the samples taken from the sites mentioned above showed the presence of certain chemicals in the water of the Senegal and Niger river basins. While these findings are important, the value of the data collected by OSU has still not been returned to the community level and even less so at the policy level. There is no evidence that OSU or ENDA's test results were used to reorient the project activities or by policy makers to formulate policies.</p>	<p>Incorrect, voir précédents commentaires</p> <p>Voir commentaires dans le Résumé exécutif. Sarr : les résultats générés par les études de ENDA et les analyses par OSU ont permis de revoir les méthodes de communiquer les résultats obtenus. L'outil PRIME a été élaboré pour permettre de faire une évaluation des risques sur l'environnement ; les méthodes de communication sur les risques ont été aussi développées par FAO et OSU et appliquées avec les producteurs.</p>	<p>The consultant does not agree. This was mentioned by almost all the stakeholders who were met during the evaluation. At the time of this evaluation, The results of the tests performed by OSU had still to be put in a format that could be understood by communities and other actors and shared with them.</p>
100	<p>CERES had signed protocols with laboratories at the country level to train in water sampling and testing methodology, including collection and transfer to laboratory without contamination. In Mali, the Central Veterinary Laboratory has for example been subcontracted to work with CERES in Mali sites. The same took place for Niger, Mauritania, and Benin.</p>	<p>Il y a lieu de mentionner les succès de techniciens formés sur les PSD. Néanmoins deux techniciens qui sont actuellement en service au CERES ont fait des séjours à OSU pour une formation sur les PSD (échantillonnage et analyse).</p>	<p>Agree. That has already been referred to in paragraph 208</p>

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	<p>Laboratories contracted by CERES have not participated in the data analysis. Their role was limited to sampling. CERES scientists who participated in the project all claim to have mastered the sampling procedure. Their understanding of the analytical method is still somewhat limited; they do not appear to fully understand the method used to analyze data.</p>		
108	<p>The diagnosis made by ENDA at the beginning of the project was qualitative. They brought together producers of about 25 communities and attempted to describe the effects of POPs and other agrochemicals on their health and environment. Producers linked changing wellness and degrading their environment to the use of these products, despite the lack of scientific evidence to establish this relationship. In addition, if the samples taken by OSU had been conducted repeatedly throughout the life of the project, this would have provided longitudinal data that could be used for comparison purposes, to allow for the successful evolution of the FFS effect on pesticide use</p>	<p>On doit comprendre que l'analyse de la contamination des eaux a (i) un objectif de renforcer les capacité de ceres et des labo des pays bénéficiaires sur les méthodes d'échantillonnage et d'analyse que le projeta jugé innovante pour l'analyse de résidus dans les eaux ; (ii) de générer des informations sur le niveaux de contamination et (iii) de communiquer ces informations aux communautés de base et autres acteurs.</p>	<p>Agree but that does not contradict with the text.</p>

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	<p>monitoring and lowered levels of POPs use. As it stands, water samples from the river basins were only taken at the outset of the project.</p>		
113	<p>The project was able to implement the NTSC and the RTSC. The NTSC was composed of State representatives and some institutions involved in the management of chemical products in the managements of chemical products in agriculture. These committees met regularly at the country level. Note that none of these committees included representatives of producers or vendors of chemical products. Furthermore, national groups involved in the regulation of pesticides were not included; for example, the director of the environment in Senegal responsible for this area was never involved in the planning or implementation of the project.</p>	<p>Il n'est pas prévu par la FAO de mettre des sociétés agrochimiques dans les comités de pilotage</p>	<p>Yes that is correct. It would have nonetheless been better to involve all the actors working in the production, distribution and management of pesticides in the target communities.</p>
119	<p>Risks to farmers and aquatic environment from exposure to pesticides estimated (Human Health Risk Assessment) and Community-based monitoring systems for pesticide use developed and used: The results of analysis carried out by OSU and CERES was not</p>	<p>Il faut noter qu'il fallait d'abord développer une méthodologie de communication sur les risques des pesticides avec OSU. Un travail sans précédent en Afrique a été réalisé en ce sens ; non seulement les risques étaient mal connus mais aussi les méthodologies innovantes pour les évaluer n'étaient pas disponibles. Le projet a grandement innové en ce sens et l'évaluation devrait reconnaître cela. donc il faudrait pas lier cette activité à un manque de disponibilité de personnel qualifié. Il s'agit plutôt d'une élaboration</p>	<p>The consultants does not agree with this comment. FAO did not have enough experience in risk communication, it did not seek help from another organization which had it and at the time of this evaluation, the results of the OSU tests were still to be communicated to the beneficiary communities.</p>

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	<p>transmitted to communities or indeed to the national authorities of the countries in which testing had been carried out. Discussions revealed that this was because FAO was unable to hire qualified staff in a timely manner to communicate the information resulted from the analysis in a manner comprehensible to target stakeholders. Indeed, very little communication took place in this regard, and very little funds were allocated in the budget for this. Money had been allocated to carry out analysis, but not to communicate these findings at the community level. Finally, communities were unable to implement monitoring systems for pesticides in their environment.</p>	<p>d'outils et de méthode pour communiquer sur les résultats.</p>	
120	<p>Regional capacity for participatory training augmented: The capacity of CERES locustox to detect and analyse POPs has improved. In fact CERES Locustox did not have any previous experience with the use of the PSD methodology to detect POPs in the environment. With support from OSU, CERES locustox was able to acquire the capacity and to transmit it to its partners laboratories</p>	<p>Il faudrait bien mentionner que la méthodologie PSD est nouvelle pour les laboratoires ouest africains; donc il fallait pour le projet, notamment OSU d'accompagner d'abord CERES sur les techniques d'échantillonnage, puis les méthodes d'analyse. Il n'était pas techniquement possible pour les laboratoires des pays de faire des analyse des PSD même si cette demande avait été formulée.</p>	<p>Agree, we are on the same page on this matter. The comment does not contradict the text</p>

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	<p>in Niger, Mali, Benin, Mauritania and Burkina Faso. It should nonetheless be noted that besides CERES locustox, none of the laboratories was involved in the analysis of the samples that were taken from the target zones. At the regional level, CERES as well as the veterinary laboratory in Burkina Faso do now have the capacity to train other laboratories on the PSD methodology.</p>		
124	<p>The majority of producers participating in the FFS had begun to apply the techniques taught by the project for seeding, integration of organic manure, and the search for alternative treatment based on natural products. They all claimed to have seen an increase in yields at their plots through the observation of best practices promoted by the project. In Niger, for example, in terms of rice FFS, the project reported an increase in yields as shown in the graph below for the 2010 campaign</p>	<p>Revoir par rapport au paragraphe 110 qui dit que "adoption was a problem because of high input costs and the apparent lack of conviction producers held". Les deux appréciations me paraissent contradictoires</p>	<p>This is adoption beyond the FFS, adoption by producers who did not participate in the FFS. Paragraph 110 which is now paragraph 106 has been reformulated to read : "...However, while the FFS were effective at demonstrating best practices, adoption in the plots of the producers who did not participate in those FFS was a problem because of high input costs and the apparent lack of conviction producers held."</p>
129	<p>Although the FFS were implemented, no plan exists to ensure their financial autonomy. Indeed, although this component was introduced in the project design, nothing was done to achieve this result. During this evaluation,</p>	<p>les CEP sont un outil d'éducation des producteurs pendant une ou deux saisons agricoles... ils n'ont pas pour but de créer des institutions permanentes ! ces producteurs sont déjà membres d'Organisations de Producteurs, qui fonctionnent toujours et pour certaines ont été grandement renforcées par le projet, comme la FAPD au Sénégal</p>	<p>Yes but Outcome 3 of the project log frame is clear on this one. The FFS were supposed to show a certain degree of financial sustainability, which did not take place.</p>

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	<p>it was observed that all the FFS had ceased their activities. The FAO has however negotiated supplementary funding to implement more FFS in other areas with other producers.</p>		
135	<p>The reduction of the presence of POPs in the environment targeted by the project was not achieved because the project staff could not always recognize the POPs in question, and analysis from the work of OSU does not identify an understandable way for the staff to do so. The same situation applied to other agrochemicals. OSU products detected by the analysis were not subsequently matched to specific commercial products in the field, which made it difficult to know exactly what the focus of awareness raising should have been. Consequently advocacy was ineffectual; just claiming all pesticides and POPs should be avoided.</p>	<p>le travail réalisé par Ceres et OSU dans le cadre de ce projet a permis d'identifier les produits agrochimiques avec les séries d'échantillonnage avec les PSSD. D'autre part OSU a fait une évaluation des risques des pesticides avec des profils écotoxicologiques montrant les effets sur l'environnement et sur la santé humaine.</p>	<p>As stated before, the paragraph has been rephrased as follows:</p> <p>“The reduction of the presence of POPs was not achieved because the original design was too ambitious and the scale of the effort needed too large compared to the time and budget of the project. In addition, the project staff could not always detect the presence of POPs in the agrochemicals used by farmers because they were sold in different shapes, colors and containers without proper packaging and with no brand-name. That made it difficult to link the commercial products to the presence of POPs.”</p>
151	<p>A number of producers who participated in the field schools said they were aware of the impact of agrochemicals on health and the environment. Of the producers who participated in the</p>	<p>Il faudrait aussi mentionner que les alternatives ne sont pas toujours physiquement disponibles dans les zones (formulations à base de biopesticides) même s'il existe une volonté de les utiliser..</p>	<p>The end of the paragraph has been modified to take the idea into account. It now reads “...Hence, suggesting that while some progress has been achieved in urging direct beneficiaries to abandon the use of POPs and other harmful agrochemicals, these gains have yet to be fully achieved as there is still some tendency for the</p>

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	<p>field schools the majority claim that they now use local neem-based products, soap, pepper or tobacco in the fight against pests in their fields in place of chemicals. However, many participants claimed that they used the synthetic products when the natural product did not work. Hence, suggesting that while some progress has been achieved in urging direct beneficiaries to abandon the use of POPs and other harmful agrochemicals, these gains have yet to be fully achieved as there is still some tendency for the participants to return to previously used agricultural methods when alternative methods are not seen to be effective or are not available in the local markets.</p>		<p>participants to return to previously used agricultural methods when alternative methods are not seen to be effective or are not available in the local markets.”</p>
178	<p>The project did not establish partnerships with the private sector. Input sellers, importers of agrochemicals or other private actors in the agricultural sector were not involved in the project. There was no mention of collaboration with these actors in any of the participating countries. In fact, the project design did not include collaboration with or provide</p>	<p>Le projet se focalisait sur les communautés de base et non sur les secteur privé et les importateurs de produits agrochimique.</p>	<p>Yes but as said before involving all the actors who are active in the sector would have made the consensus more actionable.</p>

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	benefits to these actors.		
214	<p>It is a mistake for the project to follow an approach that promotes the use of neem for any sort of disease and pest in farmers plots. Neem the primary alternative proposed in the FFS is not good for diseases, weeds and certain pest, so the alternative FFS proposed was not a comprehensive solution for producers needs. It is harder to regain farmers' confidence once they try and fail when using a recommended practice. The project was trying to be completely anti-pesticides when this may not have been appropriate in some circumstances, so FAO should be encouraged to create a better link between the lab and the FFS as a means of making projects like this one more effective</p>	<p>Voir commentaires dans le Resumé exécutif sur ce point, qui est une incompréhension de l'approche GIPD</p> <p>Le projet n'a pas fait la promotion du neem pour toute sorte de maladie et ravageur, mais plutôt une alternative pour surtout traitement préventifs contre certains ravageurs. Le projet a d'ailleurs collaboré avec une firme agrochimique pour la promotion neem en formulation huileuse</p>	<p>All the producers who have been involved in the FFS would mention a mixture made of neem for any sort of problem that they would have in their plots. It is true that they would try to use the chemical pesticides only if the one with neem does not work.</p>