



## Terminal Evaluation Report

### “Elimination of Obsolete Pesticide Stockpiles and Addressing POPs Contaminated Sites within a Sound Chemicals Management Framework” (POPs Project)

GEF Project ID:	4737
Focal Area:	Chemicals
UNDP Project PIMS:	4905
Country:	Armenia
Region:	Europe and Central Asia
Executing Agency:	Ministry of Environment (MoE) and Ministry of Emergency Situations (MES)
Implementing Agency:	UNDP
Other Partners:	Czech-UNDP Trust Fund, OSCE, Private sector
GEF Operational Programme:	Phase out POPs and reduce POPs releases
Project Start Date (planned):	April 18, 2015
Project Start Date (actual):	May 26, 2015
Project End Date (original):	April 26, 2019
Project End Date (adjusted):	December 31, 2021
Evaluation Timeframe:	May – September, 2021
Date of Final TE Report:	September, 2021
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September 2021

## **Acknowledgements**

*The evaluation team would like to extend special thanks to the United Nations Development Programme (UNDP) and the Project Team for providing key information and organizing the meetings with project stakeholders. A special thank you to Mrs. Gayane Gharagebakyan, Project Coordinator and Mrs. Kristina Tereshchatova, Project Assistant for their steadfast support.*

## **Disclaimer**

*This report is the work of an Independent Evaluator and does not necessarily represent the views, or policies, or intentions of the United Nations Development Programme (UNDP) and/or of the Government of Armenia.*

## Executive Summary

This report presents the results of an independent terminal evaluation (TE) of the UNDP Armenia full-sized project “*Elimination of obsolete pesticide stockpiles and addressing POPs contaminated sites within a sound chemicals management framework*” which was funded with \$4,700,000 USD by the Global Environmental Facility (GEF) and was implemented during the period May 2015 – December 2021. The table below provides a summary of the project’s main parameters.

<b>Project Title:</b>	Elimination of obsolete pesticide stockpiles and addressing POPs contaminated sites within a Sound Chemicals Management Framework in Armenia		
<b>UNDP Project ID (PIMS #):</b>	4905	<b>PIF Approval Date:</b>	February 15, 2012
<b>GEF Project ID (PMIS #):</b>	4737	<b>CEO Endorsement Date:</b>	December 18, 2014
<b>UNDP Atlas Business Unit, Award ID, Project ID:</b>	ARM10 00081909 00091031	<b>Project Document (ProDoc) Signature Date (date project began):</b>	May 26, 2015
<b>Country(ies):</b>	Armenia	<b>Date project manager hired:</b>	August 17, 2015
<b>Region:</b>	CIS	<b>Inception Workshop date:</b>	December 4, 2015
<b>Focal Area:</b>	Chemicals	<b>Midterm Review date:</b>	March-June 2018
<b>GEF-5 Strategic Programs:</b>	Phase out POPs and reduce POPs releases	<b>Planned closing date:</b>	April 26, 2019
<b>Trust Fund:</b>	GEF	<b>If revised, proposed closing date:</b>	December 31, 2021
<b>Executing Agency:</b>	Ministry of Environment (MoE) and Ministry of Emergency Situations (MES).		
<b>Other Execution Partners:</b>			
<b>Project Financing</b>	at CEO endorsement (USD)	at Final Evaluation (USD)	
<b>(1) GEF financing:</b>	4,700,000	4,700,000	
<b>(2) UNDP contribution:</b>	200,000	200,000	
<b>(3) Government:</b>	16,020,000	0	
<b>(4) Other Partners:</b>	3,064,384	--	
<b>(5) Total co-financing [2+3+4]:</b>	19,284,384	--	
<b>Project Total Cost [1+5]:</b>	23,984,384	4,900,000	

The report summarizes the findings of the work conducted by a team of two independent evaluators during the May – September 2021 period. It provides an objective assessment of the project’s design, performance, constraints, results, impact, relevance, efficiency and sustainability. It also identifies a number of lessons and recommendations which may be used by the UNDP Country Office to improve its programming, partnership arrangements, resource mobilization strategies, working methods and management arrangements. The evaluation included a systematic desk review of project-related documentation, data collection based on interviews/questionnaires with key stakeholders and analysis of information using triangulation.

## Project Design

The project builds on a number of environmental activities that have taken place in Armenia in relation to hazardous chemical waste management. While the overall project goals are clearly and succinctly framed, the project document is too long, cumbersome, complicated and not structured effectively. While the analysis of the context and challenges related to persistent organic pollutants (POPs) is quite detailed and engaging, the information is often repetitive and not organized in a clear and logical manner. Furthermore, the project's results framework is too convoluted, consisting of a large number of indicators, many of which are redundant. The project's RRF is quite complicated, consisting of 4 components, 9 outcomes, 34 outputs and 28 activities.

The project's design phase seems to have lacked a sufficiently deep engagement with the communities that were expected to be affected by its activities. This is particularly the case with regards to the community in the vicinity of the location where the POPs containing "category 1 obsolete pesticides waste" excavated from Nubarashen was envisaged to be stored. Eventually, the community did not provide consent on the use of the allocated building for hazardous chemical waste storage and treatment purposes. In retrospect, the consultations conducted at the project design stage were not sufficient as the local community subsequently resisted this initiative due to concerns over potential ground water contamination and environmental pollution. From this perspective, the approval of the community should have been obtained at the stage project design. Alternatively, the project should have had a more flexible approach on the selection of the temporary storage site following public consultations, rather than firmly indicating the Kotayk site from the start.

The project was designed to have a number of features that would serve as examples and provide direct implementation experience in a number of areas that would support replication, both in Armenia and elsewhere. The project was designed to be implemented through UNDP's National Implementation Modality (NIM). UNDP was envisaged to support implementation activities in accordance with UNDP rules and procedures and in line with the GEF requirements.

## Project Implementation

The project experienced a number of serious challenges that had a direct bearing on project activities and results. Despite the challenging circumstances that the project faced during its implementation process and which will be described further in this report, the project team and stakeholders took an agile approach and tried a variety of options, approaches and alternatives to achieve the set objectives. The project's response to the difficulties encountered during the years of implementation were highly imaginative and adaptive. The project also experienced a number of external challenges related to the broader country/regional context over which project stakeholders had no influence. While the project team and stakeholders tried to remain consistent to the original design of the project as much as possible, they were also highly flexible and adaptive, exploring different options and alternatives based on decisions discussed within the

Project Management Board. The project team exhausted all possible options in its consideration of alternatives. For each option serious efforts were made, including assessments such as the study of the domestic incineration potential of one of the cement factories. Although in the end all venues pursued by the project failed to produce a tangible result, the project managed through these efforts to develop a body of knowledge that will serve the country in the future in dealing with this challenge.

Two ministries have played a crucial role in this project – Ministry of Environment and Ministry of Emergency Situations. The other ministries and institutions, although formally involved through the Project Management Board, have not prioritized sufficiently this project. The Ministry of Agriculture has been marginally involved, although it has an important mandate over OPs and was expected to work with the FAO on the removal of OP waste from several sites (a project which was cancelled by FAO). Despite the leadership by certain officials within the MoE, MES and Deputy Prime Minister’s office, the engagement of government entities in this project has been fragmented.

The project facilitated a number of partnerships directly related to the issue of hazardous waste managements. First of all, the project enabled Armenian authorities to establish contacts and initiate discussions with a number of relevant partners – this included the Georgian authorities on the issue of transit and Iranian and Turkish counterparts on the issue of incineration. Furthermore, a number of contacts were established with private sector operators through the training activities and tendering procedures organized in the framework of the project. UNDP was also able to capitalize on additional sources of funding for project activities – most prominently, the UNDP Czech Trust Fund and the UNDP Russian Trust Fund.

In 2019, the Government planned in the state budget an allocation of 1.5 million USD for the project and committed to allocating similar amounts for 2020 and 2021. However, the allocated amount was not used due to delays in selection of a service provider and the launching of field works. A challenge with co-financing was that the project had to negotiate commitments on a continued basis. Ideally, these commitments should have been embedded in the government’s budget planning process (Mid-Term Expenditure Framework), which would have required a greater engagement of the Ministry of Finance in project activities. UNDP provided continued support to the project throughout its implementation and oversight, including in the identification of objectives and activities, preparation of the concept, preparation of the detailed proposal, approval of the Project Document, start-up of project activities, oversight, and execution of actions, and evaluation of the project. UNDP has also provided financial oversight, including approval of expenditures and independent audits, monitoring and mid-term and final evaluation of progress and results.

The Mid-term Evaluation of the project resulted in a number of recommendations, which among other things led to the revision of the project’s results framework. In the course of implementation, the project experienced an important deviation from the original design. The cancellation of the

approved storage site (near Hrazdan town) as a result of public grievances led to a political decision, despite the project's technical advice defending the original selection. An alternative site located near Yerevan city was identified, and a governmental decree was issued for its use for project purposes. Despite favorable technical parameters, this decision met political resistance. Understanding the importance of the storage in the designed consequence of activities to securely store the repackaged waste before removal for disposal, the project came to the third alternative solution – construction of a temporary light-metallic storage in the immediate vicinity of Nubarashen burial site, with a plan that the two segments of the storage should be dismantled after Nubarashen landfill cleanup and reinstalled in new areas to serve for the MoE and MES purposes. The storage was designed as an extra-task under the larger scope contract with Dekonta (Czech company) with no extra-cost. Another good example of flexibility was the consideration of an alternative route for the export of OPs waste to Iran for disposal, parallel to efforts directed to get a consent from Georgia on the transit permit.

The COVID-19 crisis has had a significant impact on the project across a number of dimensions. At the political level, government priorities shifted towards the fight against the health crisis, which detracted attention from the project objectives. In particular, COVID-19 had an effect on the co-financing committed by the Government.

### Project Results

The Government indicated that the current project is a priority in a number of different contexts. For example, the Program of the Government of the Republic of Armenia – 2017-2022 mentions that during the 2019-2022 period the government aims to eliminate POPs at the Nubarashen site and address any other organic pollutants as a means of aligning itself with international commitments. Also, the Armenia Development Strategy – 2014-2025 profiled the Nubarashen initiative as a strong example of a private-public partnership which aimed to reduce the impact of hazardous waste in the country. Furthermore, a decree in December 2016 noted that the Government intended to eliminate OPs at Nubarashen by 2020. The project has also operated in an area that is considered an environmental priority for the Government and is fully in line with Armenia's international commitments.

Although the core objectives of the project were not completed, the project has created a solid body of knowledge and experience and has also generated significant momentum in this sector. Therefore, there is now good potential for Government counterparts to pursue project objectives in the coming years building on project achievements. Some of these achievements are listed below:

- The Nubarashen site assessment with clean-up and waste disposal design (including the civil-engineering design) was completed in August 2018, including an Environmental Social Impact Assessment. The engineering design package for the temporary metallic

storage site was also approved by the Yerevan municipality as part of the site set-up entire package.

- A comprehensive assessment and inventory of POPs/OPs was completed, and the project team analyzed existing legislation on hazardous waste handling – the recommendations were shared with MoE.
- The project developed key documents (Prevention and Emergency Plan and the Technical Design Narrative) and a package of civil engineering-design for the site set-up that are aimed to strengthen operational procedures for site clean-up works.
- As a result of the project, the population is much more familiar with the impacts of hazardous waste on human health and the environment, and there was extensive learning with regard to stakeholder consultations and consensus-based decision making.
- The project also contributed with extensive technical, legal and environmental capacity development.

Throughout the duration of the project, there was a large amount of variation with regard to funds that were budgeted in comparison to funds that were spent (ranging from 5% in 2016 to 233% in 2018). The project started with a slow execution rate in 2015 (14%), 2016 (5%) and 2017 (19%) but subsequently the pace accelerated in 2018 (233%) and 2019 (141%). The largest amount of spending was scheduled for 2016 and 2017, however due to delays at the beginning of the project the project team had to accelerate expenditures and invest additional resources in subsequent years. Furthermore, the project experienced a number of delays related to the procurement process which were detrimental to the achievement of objectives.

From a sustainability perspective, the project has contributed to improving a number of institutional aspects related to the management of hazardous waste in Armenia. First, the POPs/OPs issue has become a growing priority for the government. Furthermore, throughout its duration, the project has supported capacity development and strengthening of institutions as a means of improving hazardous waste management practices and enhancing legislative/ regulatory frameworks. The project has developed a number of technical recommendations for handling, transportation, storage and disposal of hazardous waste. Additionally, the project has facilitated training sessions on several topic areas and it is likely the government will be able to use project results well beyond the lifespan of the project.

Given the limited infrastructure work that has taken place through this project, the effects of this project on gender equality have been limited (primarily targeted at the awareness-raising and policy level). Throughout the duration of the project, the Project Management Board was composed of nine members (30% to 40% of whom were women). During the most recent reporting period in 2020 three Project Management Board members were women, including from the MOE (co-Chair), the MoH and MoFA. The core of PMU (Project Management Unit) were two women and one man. The three international consultants were all men. Throughout the duration of the project, as communications were sent out for training, public consultations and project updates the

project team emphasized that participation of women was strongly encouraged. By the end of the reporting period 188 women and 186 men had participated in training and capacity building activities. There were a number of public consultations by a women-led CSO (e.g. Armenian Women for Health and Healthy Environment / AWHHE [www.awhhe.am](http://www.awhhe.am), Ecolur <https://www.ecolur.org/>).

Despite the failure to deliver on its objectives, this project has contributed in a number of tangible ways and provides a good foundation for further building on in order to complete the mission that has been undertaken. First of all, this project has created momentum within the country, especially in the Government involving key decision-makers. The knowledge and structures that this project has created will help policy makers keep the process towards the removal of waste alive after the project has ended. Second, the project has considerably improved awareness on the issue of POPs and OPs. Awareness has improved not only within the government circles, but also in the society, especially among affected communities and the environmental movement. Awareness is an important pre-condition for the resolution of this matter in an inclusive manner. Third, the project has generated a significant body of knowledge which constitutes a very good basis for further work in this area. Many unknowns have been resolved through the activities undertaken by the project. For example, the issues with Georgia, Iran and Turkey have been clearly explored and are understood by decision-makers. The domestic capacity for incineration has been assessed. Also, the cost of importation of incineration technology has been discovered and is public knowledge. A number of institutional and policy changes have been introduced – as noted in this report – and create a good foundation for the continuation of the process. Also, the challenges are better understood now – and a number of them are identified in this report.

The project will come to an end in December 2021. The project team is preparing an exit strategy which will be important for the handover of knowledge materials and institutional memory to the respective authorities, particularly the MoE. Going forward, it will be important that the authorities maintain the momentum that has been created by this project under clear and strong leadership. Ideally, this matter should be promoted by a champion in the position of a minister or deputy minister who makes it his/her mission to see this initiative through.

The following table summarizes the scoring of this project based on the terminal evaluation.

### Overall Project Performance Rating

<b>Monitoring and Evaluation</b>	
Overall quality of M&E	MS
<i>M&amp;E design at entry</i>	MU
<i>M&amp;E Plan Implementation</i>	MS
<b>IA Implementation &amp; EA Execution</b>	
Overall Quality of Project Implementation/Execution	MU
<i>Quality of UNDP Implementation/Oversight</i>	MS

<i>Quality of Implementing Partner Execution</i>	MU
<b>Outcomes</b>	
Overall Project Outcome Rating	MU
<i>Relevance</i>	R
<i>Effectiveness</i>	MU
<i>Efficiency</i>	MU
<b>Sustainability</b>	
Overall Likelihood of Sustainability:	MU
<i>Financial sustainability</i>	MU
<i>Socio-economic sustainability</i>	ML
<i>Institutional framework and governance sustainability</i>	MU
<i>Environmental sustainability</i>	ML

The following are some major lessons that have drawn from the experience of this project:

### ***Lesson 1: Need for Strong Leadership and Coordination***

One key lesson that can be derived from the experience of this project is that a complex problem such as the removal and elimination of hazardous waste that falls under the jurisdiction of many government institutions requires strong leadership and coordination. The lack of clear and strong leadership and coordination, combined with external crises such as political instability, hostilities in and around Nagorno-Karabakh and the COVID-19 crisis, was one of the main factors that slowed down the pace of certain activities, as noted in this report.

The fragmented nature of responsibilities of government institutions over the management of hazardous waste made the need for strong leadership an imperative. As has been noted in the report, while MoE has overall regulatory and legislative functions in the area of waste management, MES has been given the authority over the Nubarashen burial site and has been traditionally closely engaged with it. MoA, on the other hand, has been given the authority to manage community-based OP storehouse sites. Also, MoH should theoretically constitute a major institutional stakeholder based on statutory responsibilities, but in practice has maintained a relatively passive interest and low level of participation. The Ministry of Transport and Communications has responsibilities for overseeing road transport carriers and permitting travel routes for hazardous waste removed from the subject sites. The Ministry of Finance is responsible for allocating co-financing from the national budget. In addition, municipalities have authority for the permitting of landfill and storage sites. Such fragmentation of responsibilities has led to confusion about the division of labour when it comes to the management of hazardous waste and a lack of strong leadership in dealing with the challenges of this sector.

Overall, there is a need for an overall acceptance of the principle that OPs generally, and POPs in particular, are a regulated hazardous waste that should be managed under the regulatory authority of MoE in line with international practice. This applies particularly to OP sites where

responsibilities to date have not been clear and hence not managed adequately over an extended period. As also recognized in the project document, this complexity of institutional mandates underlines the importance of having a functioning *Inter-Agency Steering Committee on implementation of Stockholm Convention (SC)* which would facilitate stakeholder engagement and coordination, achieving collective decision making on key issues, as well as resolving key issues related to regulatory jurisdiction and authority. Going forward, it will be important that the removal and elimination of pesticides is led by a strong and clearly designated champion within the Government. It will also be important that the *Inter-Agency Steering Committee on implementation of Stockholm Convention (SC)* be fully functional and play an active role in the coordination of all government entities involved.

### ***Lesson 2: The Importance of Flexibility and Adaptability***

Another lesson that can be drawn from this project is that in an area where there are so many unknowns and so much uncertainty due to the lack of experience and knowledge there is a need for flexibility and adaptability in how the matter is approached and the process managed. Despite the failure to remove and eliminate the waste, this project has been quite versatile in how it responded to the challenges. As has been noted in this report, the project stakeholders have identified and pursued all possible options. The project team and stakeholders explored the export option engaging in discussions with Georgia, Iran and Turkey, the importation of technology option by engaging and inviting foreign companies, the incineration of waste in an existing facility by assessing the capacity of domestic cement plants, the temporary storage option by trying to identify an appropriate storage site, etc. Also, flexibility was built in the tendering process to allow for different options to be identified and pursued. In the end, this project did not fail because the lack of flexibility or adaptability, but slow decision-making and delays in the process – including undecidedness on the issue of co-financing combined with the challenges posed by the 2020 hostilities in and around Nagorno-Karabakh (NK) and COVID-19 crises. In effect, flexibility or adaptability were key features of this project that should be maintained in the future if a similar project will be launched to finish what has started.

### ***Lesson 3: The Importance of Capacity Building***

Although the project was not able to execute on its main goals, many stakeholders interviewed for this evaluation remain confident they will be able to complete these objectives in the coming years. This is due in large part to the learning and capacity development that occurred during the project. The changes made to hazardous waste licencing procedures are a good example of this. Prior to the project, there was a single licencing procedure for hazardous waste – including for chemical processing, neutralization, storage, transportation and placement. As a result of the project, each of these items are now addressed through individual licences – building additional precautions and rigour into the procedure. Other examples of project learning and capacity building include the support that the project provided for the phasing out *u*POPs in plastic bags, the additional lab capacity for studying hazardous chemical waste so enhancing the national M&E capacity. The

overall learning and capacity development that occurred during the project – along with the comprehensive analysis of contaminated sites – has put Armenia in a strong position to pursue the POPs/OPs initiative in the coming years.

#### ***Lesson 4: Importance of Embedding Co-financing in National Planning Frameworks***

A significant challenge this project faced was the issue of co-financing. The project had to negotiate on a continued basis with the Government on its commitments. The process was too long, convoluted and took a lot of energy and effort that could have been spent on key project priorities. In hindsight, there were three problems with how the co-financing was approached in the design of project that should be avoided in the future. First, co-financing should have been included from the very beginning in the project’s RRF. If co-financing was included in the RRF, it would have perhaps been possible to pursue additional solutions earlier. Second, the Ministry of Finance was not envisaged to play a key role in the project. This turned out to have been a wrong assumption, as the Ministry of Finance was key decision-maker in the issue of co-financing. The project design should have foreseen a more central role for the Deputy Prime Minister’s Office and the Ministry of Finance. Even a sub-committee on co-finance matters under the Project Management Board would have given greater impetus to the project and would have saved precious time. Third, a great challenge with co-financing was that it was not planned appropriately by the Government through the budgetary processes and hence it was difficult for any Government representative to deliver on the commitments. The lesson here is that these commitments should have been embedded in the government’s budget planning process (Mid-Term Expenditure Framework), which would have also implied a greater engagement of the Ministry of Finance in project activities.

The evaluation also identified the following key recommendations for project stakeholders. These recommendations are forward-looking in nature and could be applicable to the design of similar initiatives in the future.

**Table 1: Recommendations**

<b>Recommendation</b>	<b>Responsible Entity</b>	<b>Timeframe</b>
<p><b><i>1. Handover of Responsibilities and Knowledge</i></b></p> <p>The first task and priority the project team should focus on is to organize a proper and smooth handover of responsibilities, materials and knowledge to respective government entities. This will require a few steps and actions to be undertaken by the Project Team with the support of project stakeholders:</p> <ul style="list-style-type: none"> <li>• First, the project team should document the whole process and assemble all the knowledge products that have been generated in the course of the project (this includes studies, assessments, project notes, briefs and materials,</li> </ul>	Project Team	Short Term

<p>presentations, tender documents, terms of reference, project correspondence, board meeting notes, etc.). All activities that were undertaken by the project should be carefully documented in order to preserve the institutional memory.</p> <ul style="list-style-type: none"> <li>• As a second step, the project should identify the respective government entities to which it will hand over the process and documentation – including MoE, as the leading institution in this area, but also MES, MoA, DPMO, etc.</li> </ul>		
<p><b>2. <i>Charting the Path Ahead</i></b></p> <p>Before the project ceases to exist, it will be crucial for the stakeholder to get together and take stock of the status quo and try to chart the way forward in this area. This evaluation recommends the organization of a closing workshop which could also be the last PMB/PAC meeting. This event should be used as an opportunity to maintain the momentum created by the project and as a way of creating a road map for the way ahead. The project team and the PMB will have to do some preparatory work and based on consultations with all relevant government departments develop a clear vision for the process going forward based on the experience of the project. The project team is already preparing an exit strategy to this end. At the end of the closing event (workshop), the parties could ideally be able to adopt a unified vision on the way forward and a road map for how to achieve that vision. To be workable, this road map should be specific, concrete and with well-defined milestones. More importantly, such a road map should also identify the key decisions that will need to be made to push this process forward. If such a road map will be developed with the endorsement of all parties, it will also be important for the project team to work out a financial plan that specifies the financial envelope that will be needed and potential sources of funding.</p>	<p>PMB and Project Team</p>	<p>Short Term</p>
<p><b>3. <i>Strengthening Institutional Arrangements and Inter-Agency Coordination</i></b></p> <p>Although the scope of the project was primarily environmental in nature, there were major components that were focused on foreign affairs, agriculture, justice, health, emergency responses, infrastructure, finance and municipal affairs. Indeed, although the operational aspects of the project were environmental in nature – the components of the project determining success or failure were in the spheres of foreign affairs and finance. In this context, for projects that require significant coordination across several Ministries, as well as require large financial commitments from the government – it would be beneficial for central institutions such as</p>	<p>Government and UNDP</p>	<p>Medium Term</p>

<p>the Prime Minister’s Office or Deputy Prime Minister’s Office to play a greater role.</p> <p>Also, as was recognized in the project document, this complexity of institutional mandates underlines the importance of having a functioning Inter-Agency Committee on implementation of SC which would facilitate stakeholder engagement and coordination, achieving collective decision making on key issues, as well as resolving key issues related to regulatory jurisdiction and authority. This committee is a key government body responsible for overseeing the management of chemicals under the Stockholm Convention obligations. This body represents a great platform for facilitating institutional stakeholder engagement and coordination at a high government level but also to increase the visibility of the project.</p> <p>Going forward, this area will benefit from stronger leadership and more effective coordination.</p> <ul style="list-style-type: none"> <li>• First, Inter-Agency Committee needs to be strengthened and given the necessary resources and authority to exercise its mandate. The Committee should be given strong secretarial support and its work should be underpinned by a clear work plan – this function could be played by the road map mentioned above.</li> <li>• Second, the Government could designate a high-level official who has the authority to convene all relevant parties and make crucial decisions in cooperation with colleagues in all relevant areas (environment, safety, health, finance, etc.). This official could chair the Inter-Agency Committee and could be held accountable for progress in this area.</li> <li>• Third, if a clear vision is developed on this process – as mentioned in the recommendation above – and if the necessary decisions by government are identified clearly, the high-level official (champion of this matter) could exercise his/her authority to ensure that all the required decisions are taken in a timely manner.</li> </ul>		
<p><b>4. Continued Role for UNDP</b></p> <p>UNDP has become a key stakeholder in this area in Armenia and it is recommended that, given its positioning, it should continue its support on this important matter. Going forward, UNDP CO should focus on two key matters.</p> <ul style="list-style-type: none"> <li>• UNDP should start exploring funding opportunities for further support in this area. Communications with GEF should be maintained on this matter, as GEF now has a vested interest in</li> </ul>	UNDP	Medium Term (upcoming programme cycle)

<p>this area given its long-standing engagement. Also, UNDP could find interest in IFIs, the EU or emerging donors for engagement in this area.</p> <ul style="list-style-type: none"> <li>• UNDP should continue its engagement in this area by trying to keep the momentum alive through engagement and advocacy work with the main stakeholders within the Government. UNDP should lobby for strong leadership in this area, for continued action based on the foundations that have been created thus far and for financial commitments by the Government for this important area.</li> </ul>		
<p><b>5. <i>Continued Stakeholder Consultations</i></b></p> <p>This project supported stakeholder consultations, which were important given the nature of the project – with potentially negative impacts on human health and the environment. Given that the waste disposal has not been addressed definitely yet, it will be important for the Government to maintain and further promote stakeholder engagement. This work should be grounded on a clear plan and strategy, whose development can be supported by the Project Team before the closure of the project. Furthermore, UNDP has a lot of experience with information and awareness-raising campaigns, so it can provide substantive support to the Government in this area.</p>	<p>Government and UNDP</p>	<p>Continuous</p>

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## ACRONYMS AND ABBREVIATIONS

AUA	American University of Armenia
CIS	Commonwealth of Independent States
CO	Country Office
CPAP	Country Programme Action Plan
EU	European Union
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
HW	Hazardous Waste
IHPA	International HCH and Pesticides Association
IPEN	International POPs Elimination Network
M&E	Monitoring and Evaluation
MEAs	Multilateral Environmental Agreements
MES	Ministry of Emergency Situations
MoA	Ministry of Agriculture
MoE	Ministry of Environment
MoF	Ministry of Finance
MoFA	Ministry of Foreign Affairs
MoH	Ministry of Health
NIP	National Implementation Plans
OPs	Obsolete Pesticides
PAC	Project Advisory Committee
PC	Project Coordinator
PIU	Project Implementation Unit
PMB	Project Management Board
POPs	Persistent Organic Pollutants
POPs Project	Elimination of Obsolete Pesticide Stockpiles and Addressing POPs Contaminated Sites within a Sound Chemicals Management Framework
RRF	Resource and Results Framework
ToR	Terms of Reference
UNDP	United Nations Development Programme

## 1. INTRODUCTION

This report presents the findings of the terminal evaluation of the GEF-financed and UNDP-implemented full-sized project titled “*Elimination of Obsolete Pesticide Stockpiles and Addressing POPs Contaminated Sites within a Sound Chemicals Management Framework*” (hereinafter referred to as the POPs Project).

The evaluation was commissioned by United Nations Development Programme (UNDP) Armenia<sup>1</sup> and was carried out during the period May-September 2021 by a team of two independent experts. This chapter provides an overview of the objectives of the evaluation and the methodology employed for the collection of information and analysis of data. It should be noted that the evaluators in part relied on an earlier mid-term evaluation of the project which had taken place in March-June 2018.

### 1.1. Evaluation Purpose

The evaluation’s goal was to assess the project’s overall progress towards expected results, identify how activities were designed and implemented and derive lessons and recommendations for future interventions of a similar nature. More specifically, the evaluation was conceived and conducted with the following specific objectives in mind:

- To assess overall project performance against project objectives and outcomes as set out in the Project Document, the Logical Framework, and other related documents;
- To assess the extent to which results have been achieved, partnerships established, capacities built, and cross-cutting issues such as gender equality addressed;
- To establish whether the project implementation strategy has been optimal and recommend areas for improvement and learning in future interventions;
- To identify gaps and weaknesses in the project design and provide recommendations as to how it may be improved in the future;
- To assess project strategies and tactics that were deployed for achieving objectives within established timeframes;
- To critically analyze the project’s implementation and management arrangements;
- To provide an appraisal of the project’s relevance and efficiency of implementation;
- To review and assess the strength and sustainability of partnerships with government bodies, civil society, private sector and international organizations;
- To draw lessons that may help improve the selection, design and implementation of similar projects in the future;

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<sup>1</sup> In accordance with UNDP and GEF Monitoring and Evaluation policies and procedures, all full- and medium-sized GEF-financed projects are required to undergo a Terminal Evaluation upon completion of implementation to provide a comprehensive and systematic account of the performance by evaluating its design, process of implementation and achievements vis-à-vis GEF project objectives and any agreed changes during project implementation.

- To provide the UNDP Country Office (CO) with feedback on issues that are recurrent and need attention, and on improvements regarding previously identified issues;
- To assist UNDP in identifying future interventions in the area of sustainable development, environmental protection, etc., aligned with national priorities and UNDP's mandate and expertise.

## 1.2. Evaluation Scope

The evaluation's scope encompassed all activities and resource disbursements that took place within the project's lifetime. The Terms of Reference (ToR) that guided the evaluation process are attached in Annex I of this report. Key issues on which the evaluation was focused were:

- Project design and its effectiveness in achieving stated objectives.
- Assessment of key financial aspects, including planned and realized budgets, co-financing, etc.
- The project's effectiveness in building the capacity of local institutions and strengthening policy frameworks to encourage sustainable development.
- Strengths and weaknesses of project implementation, monitoring and adaptive management and sustainability of project outcomes, including the project's exit strategy.
- Recommendations, lessons learned, best practices that may be used in similar UNDP and Global Environment Facility (GEF) projects.

## 1.3. Evaluation Methodology

The evaluation used OECD DAC criteria and definitions followed the norms and standards established by the United Nations Evaluation Group. It was guided by GEF's "*Guidelines for GEF Agencies in Conducting Terminal Evaluation for Full-sized Projects*", but also meets the requirements outlined in UNDP's evaluation toolkit, and in particular:

- "*Handbook on Monitoring and Evaluation for Development Results*"<sup>2</sup>
- "*Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects*"<sup>3</sup>

The methodology was based on mixed methods and involved the use of commonly applied evaluation tools such as documentary review, interviews, information triangulation, analysis and synthesis. A participatory approach was taken for the collection of data, formulation of recommendations and identification of lessons learned.

Evaluation activities were organized according to the following stages: i) planning; ii) data collection; and, iii) data analysis and reporting. Figure 1 below shows the three stages and the main activities under each of them.

<sup>2</sup> <http://web.undp.org/evaluation/handbook/documents/english/pme-handbook.pdf>

<sup>3</sup> [http://web.undp.org/evaluation/guideline/documents/GEF/TE\\_GuidanceforUNDP-supportedGEF-financedProjects.pdf](http://web.undp.org/evaluation/guideline/documents/GEF/TE_GuidanceforUNDP-supportedGEF-financedProjects.pdf)

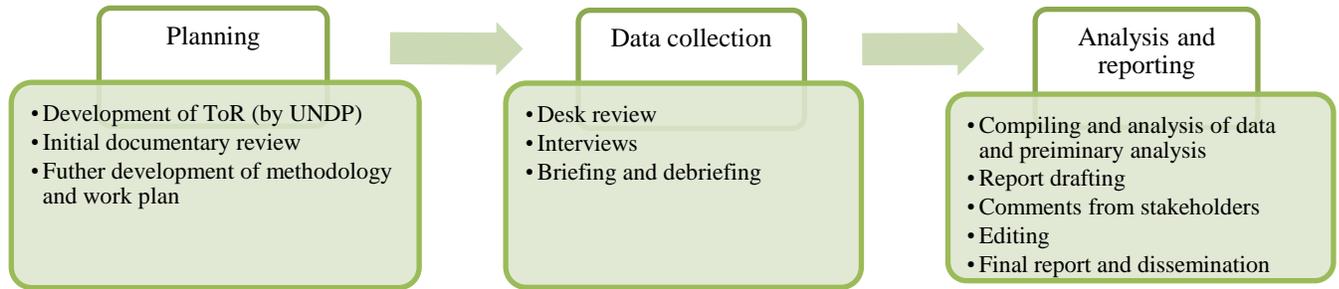
**Figure 1: Evaluation Stages**

Table 1 further details the main activities that were undertaken by the CO and the evaluators under each stage.

#### 1.4. Data Collection and Analysis

##### Planning

The planning and preparation phase included the development of the ToR by UNDP and the design of the evaluation framework by the evaluators. The evaluators developed a detailed programmatic scope of evaluation activities, as well as sample interview guides for interviews with stakeholders.

##### Data Collection

The data collection process involved a comprehensive desk review of project documents and semi-structured interviews with stakeholders and partners (see Table 3 for a list of data sources).

**Table 2: Evaluation Steps**

<p>I. Planning</p> <ul style="list-style-type: none"> <li>• Development of the ToR (by UNDP)</li> <li>• Start-up teleconference and finalization of work plan</li> <li>• Collection and review of project documents</li> <li>• Elaborated and submitted evaluation work plan</li> </ul>
<p>II. Data Collection</p> <ul style="list-style-type: none"> <li>• Questionnaires with key stakeholders</li> <li>• Further collected project related documents</li> </ul>
<p>III. Data analysis and reporting</p> <ul style="list-style-type: none"> <li>• In-depth analysis and interpretation of data collected</li> <li>• Follow-up interviews</li> <li>• Developed draft evaluation report</li> <li>• Circulated draft report with UNDP and stakeholders</li> <li>• Integrated comments and submitted final report</li> </ul>

- **Desk Review** - The evaluation team started by analyzing relevant documents, project documents and progress reports, as well as national development policies and strategies (see Annex IX for the list of reviewed documents). Documents from similar and complementary initiatives, as well as reports on the specific context of the project formed part of the analysis.
- **Semi-structured Interviews** – The interviews were conducted remotely through questionnaires or by phone, given the impact of COVID-19 and associated travel restrictions. They included project staff, UNDP representatives, government officials, impacted community members, CSOs, private contractors, etc. For the government entities involved in the implementation of

the project detailed questionnaires were used to collect their feedback. Open-ended questions were used to enable interviewees to express their views freely and raise the issues they considered most important. The full list of people interviewed can be found in Annex IV.

**Table 3: Data Sources**

Evaluation tools	Sources of information	
Documentation review (desk study)	General documentation	<ul style="list-style-type: none"> <li>• UNDP Programme and Operations Policies and Procedures</li> <li>• UNDP Handbook for Monitoring and Evaluating for Results</li> <li>• GEF Monitoring and Evaluation Policy and Guidelines</li> </ul>
	Project documentation	<ul style="list-style-type: none"> <li>• GEF approved Project Document</li> <li>• Inception Report</li> <li>• Annual work plans</li> <li>• Project Progress Reports (Mid-term evaluation, GEF PIRs)</li> <li>• Project Management Board Minutes</li> <li>• Reports produced by the project.</li> </ul>
	Government documents/papers	<ul style="list-style-type: none"> <li>• Including relevant policies, laws, strategies, etc.</li> </ul>
	Third party reports	<ul style="list-style-type: none"> <li>• Including those of the World Bank, EBRD, and others, independent local research centres, etc.</li> </ul>
Interviews with project staff and key project stakeholders	These included:	<ul style="list-style-type: none"> <li>• Interviews with key project personnel including the Project Manager.</li> <li>• Interviews with relevant stakeholders including government agencies and civil society organizations.</li> </ul>

### Data Analysis

Information obtained through the documentary review and interview process was triangulated against available documented sources and then synthesized using analytical judgement. The method of triangulation is depicted in Figure 2 below.

**Figure 2: Method of Triangulation**

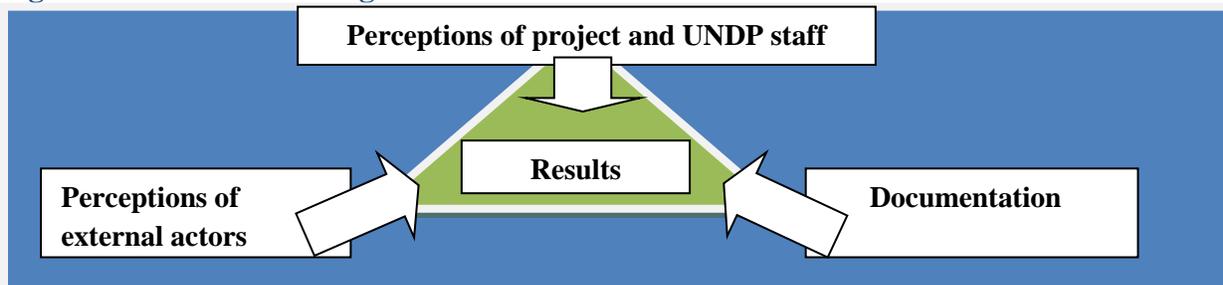
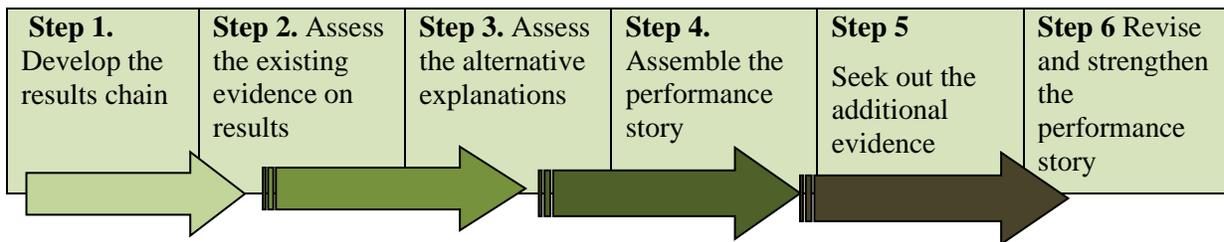


Figure 3 shows the steps taken for the analysis which was conducted on the basis of the standard criteria of relevance, effectiveness, efficiency, and sustainability (see Annex II for a more detailed list of questions that were used for the analysis of information).

- **Relevance**, covering the assessment of the extent to which outcomes were suited to local and national development priorities and organizational policies, including changes over time;
- **Effectiveness**, covering the assessment of the achievement of the immediate objectives (outputs) and the contribution to attaining the outcomes and the overall objective of the project; and an examination of any significant unexpected effects of the project (either of beneficial or detrimental);
- **Efficiency**, covering the assessment of the quality of project implementation and adaptive management; adequacy of planning and financial management; the quality of monitoring and evaluation; the contribution of implementing and executing agencies in ensuring efficient implementation;
- **Sustainability**, covering the likely ability of the intervention to continue to deliver benefits for an extended period of time after completion.

**Figure 3: Steps in Analysis Process**



The analysis also covered aspects of project formulation, including the extent of stakeholder participation during project formulation; replication approach; design for sustainability; linkages between project and other interventions within the sector; adequacy of management arrangements, etc.

The evaluation sought to assess the effect of the project on gender power relations, although the involvement of the gender dimension was limited in this project and data on gender was scarce (the scarcity of gender relevant data is due to the nature of the project, with an engineering-construction profile).

Table 4 shows the scale that was used to rate the various dimensions of this evaluation. This is the standard scale used in GEF-funded projects.

**Table 4: Rating Scale**

Rating for the assessment of Relevance, Effectiveness and Efficiency	
HS	Highly Satisfactory: The project has no shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency
S	Satisfactory: The project has minor shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency
MS	Moderately Satisfactory: The project has significant shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency
MU	Moderately Unsatisfactory: The project has major shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency
U	Unsatisfactory: major problems

HU	Highly Unsatisfactory: The project has severe shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency
<b>Ratings for sustainability assessment</b>	
L	Likely sustainable: negligible risks to sustainability
ML	Moderately Likely sustainable: moderate risks
MU	Moderately Unlikely sustainable: significant risks
U	Unlikely sustainable: substantial risks
<b>Additional</b>	
N/A	Not Applicable
U/A	Unable to Assess

## 1.5. Ethics

The evaluators were held to the highest ethical standards and were required to sign a code of conduct upon acceptance of the assignment. The evaluation was conducted in accordance with the principles outlined in the United Nations Evaluation Group (UNEG) “Ethical Guidelines for Evaluations”.

## 1.6. Limitations

All possible efforts were made to minimize the limitations of this evaluation. The project team provided exemplary support to the evaluation process by enabling full access to project-related information and arranging all necessary meetings with project stakeholders. The main limitations were a result of the COVID-19 pandemic which began in the winter of 2019. The international consultant was not able to travel to the country and the evaluation was conducted remotely with the help of a national consultant. No face-to-face meetings were organized for this evaluation and no project sites were visited. Also, contacts with impacted communities were limited – confined to the level of mayor – and did not include common community members. However, all the usual protocols and procedures were followed in organizing remote interviews.

## 1.7. Structure of the Terminal Evaluation Report

The evaluation report begins with an overview of the evaluation objectives and methodology (current chapter). The second chapter provides a description of the project and the country context (following chapter). The third chapter presents the main findings of the report and consists of three parts: the first part assesses key aspects of project design and formulation; the second part focuses on implementation issues; and, the third part presents an assessment of the results achieved by the project along the standard dimensions of relevance, ownership, effectiveness, efficiency and sustainability. The fourth chapter summarizes the main conclusions and identifies key “lessons learned” drawn from the experience of this project and the last (fifth) chapter provides a set of recommendations for the consideration of project stakeholders. Additional information supporting the arguments made throughout the document is provided in the annexes attached to this report.

## 2. PROJECT DESCRIPTION

### 2.1. Project Start and Duration

The project went through a number of important stages during its five-year lifetime. The following is the chronology of key events that marked the project's conceptualization and implementation phases.

- PIF approved on June 7, 2012
- CEO endorsement/approval on December 18, 2014
- The Project Document was signed on May 26, 2015
- LOA signature date September 11, 2014
- Actual project implementation occurred August 17, 2015 (with hiring Project Coordinator)
- Inception Workshop held on December 4, 2015
- Mid-Term Review was between March-June 2018
- Original project closure period set for April 26, 2019
- Revised project closure period set for December 31, 2021

### 2.2. Development Context

As of 2018, Armenia was ranked 63rd on the Environmental Performance Index out of a total of 180 countries. Armenia has been addressing a variety of environmental issues including those related to air, water, soil pollution, and threatened ecosystems. Due to its robust agricultural sector, during the Soviet era Armenia experienced widespread use of pesticides, including the organochlorine pesticides – such as DDO, Lindane referred to as Persistent Organic Pollutants (POPs). POPs are toxic chemicals that have significant adverse health impacts on humans, as well as the broader environment as they are able to persist for long periods of time in the environment without breaking down and are easily spread/migrate through wind and water. For this reason, when left untreated, they inevitably have the potential to make their way into the human food chain where there is a risk of cancer, birth defects and other health anomalies<sup>4</sup>.

Armenia continues to have several stockpiles of obsolete pesticides (OPs), as well as contaminated sites associated with them, which constitute a significant environment risk. OPs are a broad category of pesticides that include insecticides, fungicides, herbicides, larvicides, acaricides, and rodenticides. There are over 1,000 active ingredients used in pesticides that are manufactured world-wide, and over time the chemicals used to compose these pesticides degrade over time – often resulting in a chemical by-product that is more toxic than the original pesticide.

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<sup>4</sup> [https://www.epa.gov/international-cooperation/persistent-organic-pollutants-global-issue-global-response#:~:text=Persistent%20organic%20pollutants%20\(POPs\)%20are,they%20are%20used%20and%20released](https://www.epa.gov/international-cooperation/persistent-organic-pollutants-global-issue-global-response#:~:text=Persistent%20organic%20pollutants%20(POPs)%20are,they%20are%20used%20and%20released)

Armenia has committed under the Stockholm Convention to address stockpiles of Ops, and particularly POPs materials, in the country by 2025. Armenia participates in a number of multilateral environmental agreements (MEAs) associated with sound handling of dangerous chemicals and wastes. The following table provides a summary of these international frameworks.

**Table 5: Armenia’s International Commitments**

<b>Multilateral Environmental Agreement</b>	<b>Participation/ Signing Status</b>	<b>Ratification/ Accession (a)</b>	<b>Responsible Institution</b>
Stockholm Convention on Persistent Organic Pollutants	May 23/2001	Nov. 26/2003	MoE
Basel Convention on the Trans-boundary Movement of Hazardous Waste and their Disposal	n/a	Oct. 1/1999 (a)	MoE
Rotterdam Convention on Prior Informed Consent for Certain Chemicals and Pesticides in International Trade	Sept. 11/ 1998	Nov. 26/2003	MoE
Minamata Convention on Mercury	Oct. 10/2013		MoE
Vienna Convention	n/a	Oct. 1/1999	MoE
Montreal Protocol	n/a	Oct. 1/1999	MoE
– London Amendment to the Montreal Protocol	n/a	Nov. 26/2003	MoEP
– Copenhagen Amendment to the Montreal Protocol	n/a	Nov. 26/2003	MoE
– Montreal Amendment to the Montreal Protocol	n/a	Dec. 18/2008	MoE
– Beijing Amendment to the Montreal Protocol	n/a	Dec. 18/2008	MoE
Development of a National Profile on chemicals management, (SAICM implementation)	2003 Updated 2007	n/a	MoE
Convention on Trans-Boundary Effects of Industrial Accidents	n/a	Feb. 21/1997	MoE/MES /MTAES
UNECE Convention on Long-Range Trans-boundary Air Pollution	n/a	Feb. 21/1997 (a)	MNP
– Gothenburg Protocol to Abate Acidification, Eutrophication, and Ground-Level Ozone	Dec.1/1999		
– Aarhus Protocol on Persistent Organic Pollutants	Dec. 18/1998		
– Aarhus Protocol on Heavy Metals	Dec. 18/1998		
Convention on Access to Information, Public Participation in Decision Making, and Access to Justice in Environmental Matters	June 25/1998	June 27/2001	MNP
– Protocol on Pollutant Release and Transfer Registers	Mar. 21/2003		
ESPOO Convention on Environmental Impact Assessment in a Trans-boundary Context	n/a	Feb. 21/1997 (a)	MNP

– Protocol on Strategic Environmental Assessment	Mar. 21/2003		
UN Framework Convention on Climate Change	June 13/1992	May 14/1993	MNP
– Kyoto Protocol	n/a	April 25/2003	
UN Convention to Combat Diversification	Oct. 14/1994	July 2/1997	MNP
Convention on Biological Diversity	June 5/1992	May 14/1993	MNP
– Cartagena Protocol on Bio-safety	n/a	April 30/2004 (a)	

As mentioned above, Armenia is a party to the Stockholm Convention (2001) where signatory countries have agreed to reduce and eliminate twelve of the most common POPs, as well as commit to a scientific review process so the original list of POPs can be revised/updated. According to Article 7 of the Convention, parties are required to develop National Implementation Plans (NIP) to demonstrate how they intend to implement obligations assumed under the Stockholm Convention. According to existing rules, each Party should develop and submit the NIP within two (2) years from ratification and update NIPs within every five years thereafter taking into account amendments and additional listed POPs. The NIPs developed by Armenia have allowed for capacity building and investment programmes for POPs management, as well as adoption of basic regulatory measures within the national waste management legislative framework.

### 2.3. Problems that the Project Sought to Address

The project's objective was to protect human health and the environment through the elimination of persistent organic pollutants (POPs) and obsolete pesticide (OP) stockpiles and addressing associated contaminated sites within a sound chemical's management framework. The lead ministries involved in the project are the Ministry of Environment (MoE)<sup>5</sup> and the Ministry of Emergency Situations (MES) in partnership with the Deputy Prime Minister's office, Ministry of Agriculture, Ministry of Foreign Affairs, other line ministries, and the Yerevan Municipality.

#### Box 1: Project at a glance

- **Implementing Agency:** UNDP
- **Implementing Partner:** Ministry of Environment (MoE) & Ministry of Emergency Situations (MES)
- **Grant Size:** 4,700,000 USD from GEF and 200,000 USD from UNDP
- **In-kind and cash co-financing from the Government of Armenia:** 16,020,000 USD
- **Project Duration:** May 2015 – April 2019 (extended to December 2021)
- **Project site:** Nubarashen Burial Site and other sites and storehouses throughout the country
- **Sector/subsector:** Hazardous waste (POPs and OPs)

<sup>5</sup> The Ministry of Environment (Armenian: Հայաստանի Հանրապետության շրջակա միջավայրի նախարարություն, is a department of the Government of Armenia with responsibility for environmental protection and natural heritage. It was created as the Ministry of Nature and Environment Protection on Armenian independence in 1991, and renamed as the Ministry of Nature Protection and Lithosphere in 1995. Later it was renamed Ministry of Nature Protection, then the Ministry of Environment. The term that will be used to refer to this ministry in this report will be "Ministry of Environment" (MoE).

The project was designed to meet this objective by eliminating a large POPs pesticide burial site that represents the major POPs stockpile and waste legacy for the country. In total, approximately 4,123 tons of POPs waste in the form of heavily contaminated soil, 1,052 tons of POPs pesticides and other obsolete pesticides needed to be, secured and ultimately destroyed in an environmentally sound manner. A further 8,500 tons of less severely POPs contaminated soil was identified to be securely contained. Additionally, the project intended to provide critically needed hazardous waste infrastructure and national technical capability for the ongoing management of POPs and other chemical hazardous wastes as well as supporting the strengthening of institutional and regulatory capacity within the overall chemicals' management framework.

The project targeted the following areas:

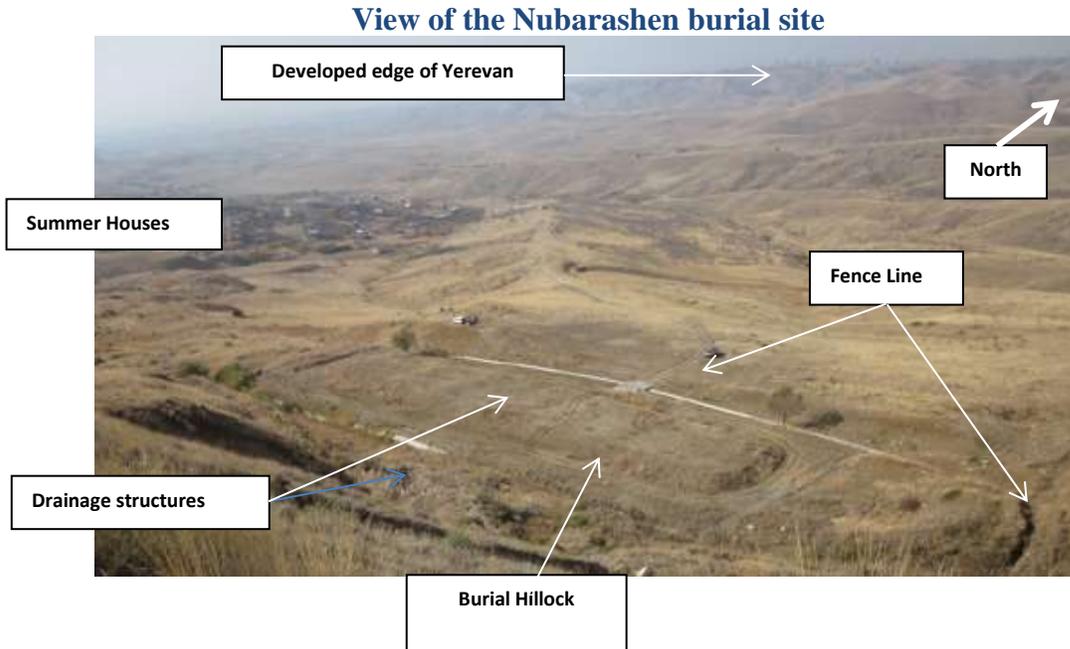
- ***The Nubarashen Obsolete Pesticide Burial Site*** – The Nubarashen landfill was used mid-1970's as a disposal/burial site for obsolete pesticides, containing also POPs substances, and is located in a valley subject to severe erosion and landslide processes. It occupies 0.8 ha of fenced area enclosed by concrete runoff drains and two run-off trenches. It is estimated that the site contains 674m<sup>3</sup> of pure pesticide, which has contaminated thousands of m<sup>3</sup> of soil. The box below provides a brief summary of the risks posed by the Nubarashen burial site.
- ***Obsolete Pesticide Storehouses and Stockpiles*** – There are 24 community-based storehouse sites containing obsolete pesticide residuals throughout Armenia with an estimated quantity of 150 ton of obsolete pesticides waste.<sup>6</sup>

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<sup>6</sup> A MoA inventory from 2005 identified several storehouse sites in 6 Marzer (provinces) containing 53 t of OPs and an updated inventory from 2011-2012 in the same Marz covering 13 stores identified approximately 120 t. All sites were former state agro-chemical distribution centres and now private agro-businesses. Limited identification of the actual materials listed the 2005 inventory indicated none of the OPs were POPs pesticides and were a mixture of organic and inorganic agricultural chemicals.

## Box 2: Description of the Nubarashen Burial Site

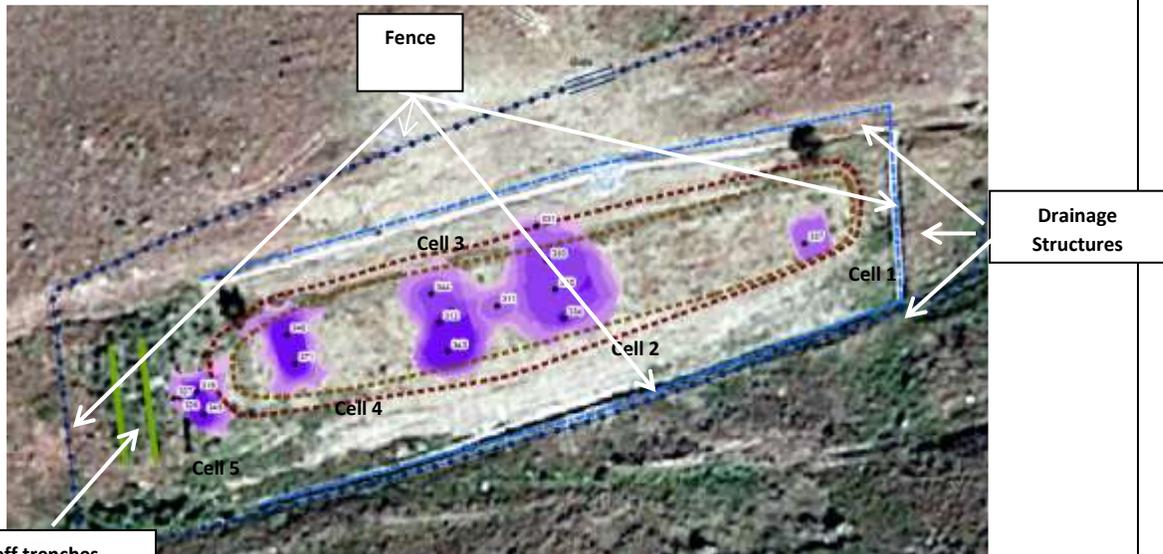
The landfill site at Nubarashen, comprising of a landfill body and surrounding land, is situated to the South-East of Yerevan on a steep mountain slope.



The landfill site is fenced and the landfill body, a hillock, is enclosed on three sides by concrete runoff drains. Two deep trenches, collecting run-off water with sediments are situated 10 m down slope from the landfill body. The landfill body has a surface area of approximately 0.2 hectares with a height of around 1-1.5 m above the surroundings; it is covered with a 40-70 cm top cover of clay lying on top of a 2 mm rubberoid liner. The estimated in-situ volume of this top cover is 890 m<sup>3</sup>. The quality of this top cover is relatively clean with DDT concentrations below or just above the Dutch I-value. Traces of pesticides, remains of packaging materials and erosion features are observed in the top cover. Below the rubberoid liner is a liner support layer of 5-10 cm coarse sand on contaminated clay layers with or without pure pesticides. From archives it is known that 512 ton of POP and obsolete pesticides supposedly was dumped in the Nubarashen landfill.<sup>7</sup>

<sup>7</sup> Site Assessment and Feasibility Study of the Obsolete Pesticides and Persistent Organic Pollutants Burial Site in Nubarashen, Armenia – Executive Summary. Tauw and OSCE study.  
<https://www.osce.org/files/f/documents/3/4/116018.pdf>

### Location of the five cells and the landfill body features



(Courtesy of Tauw/OSCE)

Soil sampling and application of DTM techniques indicate an estimated 634 m<sup>3</sup> of pure pesticide (including POPs pesticides) and immediately surrounding clay present in the five cells. There is detectable surface and subsurface POPs and other OCP contamination to varying degrees distributed across most of the fenced area of overall site with this varying in concentration and continuity generally moving away from the cells and being higher on the surface around and to the north of Cells 2 and 3 where illegal waste mining is thought to have occurred. It was estimated that 1,127 m<sup>3</sup> of heavily contaminated soil with traces of pure pesticides, 2,386 m<sup>3</sup> of contaminated soil without traces of pure pesticides and 890 m<sup>3</sup> of lightly contaminated surface material are present in the hillock area itself. Over the remaining 0.6 ha within the fence significant contaminated locations exist to a depth of 0.5 m, giving an estimated potential contaminated topsoil of approximately 3,000 m<sup>3</sup>. Outside the fenced area, 4,000 m<sup>3</sup> of surficial material having locations of relatively low surficial contamination is estimated.<sup>8</sup>

The Nubarashen site has gained international attention, having been identified by various EU based NGOs such as the International HCH and Pesticides Association (IHPA) and the International POPs Elimination Network (IPEN) as a significant example of potential risk from historical obsolete pesticide management practices in the Former Soviet Union. This interest extended to formal expressions of concern by the European Parliament and in the Government making a formal approach to the international community for assistance in addressing the issue.

As a consequence, a number of national and international initiatives have been undertaken in the site. In 2004, MES undertook an emergency rehabilitation of the site including repairs to the original surface drainage, restoration of cover and installation of security fencing. However, illegal access continued with destruction of fencing and containment due to illegal excavation including a major incident in early 2010. In addition, slow sliding of land mass including the burial site itself continued with the consequence of possible breaches in the original cell containment occurring. In the summer of 2010, the government through MoE and MES made a more substantial investment in stabilization of the site. This involved installation of an expanded surface cap over the original burial area and estimated area where sub-surface sliding had occurred (130 m by 30 m). This consisted of a soil and synthetic cap and attempts to establish stabilizing vegetation. In addition, a concrete surface runoff drainage system upstream and along the sides of the burial berm was installed as was robust fencing, signage and a locked access gate. Permanent manned security by MES officers was also now provided for.

<sup>8</sup> From POPs Project Document, page 23 – 23.

## 2.4. Immediate and Development Objectives

The objective of the POPs project was the protection “of health and environment through elimination of obsolete pesticide stockpiles and addressing contaminated sites within a sound chemicals management strategy.” The project was comprised of four components:

### Component 1 - Capture and Containment of Obsolete Pesticide Stockpiles and Wastes.

- **Outcome 1.1:** Preparation/repackaging and removal of priority POPs pesticide waste from the Nubarashen burial site, secure containment of residual contamination on-site, site stabilization and restoration, with the site secured under appropriate institutional arrangements providing effective access limitations, monitoring and future land use control, all endorsed by an informed public.
- **Outcome 1.2:** Development of the Kotayk national hazardous waste management site equipped with secure storage and basic infrastructure to allow introduction of Hazardous Waste (HW) treatment soil remediation technologies constructed and operated for the secure storage of POPs pesticide waste and OP stockpiles, and the treatment of POPs pesticide contaminated soil.
- **Outcome 1.3:** Remaining significant historical OP storehouses have OP stocks packaged and removed and residual site contamination cleaned up.

### Component 2 – Obsolete Pesticide Stockpile and Waste Elimination.

- **Outcome 2.1:** Removal from Armenia of all substantially all high priority POPs pesticides, associate very high concentration wastes and OP stockpiles.
- **Outcome 2.2:** Environmentally sound remediation of heavily POPs pesticide contaminated soil inclusive of destruction of extracted POPs pesticides demonstrated.

### Component 3 – Institutional and Regulatory Capacity Strengthening for Sound Chemicals Management and Contaminated Sites.

- **Outcome 3.1:** Legal/regulatory and technical guidance tools for management of chemical wastes, including POPs, and, contaminated sites management within a national sound chemicals management framework strengthened.
- **Outcome 3.2:** Technical/Environmental performance evaluation and upgrading requirements for existing national destruction capacity.
- **Outcome 3.3:** Basic national capacity for effective hazardous chemicals sampling and analysis for multi-environmental media and contaminated sites in place, operational and certified to international standards.

### Component 4 – Monitoring, learning, adaptive feedback, outreach, and evaluation.

- **Outcome 4.1:** Monitoring, learning, adaptive feedback, outreach, and evaluation.

## 2.5. Description of the Project's Theory of Change

The Project Document did not present an explicit Theory of Change for this project. The Theory of Change is underpinned by an extensive set of outcomes, outputs and activities which are shown in a cascading style in the box below, which provides a more detailed description of the specific objectives intended to be accomplished under each outcome area.

### Box 3: Project Objectives as per the Project Document

The following is a summary of the project's outcomes:

#### Component One

**Outcome 1.1:** Removal of priority POPs pesticide waste from the Nubarashen burial site, secure containment of residual contamination on-site, site stabilization and restoration, with the site secured under appropriate institutional arrangements providing effective access limitations, monitoring and future land use control, all endorsed by an informed public.

- 1.1.1. Detailed site assessment, clean-up design, geotechnical/hydrological stabilization design, EIA, permitting and tender document preparation for excavation/packaging/containment and site works supervision including on-site screening analysis capability for segregation of POPs pesticide waste categories.
- 1.1.2 Installation of site access and safeguarding infrastructure for recovery and restoration activities
- 1.1.3 Excavation, packaging and removal of OP burial cells and other associated priority POPs pesticide wastes involving estimated 900 t Category 1 POPs pesticide wastes (pure pesticides and POPs pesticide wastes >30% pure pesticides)
- 1.1.4 Redistribution, segregation and initial containment of Category 2 and 3 soils
- 1.1.5 Excavation, packaging and removal of 7,000 t Category 2 POPs wastes (high concentration soils using health risk criteria of > 1,500 ppm), packaging and removal
- 1.1.6 On-Site final Containment of 12,700 t Category 3 POPs waste (< 1,500 ppm health risk criteria, >0.7 ppm agricultural risk criteria)<sup>9</sup>
- 1.1.7 Site restoration, undertaking area site geotechnical/hydrological stabilization, and drainage improvements. installation of monitoring and establishment of long-term land use control arrangements
- 1.1.8 Operational and safeguards training for hazardous waste and contaminated site management including site excavation, packaging and restoration operations – Estimated 20 national technical staff trained for work on site.
- 1.1.9 Supporting public consultation for design, permitting, operational and restoration/monitoring phases of Nubarashen site work. Estimated 5 formal events held and 10 public documents/web/media products produced.

**Outcome 1.2:** Development of the Kotayk national hazardous waste management site at equipped with secure storage and basic infrastructure to allow introduction of HW treatment soil remediation technologies constructed and operated for the secure storage of POPs pesticide waste and OP stockpiles, and the treatment of POPs pesticide contaminated soil.

- 1.2.1 Detailed design, EIA, permitting and tender development and construction supervision for the Kotayk HW facility site development

<sup>9</sup> The amounts of the waste were changed after the 2017 site re-assessment.

- 1.2.2 Storage Facility upgrading and construction works for indoor secure storage capacity for 1,100 t of Category 1 POPs pesticides and OPs from Nubarashen and OP storehouses, and covered external secure on-site storage of up to 7,100 t of highly contaminated soil (Category 2) from Nubarashen and OP storehouse clean ups
- 1.2.3 Receiving storage and custody operations for Category 1 and Category 2 material received from Nubarashen and OP stockpiles from storehouses
- 1.2.4 Technical and safeguards training for hazardous waste facility operation. Estimated 20 operational staff from MTAES or contracted service providers involved
- 1.2.5 Supporting public consultation for design, permitting, and operational phases of Kotayk facility development. Estimated 5 formal events held and 10 public documents/web/media products produced.

**Outcome 1.3:** Remaining significant historical OP storehouses have OP stocks packaged and removed and residual site contamination cleaned up.

- 1.3.1 OP Storehouse screening assessments, stockpile packaging and surficial clean up and removal to the Kotayk storage facility (150 t of OP and clean up residuals from 24 sites) and export of 150 t for destruction
- 1.3.2 Follow up detailed site assessment, clean up design, and supervision permitting on 6 priority sites identified during PPG but subject to results of Activity 1.3.1 above.
- 1.3.3 Excavation/Removal, containment and/or remediation up to 200 t Category 2 and 3 contaminated soil of the 6 priority sites
- 1.3.4 Supporting public consultation for design, permitting, and operational phases of clean ups under 1.3.2-1.3.3 on 6 priority sites. Estimated 6 formal events held and 10 public documents/web/media products produced

## **Component Two**

**Outcome 2.1:** Removal from Armenia of all substantially all high priority POPs pesticides, associate very high concentration wastes and OP stockpiles.

- 2.1.1 Export of 900 t of Category 1 POPs pesticides, priority POPs pesticide wastes, and OPs from the Kotayk facility for destruction in a qualified international facility.

**Outcome 2.2:** Environmentally sound remediation of heavily POPs pesticide contaminated soil inclusive of destruction of extracted POPs pesticides demonstrated.

- 2.2.1 Environmentally sound remediation of 7,100 t of Category 2 POPs pesticide contaminated soil (7,000 t from Nubarashen and 100 t from 6 OP storage sites), involving the removal and destruction of residual POPs pesticide contaminants (to <50 ppm) at market selected soil remediation facilities either operated at the Koyatk site or a qualified facility in another country.

## **Component Three**

**Outcome 3.1:** Legal/regulatory and technical guidance tools for management of chemical wastes, including POPs, and, contaminated sites management within a national sound chemicals management framework strengthened.

- 3.1.1 Rationalization, updating and revision of polices, legislation and guidelines covering hazardous chemicals waste and contaminated sites management
- 3.1.2 Preparation and adoption of technical guidelines on operational safety procedures for hazardous chemicals waste handling, transport, storage and disposal, developed in accordance with international practice, including national training.

- 3.1.3 Introduction of environmental and health risk assessment methodologies and practices applicable to hazardous waste stockpiles and contaminated sites developed in accordance with international practice inclusive of training programs. Estimated 18 institutional, academic, industrial, private service provider and NGO professionals trained

**Outcome 3.2:** Technical/Environmental performance evaluation and upgrading requirements for existing national destruction capacity.

- 3.2.1 Undertaking technical and environment performance assessment of the EcoProject incineration facility inclusive of an international standard test burn on characteristic waste streams and a design assessment to define required upgrading requirements

**Outcome 3.3:** Basic national capacity for effective hazardous chemicals sampling and analysis for multi-environmental media and contaminated sites in place, operational and certified to international standards.

- 3.3.1 Development of a national laboratory rationalization and optimization strategy
- 3.3.2 Laboratory infrastructure and equipment upgrading as required to optimize national capacity
- 3.3.3 3 Training of laboratory personal on site and multi-environmental media sampling, laboratory analysis and QA/OC procedures. Estimated 30 professional staff will be trained
- 3.3.4 International laboratory certification support for selected labs in accordance with the strategy. 3 designated national laboratories to be certified.

#### **Component Four**

**Outcome 4.1:** Monitoring, learning, adaptive feedback, outreach, and evaluation

## **2.6. Expected Results**

The objective of the project was to promote human health, as well as the protection of environment, by addressing POPs that have accumulated at the Nubarashen site and other sites containing OP waste. The project was aimed to achieve the following results:

- Hazardous waste excavated and sorted at Nubarashen into Category 1 and 2 waste;
- Category 1 and 2 waste temporarily stored in secure storage;
- Once Category 1 and 2 waste is addressed, the Category 3 material is contained securely on-site;
- Once Category 1 material is securely packaged it is exported and incinerated;
- The technology to treat Category 2 waste is acquired and installed on-site adjacent to Nubarashen landfill;
- Category 2 waste is to be treated.

Another goal of the project was to review and improve existing legislation and regulatory frameworks related to managing chemical waste, and to review local capacities for treating hazardous waste. Additionally, the project aimed to support national laboratory capacity through technological, educational and infrastructure supports, as well as through enhanced monitoring and evaluation procedures.

As will be further discussed in this evaluation report, the ultimate goal of removing and securing Category 1 and 2 POPs waste from Nubarashen, subsequent elimination of Category 1 POPs waste and containment of Category 3 material was not achieved in the course of this project. However, the project did contribute to the improvement of institutional and regulatory capacity of the country in this area.

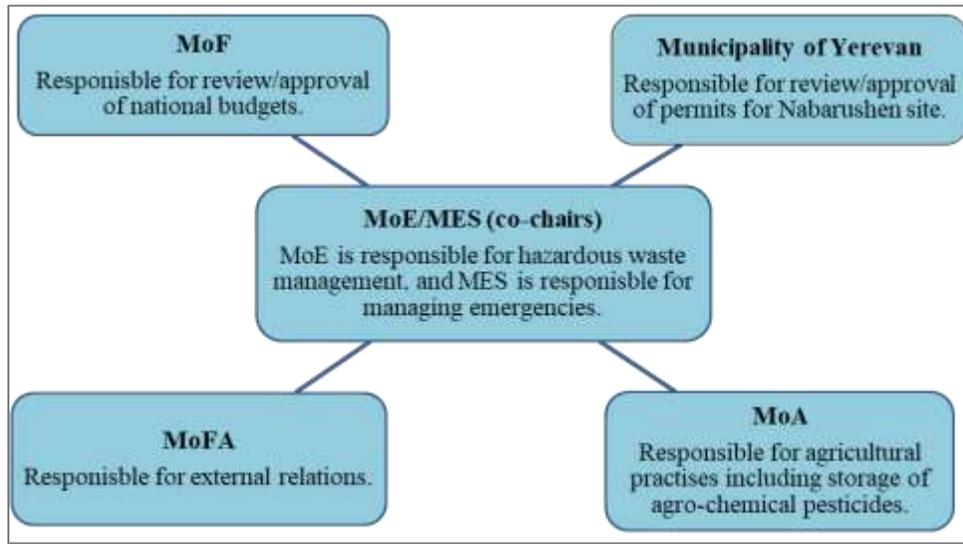
The Project Document included an extensive Results Framework presented in one of the annexes, outlining indicators, baselines, targets and key risks.

## 2.7. Key Partners Involved in the Project

The project was implemented by the UNDP jointly with the MoE and MES. Other key institutions related to the project were the Deputy Prime Minister's Office, the Ministry of Agriculture (MoA), the Ministry of Health (MoH), the Ministry of Finance (MoF), the Ministry of Foreign Affairs (MoFA) and the Municipality of Yerevan.

- **MoE** has overall policy, legal and regulatory authority for hazardous waste and contaminated sites management, as well as the licensing and approval process required to actually undertake the work at both Nubarashen and related to OP stockpile sites. It serves as the focal point ministry for the relevant international conventions and the evolving national chemicals management framework.
- **MES** is the primary focal point for work on the Nubarashen site based on the emergency order of the government related their operational capability and mandate in addressing issues of public safety. Similarly, MES was expected to act in the same proponent capacity as the owner and operator of the proposed HW storage and potential host treatment site for purposes of this project.
- **MoA** has an implementing role for the EU/FAO project, whose funding was intended to serve as co-financing for this project (this will be discussed further in the report).
- Other institutional players include the City of Yerevan as the legal owner and custodian of the Nubarasehen burial site, Ministry of Health, Ministry of Transport, Customs authorities, national public safety authorities and the major national financial and economic planning ministries (Ministry of Finance, Ministry of Economy), Ministry of Foreign Affairs.

The figure below shows the six public sector entities that were crucial for the project in terms of the responsibilities they have had for the different activities carried out under this project that will be described in this report.

**Figure 4: Responsibilities of Key Stakeholders**

In 2010, the Government established the Inter-Agency Steering Committee on the Implementation of Stockholm Convention as a coordinating body for matters related to the sound management and elimination of POPs materials. It should also be noted that MES is designated as the primary government institution responsible for the Nubarashen clean-up. MES has been the primary institutional partner for most internationally-supported study/assessment initiatives related to Nubarashen to date. Initially MES, and currently the Yerevan municipality and the Police are responsible for the control of the site, undertaking of emergency measures to protect it and its operational custody.

### 3. FINDINGS

While the amount of information generated by this evaluation was large, the findings presented in this chapter cover only the most essential aspects of the project and are to some extent focused on those issues and lessons that provide a better understanding of the achievements of the project and which would benefit the project stakeholders the most in similar future endeavors. The findings of this evaluation are organized in the following sections: i) Project Design; ii) Project Implementation; and, iii) Project Results.

#### 3.1. Project Design/Formulation

This section examines the project's logic and design features by focusing on the adequacy of the project's logic, results framework, management arrangements, identification of risks and assumptions, use of lessons learned from other projects, linkages with relevant UNDP or donor projects, UNDP's comparative advantage in the area, planned stakeholder engagement, replication approach, etc. The main questions driving the analysis are shown in the box below.

#### Box 4: Key Issues Related to Project Design

The key questions driving the analysis in this section are:

- Whether the project has a sound logic with outcomes flowing from activities and the latter driven by the project's objectives.
- Whether assumptions and risks were adequately identified at the outset of the project.
- Whether lessons learned from earlier projects and other interventions were incorporated into the project design.
- Whether the project's linkages to other relevant projects in the UNDP portfolio or by other donors were properly identified and capitalized on.
- Whether UNDP's comparative advantages were adequately exploited.
- Whether stakeholder consultation was an essential part of the project incorporated from the project design phase.
- Whether the replication approach was sound and an exit strategy was clearly identified.
- Whether management arrangements were identified correctly, with roles and responsibilities adequately determined prior to project approval.

##### 3.1.1. Analysis of Results Framework: project logic and strategy, indicators

In 2011, Armenia requested assistance from the UNDP to develop a plan for addressing the POPs waste located at Nubarashen, along with additional OP waste in other locations, and to strengthen Armenia's overall national capacity for chemicals management. This resulted in the decision to design a project with the purpose of "protecting health and the environment through the elimination of obsolete pesticide stockpiles and by addressing contaminated sites within a sound chemicals management strategy".

Extensive preparatory work took place from early 2011 until the project was approved in the Spring of 2015. The analytical work included a situation analysis, a review of national legislation on chemical and waste management, as well as a comprehensive review of POPs/OPs locations in Armenia and a review of laboratory capacities for chemical waste management.

The resulting project document identified the following three goals.

- **Component 1:** Capture and Containment of Obsolete Pesticide Stockpiles and Wastes which covers the removal and secure storage at a newly developed HW storage facility of Category 1 and Category 2 POPs/OPs wastes from Nubarashen and OP stockpiles from store houses, and the containment of remaining Category 3 POPs waste at the Nubarashen site which will be stabilized, restored and maintained under long term restricted land use.
- **Component 2:** Obsolete Pesticide Stockpile and Waste Elimination which covers the export of the Category 1 POPs waste for environmentally sound destruction and the treatment/remediation of Category 2 contaminated soil either in Armenia at the HW facility site developed for the project or exported to a qualified facility.
- **Component 3:** Institutional and Regulatory Capacity Strengthening for Sound Chemicals Management and Contaminated Sites covers selected supporting technical assistance related to improvement of the general legal/regulatory framework and technical capacity for hazardous waste and contaminated sites management.

These goals are framed in clear and practical terms and are extremely relevant to the context of Armenia and national priorities. The project's ultimate expected result was the removal and secure storage of Category 1 and 2 POPs waste from the Nubarashen burial site and subsequently the elimination of Category 1 POPs waste and decontamination of soil. In addition, the project was expected to contribute to the improvement of institutional and regulatory capacity of the country in this area.

While the overall project goals are clearly and succinctly framed, the project document is too long, cumbersome, complicated and not structured effectively. While the analysis of the context and challenges related to organic pollutants is quite detailed and engaging, the information is often repetitive and not organized in a clear and logical manner. Furthermore, as will be seen in the following sections of this report, the project's results framework is too convoluted, consisting of a large number of indicators, many of which are redundant. The project's 2018 Mid-Term Review has already pointed out some of this complexity and provided a critique of how the project was formulated, so those points made in that document will not be repeated here.

It should also be pointed out that the project's design phase seems to have lacked a sufficiently deep engagement with the communities that were expected to be affected by its activities. This is particularly the case with regards to the community in the vicinity of the location where the "category 1 waste" excavated from Nubarashen was envisaged to be stored. While the project was at the design stage, it was recognized that off-site storage of POPs and OPs would be required.

Therefore, UNDP working with MES undertook an assessment of options based on existing MES locations. A site located in Kotayk Marz adjacent to the main M4 north-south highway, southeast of Hrazdan, was selected as a prospective site for development as part of the project (and outcome 1.2 was directly linked to measures at this site).<sup>10</sup> Within the scope of Environmental Impact Assessment (EIA) required for the construction of the chemical waste storage site, a series of meetings were held with environmental NGOs, representatives of CSOs and residents of Hrazdan town, and at a later stage with the Hrazdan Mayor and municipality staff. Meetings initially aimed at raising community awareness on the developments concerning the OP and chemical waste handling at the Nubarashen burial site, as well as on the expected rehabilitation of the MES-owned storage site. This EIA was conducted in parallel to the engineering design of the storage building and its surrounding area. The permit for rehabilitation works could not be issued without the positive feedback of the impacted community. Eventually, the community did not provide consent on the use of the allocated building for hazardous chemical waste storage and treatment purposes. In retrospect, the consultations conducted at the project design stage were not sufficient as the local community subsequently resisted this initiative due to concerns over potential ground water contamination and environmental pollution. From this perspective, the approval of the community should have been obtained at the stage project design. Alternatively, the project should have had a more flexible approach on the selection of the waste storage site following public consultations, rather than firmly indicating the Kotayk site from the start.

Similarly, a number of meetings were organized in the course of project preparation and implementation with administrations and residents of communities located close to Nubarashen landfill and potentially impacted by activities envisaged for clean-up of the landfill and transportation removal of the OPs waste. The environmental NGO Armenian Women for Health and Healthy Environment (AWHHE) played an important role in the public consultations and awareness building in impacted communities supported by a grant from the UNDP/GEF Small Grants Programme in Armenia. These included Lernanist, Hrazdan, and project direct impacted communities Mushavan (and Mushavan summer residential area), Voghjaberd and Geghadir. The meetings aimed at raising community awareness on developments concerning the OP burial site in relation to its location in the landslide zone. These communities' administrations and residents

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<sup>10</sup> The site housed a former MES and MoH logistics and staging base and involved 15 ha of flat land, with direct highway access on a high strength hard surface road, basic but degraded utility supply, and a number of structures including several suitable for upgrading as storage as well as others suitable for support services. The site is located over 2 km from the nearest habitation or other development and proximate water bodies, well outside any national sanitary exclusion zones and consistent with accepted international siting criteria. A conceptual engineering feasibility study was undertaken on the upgrading the current asset both national standards and international guidance materials applicable to both hazardous waste storage and potentially treatment. Based on this, a secure site could be developed that would be fully equipped with necessary water and power utilities, access, security in the form of gating and fencing, high quality storage structures, hard surface laydown and/or working pad, and surface water management system. For the current project this would offer inside secure priority storage up to 1,200 t of HW and additional temporary secure covered storage up to 10,000 t of material such as contaminated soil, as well as the potential option of undertaking soil treatment using an imported remediation technology. In the longer term it would provide the infrastructure base for incremental development of a national HW management capability.

didn't express grievances and resistance in relation to the works to be performed in the Nubarashen landfill site. Instead, Voghjaberd's mayor office was supportive and even issued a formal decision (Decree N 34-A dated 03 November 2018) which allocated land under community ownership for the installation of a temporary "sandwich panel" storage and for the use of community roads for access to the site and transportation/removal of repackaged waste.

Another issue that would have benefitted from greater clarity in the project document is the terminology used for the classification of waste. The project document provides a detailed definition and categorization of the different categories of waste. As defined in the project document, these categories are:

- **Category 1:** Pure pesticides or associated material > 30% pure pesticides;
- **Category 2:** Overall volumes with significant potential for heavily contaminated soil above the human health risk threshold for direct exposure (>1,500 ppm DDT) or visual presence of pure pesticides in it;
- **Category 3:** Overall volumes with potential for levels of soil contamination less than determined as human health risk threshold but above the agricultural (grazing) risk threshold (0.7 ppm-1,500 ppm DDT);
- **Category 4:** Concrete construction materials with surface contamination (suitable for mechanical cleaning techniques).

However, the linkages between the four categories above and the terminology used when discussing the outcomes is not always clear. The terminology used when discussing the nine outcomes included: "priority POPs"; "high priority POPs"; "POPs pesticide"; "OP stockpiles"; "POPs pesticide contaminated soil"; "very high concentration wastes"; "heavily POPs pesticide contaminated soil"; and "extracted POPs pesticides". In summary, the project design would have benefitted from a more consistent use of terminology.

The project's RRF is quite complicated, consisting of 4 components, 9 outcomes, 34 outputs and 28 activities. Indeed, the MTR indicated that the RRF was a "convoluted strategy to understand, implement, track, monitor and report on"<sup>11</sup> and further noted that M&E activities were "complex, time consuming and cumbersome for limited value added". Project work plans were an indication of the complexity of the project structure. For reference, the 2016 work plan had approximately 70 planned outputs/activities. Such project structure required too much time and effort dedicated to planning, reviewing and reporting on activities (which inevitably consumed time for other activities). Project PIRs were underpinned by 32 indicators and targets reported annually. Due to such complexity, these reports contain a lot of redundancy. An optimum number of indicators to monitor a GEF funded UNDP project is approximately 15 (with 20 being the maximum). An

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<sup>11</sup> Project's Mid-Term Review Report, page 23.

alternative approach recommended by the MTR would have been to have had one outcome for each component and then relabel the outcomes as outputs (a total of nine outputs).

Some project outcomes are not simple and intuitive to understand. For example, outcomes 1.1 and 2.1 are phrased in a similar manner:

- **Outcome 1.1:** Removal of priority POPs pesticide waste from the Nubarashen burial site, secure containment of residual contamination on-site, site stabilization and restoration, with the site secured under appropriate institutional arrangements providing effective access limitations, monitoring and future land use control, all endorsed by an informed public.
- **Outcome 2.1:** Removal from Armenia of all substantially all high priority POPs pesticides, associated with very high concentration wastes and OP stockpiles.

A more detailed review of the project document reveals that outcomes 1.1, 1.2 and 1.3 were focused on the preparatory work required to complete the outcomes in Component 2, whereas, outcome 2.1 was focused on the actual removal/export of POPs/OPs waste from Armenia. Furthermore, outcomes 1.2 and 1.3 were the only outcome with a reference to public consultations, although these events were scheduled to occur throughout the duration of the project within the other outcomes as well.

It should also be noted that following a recommendation from the MTR in 2018, the RRF was adjusted to streamline some of the indicators and targets. Specifically, outcome 2.2 was adjusted to the following:

- *Prior to the MTR Recommendation:* Treatment/remediation of Category 2 heavily contaminated POPs contaminated soil (POPs pesticide waste) remediated to levels below the low POPs content and demonstration of its commercial viability in Armenia for remediation of POPs contaminated soil
- *Following the MTR Recommendation:* Volume of treated Category 2 waste below the low POPs content and demonstration of commercial viability of the Category 2 waste/soil treatment technology in Armenia

Furthermore, following the MTR, there was an additional indicator on co-financing added to the RRF in the objectives section at the suggestion of the RTA, and the quantities of waste and number OP sites to be addressed were updated. The project would have benefitted from including the co-financing as an indicator in the RRF during the initial phases of the project.

### **3.1.2. Assumptions and Risks**

No assumptions were identified in the Project Document. The risks identified in the Project Document are presented in the table below.

Project Risks	Rating	Mitigation Measures
1. Lack of institutional cooperation between key stakeholders, particularly Ministry of Nature Protection, Ministry of Emergency Situations, Ministry of Agriculture and ministry of Health	Low	<ul style="list-style-type: none"> <li>The project's preparation and implementation arrangements build upon the long positive working relationship between these key institutional stakeholders is addressing the POPs and OP issue in the country through a formally constituted Inter-Agency Committee. Additionally, a clear understanding and agreement exists respecting each institution's roles and responsibilities for various aspects of the project during implementation. The Project Board is a continuation of the above IAC mechanism with representation at a senior level from each will proactively ensure the resolution of operational issues as they appear.</li> </ul>
2. Failure of the current framework for hazardous and chemicals waste to adequately and efficiently cover project activities and requirements	Low	<ul style="list-style-type: none"> <li>In the PPG stage, it has been recognized that there are gaps in the present framework and this is the focus of specific key TA initiatives in Component 3 particularly in areas where requirements applicable to the handling, transportation, storage, treatment and disposal of HW are involved. For its part the project has adopted referenced international standards and guidelines in these areas. This will serve to pilot and inform national regulatory authorities in these areas through project implementation with the results that tested approaches applied by well-informed regulators and operators will develop.</li> </ul>
3. Inability to export pure POPs pesticides and OPs	Moderate	<ul style="list-style-type: none"> <li>As detailed in Section V above, the option to not exporting selected waste streams and retaining it in secure storage is provided for as a default option recognizing this substantially removes immediate and critical risks they currently pose and allow development of regional options that will likely become available in the medium term.</li> </ul>
4. Inability to provide for cost effective treatment of highly contaminated soil (Category 2 materials) in an environmental sound manner.	Moderate	<ul style="list-style-type: none"> <li>The stepwise process of tendering and having pilot out of country demonstration of capability of candidate technologies ensures that technical and environmental performance requirements to remediate soil below the SC low POPs content will be determined prior to large scale commitment of resources. A fall back is available for treatment in export facilities subject to the above. In the event this is unachievable the default option of secure containment will be exercised.</li> </ul>
5. Environmental damage resulting from delay or non-completion of Nubarashen site clean-up, stabilization residual containment and restoration	High	<ul style="list-style-type: none"> <li>The step by step process that restricts excavation and removal and provides for interim containment of contaminated material mitigates operation period impacts. The further constraint of not starting a specific step in the process until resources to complete it is provided had been imposed.</li> </ul>
6. Notwithstanding the strong government co-financing	Moderate	<ul style="list-style-type: none"> <li>Enlarge strategic partnership with third parties (international organizations, donors and IFIs) to mobilize additional co-financing resources for implementation of committed project activities.</li> </ul>

Project Risks	Rating	Mitigation Measures
<p>commitment, circumstances could develop (e.g. emerging political conflict: economic difficulties and shift of national priorities) at some point that sufficient direct cash funding is either not available or available beyond the timeline to complete the planned co-funded activities.</p>		<ul style="list-style-type: none"> <li>• Certain activities planned with direct cash funding are performed through local in-kind contributions (e.g. participation in the Kotayk facility renovation by the MES, development of supporting infrastructure at Nubarashen site by Yerevan Municipality, etc.). Statements of Intent are signed between UNDP and respective parties fixing their specific commitments. Follow-up discussions with the Government on mobilization of possible co-financing alternatives.</li> </ul> <p><i>Identified/added during the inception phase</i></p>
<p>7. The envisaged MOA/EU/FAO co-financing (800,000 US dollars) of Activity 1.3 (the planned collection and packaging of the 150t OPs waste) might not be available or be available beyond the planned timeline.</p>	<p>High</p>	<ul style="list-style-type: none"> <li>• Follow up/intensify discussions with the MOA on possible recommencement of the postponed fundraising process with EU/FAO for co-financing of Activity 1.3. To activate negotiations with the RA Government to reconsider and reassess the MOA's commitments, additionally involve MES and respective communities, as well as private owners in collection and packaging of OP POPs from major storehouses in Armenia regions.</li> </ul> <p><i>Identified/added during the inception phase</i></p>

Originally, there were five risks presented in the ProDoc, and then following the inception workshop there were two additional risks added. However, a second set of risks was identified in the ProDoc under the section on “*Project Design Options and Risk Management*”. The second set of risks is presented below:

***Technical, financial, and direct environmental risks***

- i. The high concentration POPs pesticides and wastes (Category 1 material) could not be exported immediately due to political barriers in transit countries or insufficient resources.
- ii. The high concentration POPs contaminated soil (Category 2 materials) could not be economically treated to a sufficiently low concentration, or otherwise be exported for treatment.
- iii. Notwithstanding strong government co-financing commitments, circumstances could develop that would make sufficient direct cash funding not available to complete either/or Component 1 and 2, particularly considering environmental risks associated with inability

to complete on-site work such that there would be increased potential for POPs pesticide release.

### ***Environmental, social and related institutional risks***

- i. Inadequate environmental protection measures are not built into the detailed design and/or actually implemented for the various activities involved with the excavation, handling, packaging, transport, storage and treatment/destruction of OPs and POPs waste such that unacceptable releases to the environment and exposure of those directly involved and potentially a broader public occur.
- ii. Insufficient consideration of possible social impacts inclusive of inadequate public consultation and input results in significant unanticipated and/or unaddressed social impacts from project activities and the absence of public acceptance of project actions, which may negatively affect sustained political and institutional support for key project activities (i.e. clean-up activities at Nubarashen, development of the Kotayk site and ability to transport POPs wastes).

### **3.1.3. Lessons from other Relevant Projects Incorporated into the Project Design**

The POPs project builds on a number of environmental activities that have taken place in Armenia in relation to waste management. The following are key GEF-supported projects that have laid the groundwork for the POPs project.

- GEF Project No. 5038: Implementation of BAT and BEP for Reduction of U-POPs Releases from Open Burning Sources in Armenia<sup>12</sup>
- GEF Project No. 4961: Enabling Activities to Review and Update the National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants (POPs)<sup>13</sup>
- GEF Project No. 3571: Technical Assistance on the Environmentally Sound Management of PCBs and other POPs Waste in the Republic of Armenia<sup>14</sup>
- GEF Project 3212: Capacity Building on Obsolete Pesticides in EECCA Countries<sup>15</sup>

Other initiatives that have provided the POPs project with good foundations are the following:

- A project funded by the *Czech Trust Fund* titled “***Strengthening National Capacities on Comprehensive Chemicals (Persistent Organic Pollutants) Contaminated Site Assessment in Armenia***” created a wealth of knowledge through several activities that included an assessment of the Nubarashen site, training on risk assessments, development of operating procedures for waste storage facilities, etc. This project shared knowledge on

<sup>12</sup> [http://www.thegef.org/gef/project\\_detail?projID=5038](http://www.thegef.org/gef/project_detail?projID=5038)

<sup>13</sup> [http://www.thegef.org/gef/project\\_detail?projID=4961](http://www.thegef.org/gef/project_detail?projID=4961)

<sup>14</sup> [http://www.thegef.org/gef/project\\_detail?projID=3571](http://www.thegef.org/gef/project_detail?projID=3571)

<sup>15</sup> [http://www.thegef.org/gef/project\\_detail?projID=3212](http://www.thegef.org/gef/project_detail?projID=3212)

EU guidelines through training events that involved representatives from the government, private sector, NGOs and educational institutions.

- A project implemented by the OSCE Office in Yerevan and MES, with funding from the US Government, conducted a study of OPs and POPs in the Nubarashen burial site and their impact on the environment.
- Another study was carried out by the American University of Armenia (AUA), with funding support from the Blacksmith Institute. This research helped identify 25 sites in Armenia that were contaminated with heavy metals and chemical waste. For the most part, these sites were abandoned mines and industrial facilities that were no longer in use. The results of this study provided the MoE and MoH with information for developing databases to help get a better understanding of the work required for addressing contaminated sites.

Although it mentions them, the Project Document does not elaborate on the exact lessons that have been derived/learned from these projects and initiatives.

#### 3.1.4. Planned Stakeholder Participation

Several stakeholder consultations were held during the design phase – including an assessment of institutional stakeholders, as well as non-governmental stakeholders. Three workshops were held during the PPG phase – including a PPG inception workshop in December 2012, a technical workshop in March 2013 and a project document stakeholders’ workshop in January 2014. Additionally, the OSCE funded a stakeholder analysis that was conducted by *Armenian Women for Health and a Healthy Environment* as a means of collecting feedback on the project.

The following is a list of institutional stakeholders identified in the project document:

Stakeholder	Roles and Functions
<p><b>Ministry of Nature Protection:</b></p> <ul style="list-style-type: none"> <li>• Hazardous Policy and Waste Policy Division</li> <li>• National Environmental Inspectorate</li> <li>• Bio-Resource Management Agency</li> <li>• Waste and Atmosphere Emissions Management Agency</li> <li>• "Environmental Impact Monitoring Center" SNCO (ArmEcoMonitoring)</li> <li>• SNCO "Wastes Research Centre"</li> </ul>	<ol style="list-style-type: none"> <li>1. Responsible for general waste management with legislated staff positions</li> <li>2. Oversee the national waste management</li> <li>3. Implementation of international Chemicals and Waste Conventions: Stockholm Convention, Rotterdam Convention, Basel Convention</li> <li>4. Oversee Non-for-Profit supporting organizations such as the "Environmental Impact Monitoring Center" SNCO (ArmEcoMonitoring); and the Waste Research Centre</li> <li>5. Chair the Inter-Agency Committee on the Implementation of the SC</li> <li>6. Supervise jointly with the Ministry of Health the compliance with the requirements and conditions licenses for processing, decontamination, storage, transportation and placement of hazardous waste</li> </ol>

Stakeholder	Roles and Functions
<b>Ministry of Emergency Situations:</b> <ul style="list-style-type: none"> <li>• Armenian Rescue Service</li> </ul>	7. Provides preventive measures for the protection of the population 8. Establish rescue forces for rescue activities and professional aid to the population, keep these in a constant readiness, inclusive of state, NGO and institutional rescue units that in emergency situations they operate under centralized command and control within reasonable risk 9. Supervise operational direction and coordination of solid waste management facilities development policy and financing specifically for municipal waste management activities
<b>Ministry of Agriculture:</b> <ul style="list-style-type: none"> <li>• Division of Plant Production and Plant Protection</li> </ul>	10. Regulatory supervision of the storage, handling and storage safe use of agro-chemicals including pesticides. 11. Establishment of a working group for the coordination of the disposal of obsolete pesticides developing an action plan for the disposal of these substances including the accounting of obsolete pesticides within three 12. Nominal ownership and custody of state assets formally used for the storage of pesticides.
<b>Ministry of Health</b>	13. General waste management, including the approval of the sites for waste management facilities 14. Administration of rules and norms on the management of hazardous chemical waste and the requirements to storage and shipment of hazardous chemical waste
<b>Ministry of Transportation and Communications</b>	15. Permitting the shipment of hazardous cargo including hazardous waste by road
<b>Ministry of Foreign Affairs</b> <ul style="list-style-type: none"> <li>• International Organizations Department</li> </ul>	16. Coordinating responsibility for activities of diplomatically accredited international organizations operating in Armenia and bi-lateral relations related to foreign assistance
<b>Ministry of Economy<sup>16</sup></b>	17. Overall economic policy and planning authority with a specific interest in net economic development benefits from projects involving national and international financial commitments, and in the facilitation of public private partnerships in such developments
<b>Ministry of Finance</b>	18. National authority for approval of national budget commitments as would be associated with project co-financing
<b>State Revenue Committee under Ministry of Finance</b>	19. Responsibility for customs control as may relate to import of technology and export of waste
<b>Ministry of Defense</b>	20. Maintained observer status on the issue 21. Expert participation on the Inter-Agency Committee on the Implementation of the SC through Radiological, Chemical and Biological Defense Department 22. Potential provision of trained personnel for site operational work

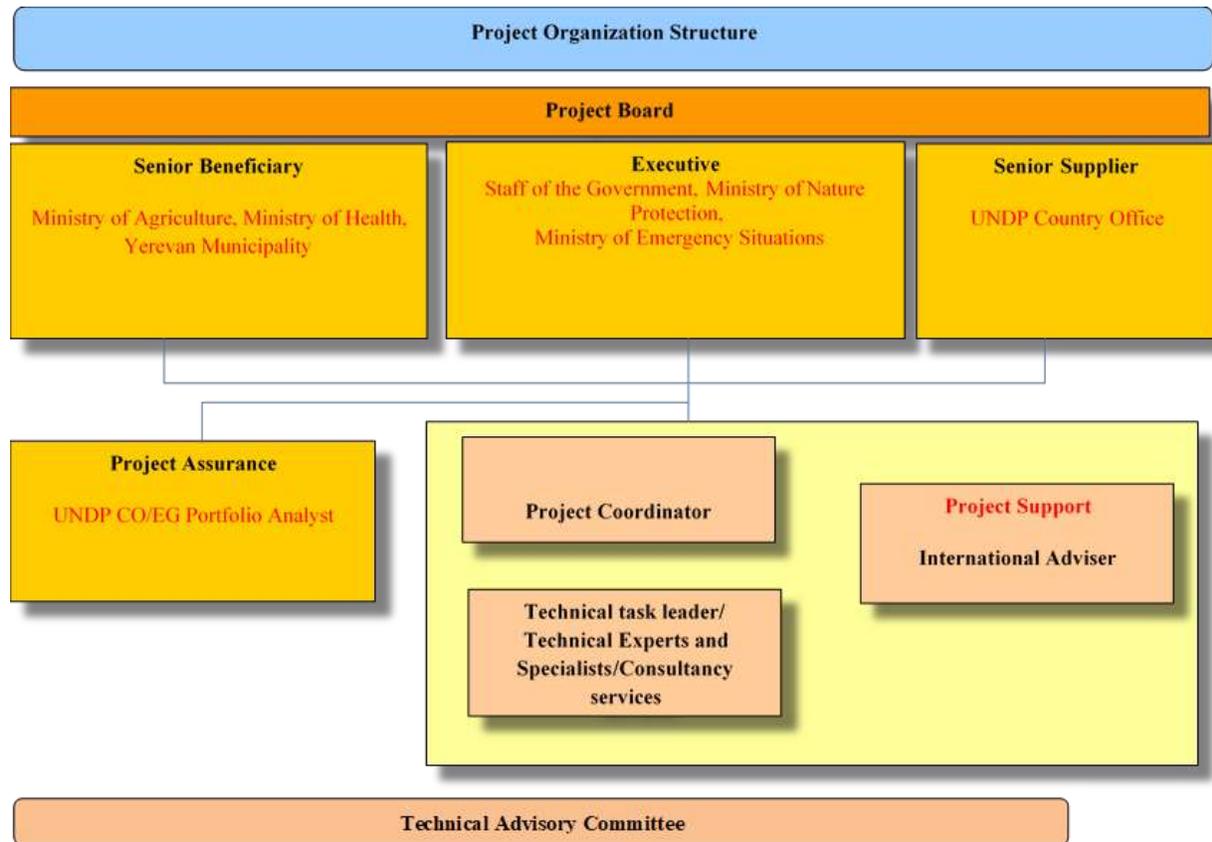
<sup>16</sup> Currently, MoA is merged with the Ministry of Economy.

Stakeholder	Roles and Functions
<b>National Academy of Science</b>	23. Through institutes and laboratories supplies technical expertise and participation on relevant interagency commissions. 24. NAS Centre for Ecological-Noosphere Studies has actively participated in addressing the issue
<b>Republic of Armenia Police</b>	25. Site security control functions
<b>Local Self-Governing Bodies:</b> <ul style="list-style-type: none"> <li>• Marz, Yerevan, and Municipal Governments</li> </ul>	26. General Waste Management, including issuance of permits in coordination with the authorized state body for waste disposal; compilation and maintaining of logs for waste generation, processing, disposal and utilization facilities; accounting of waste generation, decontamination, utilization and disposal and certification thereof, etc. 27. Issuing permissions at the Marz (and City of Yerevan) level for hazardous waste storage sites such as obsolete pesticide stockpile stores in their territory

Additionally, the project document identified the following non-governmental stakeholders:

- Communities affected by OPs and POPs waste – particularly those located near Nubarashen, as well as those located along the project’s waste disposal routes;
- Service providers working in the hazardous waste industry;
- CSOs and ENGOS;
- Educational institutions;
- International organizations;
- Armenian citizens.

The stakeholder analysis indicated there was low public awareness around the issues the project aimed to address, and consequently greater awareness raising activities would be required. Additionally, the feedback received from ENGOS caused the project team to conclude that it was important to strike a balance between creating public awareness on the one hand, and overreacting to risks in such a way that public awareness campaigns themselves become a barrier to environmental initiatives. The project was designed to be implemented through UNDP’s National Implementation Modality (NIM). UNDP was envisaged to act as the implementing agency and support implementation activities in accordance with UNDP rules and procedures and in line with the GEF requirements. The project’s organizational structure outlined in the Project Document is shown below.

**Figure 5: Project Organizational Structure**

The project's organizational structure was arranged in the following way:

**Project Management Board (PMB)** was co-chaired by the MoE and MES and served as the main decision-making body. The PMB provided guidance to the project coordinator through consensus-based decisions and was responsible for arbitrating any internal conflicts that arose within the project team. The PMB was also responsible for communications, performance and accountability. Decisions were made in accordance with UNDP standards, and on average there were 15 to 20 stakeholders present at meetings including nine permanent members from the following:

- Ministry of Environment
- Ministry of Emergency Situations
- Government / Deputy Prime Minister's Office
- Yerevan Municipality
- Ministry of Agriculture / Ministry of Economy
- Ministry of Foreign Affairs
- Ministry of Health
- Ministry of Finance
- UNDP

**Project Advisory Committee (PAC)** was formed in mid-2017 with 13 members to represent project stakeholders and provide advisory assistance to the project implementation team. Committee members have been consulted on a regular basis by the project coordinator on technical issues.

**Project Implementation Unit (PIU)** was managed by the PC to provide administrative and technical support for the day-to-day operations of the project. The PIU included:

- Project Coordinator (full-time)
- Finance and Administration Officer (full-time)
- Technical Task Leader (full-time)
- Civil Engineer Consultant (part-time)
- International Advisor (part-time)

**Project Coordinator (PC)** was hired by the UNDP to be responsible for project implementation, day-to-day management of the project and financial and administrative reporting. The PC has prepared annual work plans based on UNDP RBM guidelines and submitted them to the PMB for approval.

**Project Implementing Partners** were the MoE and MES (who represented national ownership of the project). The MoE had legal and regulatory authority over HW and was responsible for the licensing and approval processes required to complete the work at the POPs/OPs sites. The MES was responsible for public emergencies and risks that may occur in the country, including taking preventative actions where possible. The implementing partners were the government's focal point of the project and were responsible for adherence to the Stockholm and Basel conventions.

**UNDP Country Office** was responsible for monitoring project implementation, reviewing progress, project outputs and ensuring proper use of funds. While working in close cooperation with the MoE and MES, the Country Office was expected to provide support services to the project - including for procurement, contracting of services, human resources management and financial services - in accordance with UNDP *Rules and Procedures* and *Results-Based Management (RBM)* guidelines.

### **3.1.5. Linkages between Project and Other Interventions within the Sector**

In recent years, UNDP has carried out a number of GEF-funded projects focused on the reduction/elimination of POPs. The projects were designed as a means of helping countries with their commitments to the *Stockholm Convention on Persistent Organic Pollutants*<sup>17</sup>. One set of projects focused on reducing unintentional POPs in the healthcare sector – focal countries included Ghana, Madagascar, Tanzania and Zambia. Additional projects were focused on the integration of POPs reduction/elimination procedures into national planning, healthcare waste management, the

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<sup>17</sup> <https://sdg.iisd.org/news/undp-reports-on-human-impact-of-stockholm-convention-implementation-projects/>

management of electronic equipment and associated wastes (in China), as well as on reducing polybrominated diphenyl-ethers and unintentional POPs (in Indonesia). Other projects include the development of national capacity for the disposal of PCBs (in Colombia and Ecuador). Similar projects have been implemented by UNDP in Belarus, Kazakhstan, Georgia, etc.

The current POPs project was directly linked to an OP disposal initiative that was pursued by the Commonwealth of Independent States (CIS), and this was formally integrated into project document under outcome 1.3. In addition to Nubarashen, there were another six OP sites to be addressed by the MoA with financial support from the FAO. It was expected that once these materials were re-packaged, they would be transported for disposal along with the waste from Nubarashen. In May 2018, the Minister of Agriculture informed the project team that the funding had been cancelled (and by extension the initiative as well). At this point, the project team agreed to use co-financing to address the additional OP sites, and staffing supports would be provided by the MES, related communities and private owners of storehouses.

The Project Document identified some of the UNDP's comparative advantages in the area of sustainable development, the most important being its long institutional experience of implementing environmental projects ranging from climate change, energy efficiency and management of protected areas. This vast experience enables the UNDP to build on previous achievements and apply lessons learned to new challenges. Combined with a good profile/image, good financial system control, procurement systems, etc., the close links and trusted partnership with governmental and non-governmental partners allow the UNDP to ensure continuity in circumstances of frequent institutional change. Box 4 summarizes the additional advantages of the UNDP in the implementation of projects that mainstream environmental concerns into public policy.

#### **Box 5: Key Elements of UNDP's Comparative Advantage**

- UNDP boasts close partnerships with the government, civil society, private sector, universities, etc. National stakeholders value UNDP for its neutrality and impartiality. The trust and respect commanded by UNDP and the access it has to government officials, as well as civil society, place UNDP in a good position to play a strong advocacy role on the one hand, and, on the other, to undertake pioneering initiatives.
- UNDP has extensive experience supporting capacity development initiatives of national governments and other stakeholders through advocacy, policy advisory, and technical assistance services. Implementation of this project benefited from the experience and technical support UNDP provided as a specialist in capacity development.
- Its global experience and lessons learned in the same sectors in many countries around the world and in the region in particular, provide UNDP with a distinct advantage. When needed, UNDP is able to mobilize support from a range of UNDP and UN structures. Its access to a vast global network of experts allows it to tap into comparative experiences and technical support from other regions.

- UNDP’s regional office, in particular, provides technical support to numerous projects across a number of areas.
- UNDP has extensive experience and capabilities related to regional cooperation. A significant part of UNDP’s work is regional (multi-country) in nature. It has great capabilities for promoting south-south and triangular cooperation and can mobilize technical expertise to develop a suitable regional knowledge platform.
- UNDP’s strong record on environmental projects allows it to capitalize on valuable GEF expertise in these sectors. UNDP has one of the largest portfolios of GEF-funded projects in the world. The experience and capacity that this implies is a significant comparative advantage in developing and implementing such types of projects.
- Another one of UNDP’s strengths is its broad-based development approach focused on strengthening national capacities for sustainable development through the integration and mainstreaming of various development aspects. SDGs are used by UNDP as an integrating platform for all development efforts in various countries and as an instrumental for engaging with a wide spectrum of stakeholders, which has proven to be a critical factor of success in many instances.

The project was designed to have a number of features that would serve as examples and provide direct implementation experience in a number of areas that would support replication, both in Armenia and elsewhere. These included:

- Applying an approach to POPs stockpiles, waste and contaminated site elimination based on prioritizing the cost effectiveness, risk mitigation, and global environmental benefit as a primary criterion in incrementally capturing, securing and ultimately eliminating the POPs waste and associated risk.
- Ensuring an appropriate mix of developing national capability and utilizing established, international capability to obtain the most cost-effective, sustainable and achievable results.
- Exploiting and building on national capability and capacity to provide a sustainable expertise core and physical capability in critical areas such as risk assessment, HW management practices, contaminated site assessment/monitoring, and development of optimized analytical support capability.
- Integrating of proactive public consultation and awareness activities into the planning and implementation of sensitive HW and contaminated sites projects inclusive of a prominent role taken by civil society organizations.

The demonstrability and replicability of this project is somehow limited given its failure to achieve the removal and elimination of the waste. However, as will be seen further, there are many contributions this project has provided to the replication of a similar project.

### **3.1.6. Gender responsiveness of project design**

Although the nature of the project is very specific and technical, the Project Document for the most part is gender-blind. There is no mention of the term “gender” in the Project Document. The Project Document could have focused on the impact of the expected project results on women and also on the engagement of women in project activities.

### **3.1.7. Social and Environmental Safeguards**

The general environmental, social and related institutional risks identified in the project design, particularly through the project’s safeguards review process under UNDP’s ESSD procedures, were:

- Inadequate environmental protection measures are not built into the detailed design and/or actually implemented for the various activities involved with the excavation, handling, packaging, transport, storage and treatment/destruction of OPs and POPs waste such that unacceptable releases to the environment and exposure of those directly involved and potentially a broader public occur.
- In sufficient consideration of possible social impacts inclusive of inadequate public consultation and input results in significant unanticipated and/or unaddressed social impacts from project activities and the absence of public acceptance of project actions, which may negatively affect sustained political and institutional support for key project activities (i.e. clean-up activities at Nubarashen, development of the Kotayk site and ability to transport POPs wastes.
- Institutional commitment to the project’s intentions and objectives related to environmental standards and social considerations is not sustained.

The above risks were to be mitigated by a number of features built into the project design as described above and highlighted as follows:

- Management of project related environmental risks: As is inherently the case with any activity that involves the management of a hazardous waste (or the large volumes of dangerous goods of any kind that are handled daily) there are inherent risks of release with consequential environmental contamination and human exposure with potential negative health implications. This can occur through poor organization and planning, inadequate/inexperienced design of activities, failure to adhere to set environmental performance standards, poorly executed implementation practice, accidents and inadequate emergency response, lack of proponent/IA/regulatory oversight, and inadequate of resources and expertise. The approach built into the design of this project is based on several principles that are specifically operationalized with the designation of directed activities and resource allocations as well as the linkage of these through this project document as agreed mandatory obligations of both UNDP and the government. These principles and operationalized activities include:

- International technical support, oversight, and adoption of international standards: The project is designed with development objectives associated with creating and strengthening national capacity respecting the management of HW and contaminated sites which involves a strategy of providing for international expertise to support the key components jointly with national expertise and also to have international oversight applied through the IA. The overall mandate in both cases will include the adoption and transfer of best international standards and practice in these fields as referenced above including as mandatory those associated with the treatment and destruction of POPs waste.
- Internationally benchmarked EIA requirement: The project generally and specifically the two primary site-specific aspects (Nubarashen and Kotayk sites) will be subject to the national environmental assessment and expertise approvals process but with the condition that this be benchmarked against a reasonable standard of international practice. To ensure this, the activity in both cases will be the responsibility of a qualified internationally led consultant team undertaking the detailed design and implementation supervision inclusive of dedicated EIA professionals, and by the inclusion on UNDP's side of international expert oversight on technical and environmental matters as noted above. A specific product of the EIA process will be an Environmental Management Plan (EMP) to be approved by UNDP that will serve as a monitoring baseline for implementation work for purposes of M&V activities.
- Provision for extensive operational training to international standards: Both key components include dedicated operational training activities supported by GEF for national participants. This training will utilize one or more recognized international guidance documents referenced above and include familiarization with the EMP, application site specific EHS procedures, technical training on key operational activities and adherence to mandatory containment and release mitigation, emergency response procedures, and undertaking worker health monitoring.
- Inclusion of environmental performance verification as part of the M&E process: The overall project M&V activity described in Section IX below will include an evaluation of adherence to internationally benchmarked environmental practice and performance consistent with UNDP's safeguards policy.
- Management of project related social impact risks: Generally, the social impact risks associate with the project's implementation as proposed are considered low with the overall impacts being substantially positive specifically through the removal of POPs and OP stockpile and contamination of locations have public exposure through itinerant agricultural, recreational and general uncontrolled public access. The latter is particularly true for the Nubarashen site where water resources utilized nearby recreational and agricultural communities are threatened by the burial site if left unaddressed and broadens with time if unaddressed. The inherent long-term risks associated with the specific

chemicals involved are also generally associated with specific impacts on more vulnerable populations (young, female, and lower income). While arguably substantially less critical, the impact of the distributed OP storehouse stockpiles and historical POPs contamination has similar implications, noting that this is primarily being addressed by an EU/FAO initiative. In the case of the Kotayk site, its relatively remote location and the inherent security provided by its administration by a national paramilitary organization (MTAES) minimize the direct social impact that this development would have. Having said the above, the one identifiable possible social impact involved relates to the final land use plan associated with the Nubarashen site which involves incorporation of the overall area into the adjacent ecological preserve and creation of immediate public access exclusion are of 100 m distance around the contained/remediated site. This would impact the access of the area for occasional grazing and mushroom harvesting apparently practiced periodical by the local population.

- The main mitigation practice related to social impacts generally is the support of an extensive ongoing public consultation supported by the GEF at all critical site areas and more generally with the general population, particularly along transportation routes. Historically this has been extensive in relation to the Nubarashen site and OP storehouses, largely through the efforts of the NGO AWHHE, and this has carried on through the PPG specific to the proposed activities under the project. In general, public response is positive in that they are both aware of the risk that these sites pose and reflect public demand to ensure they are addressed. The project design continues and expands this process through project implementation at all locations and will utilize the substantial civil society capacity in Armenia as part of this process.
- Formalizing environmental and social impact management as a legal obligation: The final aspect of the environmental and social risk management strategy is to ensure the sustained commitment of the IA and government to the measures included in the project design, specifically international benchmarking of things like EIA and environmental performance standards and effective public consultation as legal commitments assumed by the parties through being signatories to this Project Document.

## 3.2. Project Implementation

### 3.2.1. Adaptive Management

As will be seen further in the results section of this report, the ultimate goal of removing and securing category 1 and 2 waste from Nubarashen, subsequent elimination of category 1 Ops/POPs waste and containment of category 3 waste was not achieved in the course of this project. The project's main contribution was on the improvement of the government's institutional and regulatory capacity in this area.

The project experienced a number of serious challenges that had a direct bearing on project activities and results. Despite the challenging circumstances that the project faced during its implementation process and which will be described further in this section, the project team and stakeholders took a very flexible approach and tried a variety of options, approaches and alternatives to achieve the set objectives. The project's response to the difficulties encountered during the years of implementation were highly imaginative and adaptive. The following is a summary of the main challenges and adaptive options pursued by the project.

1. ***Transportation of Category 1 Waste Abroad*** – The initial focus of the project was on the transportation of Category 1 waste for incineration in a facility in Western Europe which implies the transit of the material through the territory of Georgia (either by road or railway). The project launched a tender for a private company that would provide the best solution, including the safe packaging and storage of waste in the country and incineration abroad. Significant efforts were made by project stakeholders in engaging Georgia to obtain a permission for the transit of waste through its territory. Project stakeholders were aware this would present challenges given that Georgia had a law that banned the transit of hazardous waste. However, they were hopeful that Georgia would accommodate the request, given that they had completed a similar project on the removal of POPs in 2013.<sup>18</sup> Additionally, Georgia is a party to the Basel Convention, which regulates the secure export, transit and import of hazardous waste between countries. Armenia's Ministry of Foreign Affairs led the process of discussions with Georgia trying to get an exemption for the transit of waste through its territory. Georgia considered the request carefully, however concluded they would not be able to provide the transportation permits based on current legislation, as well concerns that environmental groups would oppose the decision and present it in an unfavorable way to the public. Another factor that complicated Georgia's decision-making were frequent changes in Georgia's government (refers to the years 2017-2019) which disrupted the ongoing dialogue. As a result of these factors, the project's protracted efforts in this direction failed.

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<sup>18</sup> Georgia has successfully transporting 230 t of POPs/OPs waste to western Europe in 2013.

2. ***Possibility for Incineration in Iran and Turkey*** – In parallel to efforts to negotiate the waste transit through Georgia, the project started to assess the possibility of incinerating the waste material in neighboring Iran, where a technically suitable incineration plant has been operational since 2015. After a number of contacts and discussions with Iran, it turned out that this option was not feasible due to several factors, including international sanctions, Iranian national regulations on the import and disposal of hazardous chemical waste, insecure route to the border due to the escalation of the conflict over Nagorno-Karabakh and also the difficult terrain,<sup>19</sup> and uncertainty about the environmental standards of incineration facilities.<sup>20</sup> The project also considered the possibility of incineration in the Isaydac facility in Turkey, but this option did not succeed because of the absence of diplomatic relations and closed border with Turkey.
  
3. ***Importation of Incineration Technology in Armenia*** - Given the complications with transporting the waste through Georgia, project stakeholders considered the option of importing and installing low-to-middle incineration capacity technology in Armenia. There were different opinions among stakeholders about this option. Some maintained that developing this technology in the country would be beneficial and could be used on a continued basis. Others, however, maintained that this option was too costly and not financially sound. Another limitation of this option was that the project document indicated that GEF funding would only be available for Category 1 waste if it would be disposed in an internationally-certified facility. The project team reviewed the option of using co-financing for the purchase of technology and applying the GEF funding elsewhere to support the project. However, the installation of incineration technology and its commissioning as a full-disposal plant with auxiliary infrastructure and services was quite expensive – estimated at over 6 million EUR for mid-range capacities. Furthermore, the future use of this technology within Armenia would be quite limited, which did not justify the cost. It should also be noted that even if the necessary financing would have been available, the project lifetime would not have been sufficient to have the unit installed and ready for project purposes. The installation of such technology in the country would have required a separate Environmental Impact Assessment (more than 8 months), testing, operation license, environmental permits, etc.
  
4. ***Incineration in Existing Facility*** - The project also considered the feasibility of the incineration of the material in an existing facility in Armenia. Two cement factories were

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<sup>19</sup> Some project stakeholders were concerned about the risk of transporting the waste through the mountainous roads in the south of the country, noting that if any accidents were to occur in this context the impact would be much greater than leaving the waste at Nubarashen.

<sup>20</sup> One of the requirements for the use of GEF funding in this project was that incineration took place in an internationally-certified facility. Although the incineration facility in Iran was manufactured by a French company and certified to be compliant with the EC76/2000 directive, the managing company was not able to confirm whether the operation of the plant was carried out in line with internationally certified standards.

considered as potential options. For one of these cement factories (Hrazdan Cement Plant<sup>21</sup>), the project contracted the Swedish company SWECO to conduct a pre-feasibility assessment of the plant to establish whether the plant could be retrofitted and serve for the hazardous chemical waste disposal. The assessment provided recommendations on necessary new structures for the treatment of waste materials before supply, estimated costs and benefits and concluded with a negative recommendation based on required high investments and high risks related to the adapted technological process.

5. ***Temporary Safeguarding of Waste*** - The project also attempted the option of excavating the waste from Nubarashen, repackaging and storing it in another location (a storage site near Hrazdan town). The site was selected from the design stage of the project for rehabilitation as a temporary storage site. This option was abandoned after the idea generated strong opposition by the community and environmental groups. The Government identified another site for this purpose – in the area of Nairit Chemical Plant located in Yerevan city. A governmental decree was issued for the use of given the object for the purposes of the project. However, even this option caused significant opposition from both the plant management and the Yerevan Municipality. Given this situation, a third option was identified by project team and agreed with the Project Board - the installation of a light metallic storage structure that could be placed near the burial site in Nubarashen temporarily and that could be used for other similar purposes in the future. The storage was designed as an extra-task under the larger contract with the Czech company Dekonta at no extra-cost for the project. Going through this process of identifying feasible solutions for the temporary storage of repackaged waste before removal to the disposal destination, the project lost a lot of time as each option required an assessment of risks, development of health/safety plans and works plan, public consultations, etc.
  
6. ***Treatment/Safeguarding of Category 2 Waste (contaminated soil)*** - Throughout the duration of the project, stakeholders considered a variety of options for addressing the Category 2 waste. In the early stages of the project, stakeholders made the decision to invite bidding companies to present a proposal (through an expression of interest) for a suitable technology that would be able to address Category 2 soil decontamination. come up with an optimal proposal for the consideration of the project. This was a very flexible and adaptive way to deal with the uncertainty of a technology that had not been tested before in Armenia. Representatives of six companies visited Armenia in late 2017 and delivered presentations on the technology they offered to apply for the Category 2 soil decontamination. For each of these companies the project organized separate workshops. In the discussions, the companies suggested to not separate bidding for the soil treatment works from the bidding for Category 1 waste excavation and packaging, because all site clean-up activities were interlinked and would take place within the same area. The project

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<sup>21</sup> Working with wet row material input.

agreed with this suggestion and ultimately launched an integrated tender that captured all works related to on-site activities and the Category 1 waste disposal abroad. Bidders were asked to propose two options for soil treatment on the basis of a comprehensive analysis. One baseline option included the decontamination of soil, whereas the alternative option included the possibility of safeguarding and backfilling the waste without decontaminating it.<sup>22</sup> In many ways, soil cleaning technologies turned out to be more complicated than incineration technologies.<sup>23</sup> Given the complexity of the task, the project team was concerned that procurement, importation, installation, benchmarking, full-scale testing and commissioning of this technology would take longer than what originally thought. Consequently, the project team considered the back-up option of safeguarding/repackaging the waste without decontaminating it. This approach had been identified in the project document as a possible risk mitigation measure. Some project stakeholders were in favour of using co-financing to invest in soil decontamination technologies that could be used for other initiatives once the project ended. There were some complications with this approach however – including maintenance costs, as well as concerns that the technology may have limited applied value beyond the scope of POPs waste. The PMB agreed that the decontamination needed to be conducted on-site near Nubarashen, so as not to transport the soil and avoid the risk of spreading the waste in a new area. However, the installation and operation of decontamination technology in this area was going to be challenging given that the Nubarashen landfill is located on a slope in an area with poor access and limited space for infrastructure and technological processes, as well as around 100 m away from the State Reserve “Erebuni” of ancient wild grains (which has a 100 m sanitary zone). Consequently, the installation of the technology would have required a separate environmental impact assessment, as well as separate procedures for testing, licensing and permits. The tender for the integral assignment was cancelled in June 2020 with no contract awarded because the value for money was not assured (see box above for a brief description of the challenges and outcome of the tender procedure).

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<sup>22</sup> The alternative option of non-decontamination but safeguarding and backfilling of Category 2 soil was also considered and included in the same tender assignment, to allow a comparative decision-making within the same market conditions/proposal. Soil cleaning technologies are not as universal as high-temperature waste incineration technologies. Some soil decontamination technologies exist at the lab level, some are focused on cleaning oil waste, the composition of the soil is a matter, etc., and these factors substantively contribute to the cost. As the project has already experienced delays, stakeholders were wary that the import, installation/commissioning of the technology during the project life-time could be questionable. Therefore, the project included in the tender assignment a second alternative approach for soil treatment, namely the safeguarding/packaging and containment back into the empty landfill (after Category 1 excavation), without performing decontamination. Another reason for including the alternative option was the prospect that the cost of decontamination technology could be unreasonably high. The market response/tender proved this assumption.

<sup>23</sup> For example, some of the technologies work better in a lab than outdoors, depending on the level of soil composition/moisture, climate type, soil density, etc.

### Box 6: Inadequate Market Response

There was an inadequate response from the private sector to address both categories of waste. Initially, eight companies applied for the contract. However, only five were qualified, of which three did not submit proposals. Moreover, there was only one strong (technically eligible) proposal among the two companies that at the end of the process submitted bids, and the project team concluded that the bidding price was too high based on an analysis of similar works/projects. Based on the tenders offered, the average cost of disposing the Category 1 waste was \$6,837 per ton. This was inclusive of all costs – i.e., site set up, soil displacements and overhead costs. In comparison, the all-inclusive costs (including the technology importation to Armenia, installation, testing, etc.) for Category 2 waste were \$205,974 per ton for the decontamination option, and \$77,405 per ton for the safeguarding and backfilling option. Given that the costs associated with the Category 2 waste were so much higher, the project team pursued both of the above options with the intent of awarding the work for the Category 1 waste to the company able to do the Category 2 waste at the best price. In June 2020, the tender was cancelled given that the price for the work was too high, and project co-financing could not be made available within the project's timelines.

The project also experienced a number of external challenges related to the broader country/regional context over which project stakeholders had no influence. The following are the main external challenges that had a significant impact on the project.

- ***Political Volatility*** - From April to May 2018, Armenia experienced a series of protests led by members of parliament in response to governance issues in the country. Known as the “Velvet Revolution”, these protests led to significant changes to governance structures, which eventually had a significant delaying impact on the project. Throughout the duration of the project there were 22 changes to PMB membership – including five changes prior to the Velvet Revolution and 17 afterwards. When there was a change in membership, the Project Coordinator met with new members to introduce them to project objectives, initiatives, issues, proposed solutions and the general status of the project. The numerous changes to the PMB resulted in additional time needed to brief PMB members on the project, which as a result led to a decreased momentum in project activities. As a means of adjusting to these frequent changes of PMB membership, the Project Coordinator regularly sent email updates to the PMB and PAC members and staff from involved Ministries. In general, PMB members were more engaged in aspects of the project that were directly relevant to their area of expertise and competencies than other areas. Also, during the conduct of this evaluation, Armenia underwent snap parliamentary elections, which also had a distractive effect for the project as most of the government apparatus was focused on that process. The new cabinet had not been formed by the time of this evaluation, so it is not clear what the effects of potential changes in the government will be for the project.
- ***Escalation of Conflict Over Nagorno-Karabakh*** – The lasting conflict with Azerbaijan over Nagorno-Karabakh escalated to military action in 2020, causing a number of challenges for the project. First of all, the attention of the leadership and policy makers turned to the conflict,

which detracted from the importance that had been given to this issue before. Furthermore, financial resources that could have been available to co-finance for the site clean-up works and removal and disposal of the waste were shifted towards priorities related to the war and post-war recovery. Though initiated, but then the inability of the Government of Armenia to plan the necessary co-financing in the year 2021 state budget became a significant constraint for this project. Thirdly, the post-war geopolitical tension created insecurity about the transportation of the material to Iran, which was considered as one option by the project stakeholders.

- **Global COVID-19 Pandemic** - The COVID-19 crisis hit Armenia in the beginning of 2020 and, as in all other sectors, it had a significant impact on the project as well. The impact took place at different levels. Social distancing made communications with stakeholders more difficult. Further, the attention of authorities focused on the fight against the pandemic, leading to a decrease in the momentum of project activities. Further, available public financing was quickly shifted to the health sector, which created a challenge for the co-financing required by the project for the clean-up operations. These challenges are described further in the section on the impact of COVID-19 further in this chapter.

As can be seen from the description above, while the project team and stakeholders tried to remain consistent to the original design of the project as much as possible, they were also highly flexible and adaptive, exploring different options and alternatives based on decisions discussed within the Project Management Board. The project team exhausted all possible options in its consideration of alternatives. For each options serious efforts were made, including serious assessments such as the study of the incineration potential of one of the cement factories. Although in the end all venues pursued by the project failed to produce a tangible and feasible result, the project managed through these efforts to develop a body of knowledge that will serve the country in the future in dealing with this challenge.

### **3.2.2. Actual Stakeholder Participation and Partnership Arrangements**

The project facilitated a number of partnerships directly related to the issue of hazardous waste managements. First of all, the project enabled Armenian authorities to establish contacts and initiate discussions with a number of relevant partners – this included the Georgian authorities on the issue of transit and Iranian and Turkish counterparts on the issue of incineration. Furthermore, a number of contacts were established with private sector operators through the training activities and tendering procedures organized in the framework of the project. The project was also able to capitalize on additional sources of funding for project activities – most prominently, the Czech Trust Fund and the Russian Trust Fund. Some key partnerships that materialized under this project are listed below:

1. With financing from the Czech Trust Fund, training was provided for the BAT-based design and renovation of safe storage site.

2. Swedish company SWECO was contracted to conduct a pre-feasibility assessment of Hrazdan Cement plant, to answer the MoE query whether the plant could be retrofitted and serve for the disposal of hazardous chemical waste.
3. With financial support by the Russian Trust Fund, representatives of a Russian company visited Armenia and introduced their manufactured mobile incinerator unit (under testing phase).
4. Representatives of two French companies manufacturing incinerator plants visited Armenia (at their own cost), conducted introductory workshops and provided financial proposals for procurement, shipment, installation, commissioning of on-the shelf incinerator units.
5. The Project Coordinator and Technical Team Leader visited the Iranian incinerator plant near Isfahan. Throughout the project course, connections were maintained with the staff of the plant. In 2019, the owner and CEO visited Armenia, but plans to visit again were disrupted by COVID-19.
6. With support from the Russian Trust Fund, two Russian experts assessed the chemical waste legacy in two former chemical plants.

A potential partnership with an EU-funded FAO project did not materialize. This opportunity emerged during the project's PPG phase. FAO announced that it would launch a project entitled *“Improving Capacities to Eliminate and Prevent Recurrence of Obsolete Pesticides as a model for tackling Unused Hazardous Chemicals in the Former Soviet Union”*. The project was initially informed that FAO and MoA were in the process of finalizing an agreement involving the allocation of 500,000 EUR from this initiative to Armenia for a range of activities, including detailed inventories and site assessment along with site safeguarding in the form of analysis, packaging, general clean-up and disposal of OP storehouses. However, this was then reduced when it was learnt from MoA that FAO was actually only allocating for Armenia 138,000 EUR, apparently because of preferential allocation of funds to other countries. The situation changed again when FAO informed project stakeholders that they were increasing the amount to equivalent of US\$ 770,000 and intended to handle all required management activities related to these lower-priority OP sites. The project agreed with FAO that the FAO project would limit its activities to low-priority OP storehouses as described in Outcome 1.3 below. This involved the provision of intermediate storage for relatively small volumes of packaged OP pending export and containment of low concentration site clean-up residuals as part of the Nubarashen site works. MoE and MoA, under the auspices of the Inter-Agency Steering Committee, agreed that the FAO project would handle the assessment of OP storehouse sites and execute the secure packaging of OP stockpiles and clean-up activities. Upon completion, the POPs project was expected to accept the relatively small quantities involved for secure storage and ultimate disposal using GEF and national resources. In May 2018, the Minister of Agriculture announced that the FAO project was cancelled. At that time, the project decided to use co-financing to address the waste at OP sites. MoA and MES announced they would provide training (security guidance), whereas the private owners of storehouses committed staff.

### 3.2.3. Project Finance and Co-Finance

This section provides an overview of the project's financing and expenditures, based on information provided by the project team. The table below shows planned expenditures from the GEF budget. The vast majority of GEF grant funding for the project was planned to occur under component 2 where the waste disposal work was scheduled to take place. Component 5 included project management costs is 5%.

**Table 6: Budgeted Expenditures by Fiscal Year**

Component Area	2015	2016	2017	2018	2019	Total	In %
Component 1.	233,325	396,100	98,100	13,100	4,375	745,000	16%
Component 2.	0	1,800,000	1,590,000	0	0	3,390,000	72%
Component 3.	41,100	104,350	74,350	15,540	4,750	240,000	5%
Component 4.	5,250	10,000	41,000	10,000	33,750	100,000	2%
Component 5.	41,975	56,250	56,250	56,250	14,275	225,000	5%
<b>Total</b>	<b>321,650</b>	<b>2,366,700</b>	<b>1,859,700</b>	<b>94,890</b>	<b>57,150</b>	<b>4,700,000</b>	<b>100%</b>

Actual expenditure was not aligned with planned expenditures due to the fact that the main excavation and construction activities under Component 1 and waste disposal under Component 1 did not occur. By the end of the project, a total of 972,513 USD (or 20 %) will be spent out of a total budget of 4,700,000 USD.

**Table 7: Actual Expenditures by Fiscal Year (until the evaluation)**

Component Area	2015	2016	2017	2018	2019	2020	2021	Total	In %
Comp 1.	9,649	49,733	238,751	196,851	16,819	45,032	11,878	537,796	60%
Comp 2.	0	0	0	0	0	0	0	0	0%
Comp 3.	725	12,626	26,219	33,360	21,995	12,293	2,879	110,099	12%
Comp 4.	1,512	6,278	5,962	27,317	8,760	0		49,829	5%
Comp 5.	10,309	34,204	32,385	35,964	34,012	32,506	20,157	199,536	22%
<b>Total</b>	<b>,22,194</b>	<b>102,842</b>	<b>303,317</b>	<b>293,493</b>	<b>81,585</b>	<b>58,794</b>	<b>34,914</b>	<b>897,260</b>	<b>100%</b>

Actual expenditures for Component 5 were aligned with planned expenditures (89% of funds spent), followed by 72% of funds for Component 1 and 50% of funds for Component 4. In contrast, only 46% of funds were spent for Component 3, and 0% of funds were spent for Component 2. For a more extensive overview of budget execution rates please see the table below.

**Table 8: Budget Execution Rates by Fiscal Year**

Year 2015				
No.	Component Area	Spent	Budget (Pro Doc)	Execution Rate
1	Component 1.	9,649	233,325	4%
2	Component 2.	0	0	0%
3	Component 3.	725	41,100	2%
4	Component 4.	1,512	5,250	29%

5	Component 5.	10,309	41,975	25%
6	<b>Total</b>	<b>22,194</b>	<b>321,650</b>	<b>7%</b>
<b>Year 2016</b>				
<b>No.</b>	<b>Component Area</b>	<b>Spent</b>	<b>Budget (Pro Doc)</b>	<b>Execution Rate</b>
1	Component 1.	49,733	396,100	13%
2	Component 2.	0	1,800,000	0%
3	Component 3.	12,626	104,350	12%
4	Component 4.	6,278	10,000	63%
5	Component 5.	34,204	56,250	61%
6	<b>Total</b>	<b>102,842</b>	<b>2,366,700</b>	<b>4%</b>
<b>Year 2017</b>				
<b>No.</b>	<b>Component Area</b>	<b>Spent</b>	<b>Budget (Pro Doc)</b>	<b>Execution Rate</b>
1	Component 1.	238,751	98,100	243%
2	Component 2.	0	1,590,000	0%
3	Component 3.	26,219	74,350	35%
4	Component 4.	5,962	41,000	15%
5	Component 5.	32,385	56,250	58%
6	<b>Total</b>	<b>303,317</b>	<b>1,859,700</b>	<b>16%</b>
<b>Year 2018</b>				
<b>No.</b>	<b>Component Area</b>	<b>Spent</b>	<b>Budget (Pro Doc)</b>	<b>Execution Rate</b>
1	Component 1.	196,851	13,100	1503%
2	Component 2.	0	0	0%
3	Component 3.	33,360	15,540	215%
4	Component 4.	27,317	10,000	273%
5	Component 5.	35,964	56,250	64%
6	<b>Total</b>	<b>293,493</b>	<b>94,890</b>	<b>310%</b>
<b>Year 2019</b>				
<b>No.</b>	<b>Component Area</b>	<b>Spent</b>	<b>Budget (Pro Doc)</b>	<b>Execution Rate</b>
1	Component 1.	16,819	4,375	384%
2	Component 2.	0	0	0%
3	Component 3.	21,995	4,750	463%
4	Component 4.	8,760	33,750	26%
5	Component 5.	34,012	14,275	238%
6	<b>Total</b>	<b>81,585</b>	<b>57,150</b>	<b>143%</b>
<b>Year 2020</b>				
<b>No.</b>	<b>Component Area</b>	<b>Spent</b>	<b>n/a</b>	
1	Component 1.	<b>45,032.23</b>	<b>n/a</b>	
2	Component 2.	<b>0</b>	<b>n/a</b>	
3	Component 3.	<b>12,293.21</b>	<b>n/a</b>	
4	Component 4.	<b>0</b>	<b>n/a</b>	
5	Component 5.	32,506	n/a	
	<b>Total</b>	<b>58,794</b>		
<b>Year 2021 (by 30 June)</b>				
<b>No.</b>	<b>Component Area</b>	<b>Spent</b>		
1	Component 1.	<b>11,878</b>	<b>n/a</b>	
2	Component 2.	<b>0</b>	<b>n/a</b>	
3	Component 3.	<b>2,879</b>	<b>n/a</b>	
4	Component 4.	<b>0</b>	<b>n/a</b>	

5	Component 5.	20,157	n/a	
	<b>Total</b>	<b>34,914</b>		

The project team and UNDP established adequate financial controls to allow for the timely flow of funds and for the payment of project deliverables. The project demonstrated due diligence in the management of funds, including periodic audits.

### Co-financing

Total financing for the project was planned at 23,984,384 USD (including 4,700,000 USD from the GEF grant). In total, co-financing was expected to be 19,284,384 USD, of which about 16 m USD in kind and cash was expected from the Government of Armenia. Other partners, including UNDP, private sector, OSCE and Czech-UNDP Trust Fund, were expected to provide co-financing. The table below provides a breakdown of contributions.

**Table 9: Planned Expenditures by Funding Source**

Source	Type	Amount (USD)
Government of Armenia	In-kind	8,105,000
Government of Armenia	Cash	7,915,000
UNDP	Cash	200,000
Czech-UNDP Trust Fund	Cash	60,000
Eco Project (Private sector)	Investment	2,640,000
OSCE (Other Multi-lateral)	In-kind	350,000
OSCE (Other Multi-lateral)	Cash	14,384
<b>Co-Financing Subtotal</b>		<b>19,284,384</b>
GEF	Cash	4,700,000
<b>Total</b>		<b>23,984,384</b>

Cash co-financing was envisaged to finance or co-finance specific project activities, especially in the clean-up phase - the central part of the project. It included the co-financing of 100% for activities such as packaging, removal, destruction and clean-up of obsolete pesticide stockpiles from community storehouses (Outcome 1.3). Under Outcome 2.1, the disposing of Category 1 hazardous material was to be mostly funded by the GEF grant (97%). However, the treatment of Category 2 material was to be funded at 71% by other sources.

In 2019, the Government planned in the state budget an allocation of 1.5 million USD for the project and committed to allocating similar amounts for 2020 and 2021. However, the allocated amount was not used due to delays in selection of a service provider and the launching of field works. A challenge with co-financing was that the project had to negotiate commitments on a continued basis. Ideally, these commitments should have been embedded in the government's budget planning process (Mid-Term Expenditure Framework), which would have required a greater engagement of the Ministry of Finance in project activities. Nevertheless, in September 2020, an agreement was reached with the Deputy Prime Minister's Office that would facilitate the

allocation of 4.5 million USD in co-financing from the 2021 state budget. This was formally agreed during the PMB meeting of September 10<sup>th</sup> 2020. However, this plan was sidelined by the escalating military conflict with Azerbaijan, as well as complications arising from the ongoing COVID-19 crisis. Ultimately, no co-financing was used from government sources.

UNDP provided 200,000 USD, of which 177,161 USD or 88.58% was spent. Contributions from the Czech-UNDP Trust Fund were used for testing and inventory analysis at the Nubarashen site, as well as capacity building activities during the PPG phase. Contributions from the OSCE were mainly focused on an assessment and feasibility analysis of the Nubarashen site as means of gauging the scale and complexity of the project – this included equipment purchases and the remuneration of experts

### **3.2.4. Monitoring and Evaluation**

The project underwent ongoing monitoring of the overall situation in the country, the surrounding environment and, in particular, the project's immediate implementation sphere. The project team analyzed potential risks and discussed them with the implementing partners and UNDP. The PMB carried out its oversight role and provided key guidance and took major decisions as needed. Critical risks, for example, national currency exchange rate fluctuations or COVID-19 negative impact, were monitored through the Atlas system and ways to manage and mitigate them were identified and followed-up.

All the adaptive measures undertaken by the project, including the major ones listed in the previous sections of this report, were identified and carried out on the basis of the monitoring mechanisms put in place by the project stakeholders. The MTR, in particular, was useful in helping project stakeholders establish a clear baseline with regards to the project's achievements, strengths, weaknesses and challenges up to that point. Following the MTR, the project team made a series of efforts to address its recommendations, including the following:

In the course of implementation, the project experienced an important deviation from the original design. The cancellation of the approved storage site (near Hrazdan town) as a result of public grievances led to a political decision. Despite the project's technical advice defending the original selection. An alternative site located in Yerevan city was identified, and a governmental decree was issued for its use for project purposes. Despite favorable technical parameters, this decision met political resistance. Understanding the importance of the storage in the designed consequence of activities to securely store the repackaged waste before removal for disposal, the project came to the third alternative solution – construction of a temporary light-metallic storage in the immediate vicinity of Nubarashen burial site, with a plan that the two segments of the storage should be dismantled after Nubarashen landfill cleanup and reinstalled in new areas to serve for the MoE and MES purposes. The storage was designed as an extra-task under the larger scope contract with Dekonta (Czech company) with no extra-cost. Another good example of flexibility was the consideration of an alternative route for the export of OPs waste to Iran for disposal, parallel to efforts directed to get a consent from Georgia on the transit permit.

As mentioned above, one challenge of the M&E system was that the results framework consisted of too many indicators (32) and targets (48) to monitor the progress made by the project. Such complexity of the results framework made the M&E system and project reporting convoluted.

Despite the challenges with the RRF, the project team developed an M&E plan in accordance with UNDP and GEF procedures – including a total of \$100,000 USD allocated from the GEF grant. For each M&E activity, a budget and schedule were identified, along with a set of performance indicators and targets. Key components of the M&E process included:

- **Performance Indicators** included a total 32 indicators identified in the *Project Results Framework* along with baselines and end of project targets.
- **Inception Workshop** was on December 4, 2015 where the project was reviewed (including the RRF and five-year work plan). Discussions included the roles and responsibilities of implementing partners/stakeholders and the Project Implementation Team. No changes were made to the ProDoc during this time and an inception report was completed following the workshop.
- **Inception Report**
- **Quarterly Progress Reports** were planned to monitor progress where risks were reviewed and updated in the ATLAS system.
- **Annual Project Review/Project Implementation Review (APR/PIR)** annual progress reports which included comments and feedback from the UNDP and the GEF were submitted to the PMB. The reports included a summary of achievements during the reporting year and based on the targets in the project document.
- Meetings of Technical Advisory Board and relevant meeting proceedings (minutes)
- Meetings of the Project Board and relevant meeting proceedings (minutes)
- Technical monitoring, evaluation, and reporting within project components
- **Site Visits** the UNDP Country Office and the UNDP Regional Coordination Unit made visits to project locations to review progress (feedback from these visits was sent to the PT).
- Compilation of lessons learned
- **External Mid-term and Final Evaluations** a mid term evaluation was completed in February 2018 and a final evaluation was scheduled for May-September 2021.
- **Project Terminal Report** a comprehensive report to review results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved, including recommendations for ensuring sustainability and replicability.
- **Audits** were completed based on UNDP audit policies (e.g., *Financial Regulations and Rules*).
- Project final workshop

An important component of the M&E framework were the Project Implementation Review (PIR) reports that were completed annually. Overall, the PIRs were well-formulated and included the following information:

- **Basic Data** – project IDs, project contacts, project type
- **Overall Ratings** – overall project ratings in terms of DO, IP and risk
- **Development Progress** – a list of objectives, outcomes, indicators, targets and cumulative progress since the project started
- **Implementation Progress** – cumulative GL delivery against total approved amount, as well as expected delivery for the year
- **Critical Risk Management** – list of critical risks and actions for mitigating them
- **Adjustments** – a list of delays with regard to key project milestones and options for addressing them
- **Ratings and Overall Assessments** – assessments from key project participants, including the Project Manager/Coordinator, UNDP CO Programme Officer, GEF Operational Focal Point, Regional Technical Advisor, etc.
- **Communicating Impact** – how the project is improving people’s lives
- **Gender Mainstreaming** – demonstration of women empowerment - data disaggregated by gender for events
- **Partnerships** – activities and innovation occurring among project partners
- **Grievances** – environmental or social grievances addressed during the reporting period

The PIRs played an important role in monitoring the project’s overall progress and provided detailed assessments of each of the main outcomes. The PIRs also played an important role in monitoring expenditures that were occurring, and monitoring overall cumulative expenditures for each phase of the project. The PIR reports included a clear description of project indicators, baseline levels for the indicators, the target for the indicator at project completion, the current target that the indicator was at, and the cumulative progress since the project began. Overall, PIR self-evaluation ratings were consistent with MTR and TE findings.

Overall, despite the challenges presented by the results framework, there were a large number of M&E activities that were undertaken by the project team and stakeholders involved in the project – covering staffing requirements, financial requirements, project planning and implementation requirements. One aspect of the M&E system which was weak and did not generate sufficient information for the project, including this evaluation, was the gender dimension. Although not a central feature of this project, better gender-disaggregated information would have made the work of the project more focused on gender imbalances in this sector and would have also provided some better analytical material for this evaluation. **Given all the above, the rating of “Monitoring and Evaluation” at project start-up/design is “Marginally Unsatisfactory”, whereas at Implementation the rating is “Marginally Satisfactory”.**

### **3.2.1. UNDP implementation/oversight, Implementing Partner execution and overall assessment of implementation/oversight and execution**

#### Performance of the Executing Agency

Two ministries have played a crucial role in this project - MoE and MES. The other ministries, although formally involved through the Project Management Board, have given secondary importance to this project. The Ministry of Agriculture has been marginally involved, although it has an important mandate over OPs and was expected to work with the FAO on the removal of OP waste from several sites (a project which was terminated). Despite the leadership by certain officials within the MoE, MES and Deputy Prime Minister's office, the engagement of government entities in this project has been fragmented. For example, four government entities (Ministry of Environment, Ministry of Foreign Affairs, Ministry of Agriculture, Deputy Prime Minister's office) were involved in conducting the dialogue with Georgia to obtain a preliminary consent on the waste transit permit. This dialogue with Georgia turned into a long process, while the project's position was to request from Georgia a formal "yes" or "no" response in the project's earlier stage so that alternative scenarios could be pursued in due time. Furthermore, responsibilities in the area of hazardous waste management are fragmented among various government agencies and it was sometimes hard for the project to navigate this landscape and obtain the necessary clearances. It should also be noted that frequent changes in the PMB structure and government agencies caused delays as repeated cycles of knowledge building were needed to restore the institutional memory of involved government departments. Also, the challenges with the allocation of co-financing by the government are an indication of a fragmented approach to the problem at the center of the project.

The main challenges related to the national institutional infrastructure are discussed in this report's section on "ownership", but, overall, the coordination of relevant institutions on this matter has generally been weak and has not provided the right amount of impetus for the project – leading to a number of delays that could have been avoided, despite the external challenges that the project faced. **Given all the challenges identified in this report, the rating of Executing Agency's performance in the project is "Marginally Unsatisfactory".**

#### Performance of Implementing Agency (UNDP)

UNDP has provided continued support to the project throughout its implementation and oversight, including in the identification of objectives and activities, preparation of the concept, preparation of the detailed proposal, approval of the Project Document, start-up of project activities, oversight, supervision, and execution of actions, and evaluation of the project. UNDP has also provided financial oversight, including approval of expenditures and independent audits, monitoring and mid-term and final evaluation of progress and results will be also ensured by the country office.

The following are some key contributions of UNDP in this project.

- UNDP played a key role in the monitoring and evaluation of the project, working closely with project partners to ensure that the outputs of the project were on track through field visits, consultations and reviews with stakeholders.
- UNDP also provided advisory support to the project. Its experience with similar projects in other countries was particularly useful. To this end, the project received substantial technical assistance from the Regional Technical Advisor in the UNDP Regional Hub, in addition to the international and local consultants. The RTA has not only provided monitoring support to the project team, but has also helped with recommendations on budget allocations, guidance on operational decisions and the process for obtaining a 30-month extension of the project.
- UNDP also provided operational support to the project, especially with regards to the procurement process. Given the infrastructure-related nature of the project, procurement was an essential part of activities. This report has described the failure of one procurement process, but also the successful completion of another.
- UNDP also ensured the firewall between implementation and oversight responsibilities.

The Project Team played a crucial and active role in facilitating and coordinating project activities. The team was instrumental in keeping project stakeholders and board members fully informed on project-related activities. This was especially important in the context of frequent and multiple changes that took place in government institutions.

Overall, the performance of UNDP (the Implementing Agency) has been adequate, with an appropriate level of support provided to the project team. During the MTR and terminal evaluation, no concerns were noted with regard to UNDP's performance and its role in the project. In particular, no delays were noted in the transfer of funds and no shortcomings were detected in the conduct of monitoring activities.

There are two areas, though, where UNDP's performance could have been more effective. One is the procurement process which suffered from delays, especially the lengthy procedures negotiated with NY that lasted for about one year. The other area is the engagement of UNDP's leadership with the process at the political level to advocate for the necessary political leadership and certain key decisions that were expected of the government, including the issue of co-financing. **Given the above, the rating of Implementing Agency's performance in the project is "Marginally Satisfactory".**

### **3.2.5. Risk Management**

While a number of risks and safeguards were identified in the Project Document (as noted in Section 1.3. on Assumptions and Risks), some of them did materialize and had a disruptive effect on the project. An example of this was the lack of solid inter-institutional coordination in matters related to hazardous waste management. Furthermore, a number of risks that played a major role

in the project were not identified – some of them, such as COVID-19, for the obvious reason that they were unforeseeable.

Several major risks not identified in the project document that materialized in the project’s lifetime are summarized below.

### COVID-19

The COVID-19 pandemic began at the end of 2019. This was impossible to foresee, given the rarity of such events. But the impact of the pandemic globally has been enormous, and as will be discussed further, it has also had a significant impact on certain aspects of the project. This will be discussed in more detail further in this report.

The COVID-19 crisis has had a significant impact on the project across a number of dimensions. At the political level, government priorities shifted towards the fight against the health crisis, which detracted attention from the project objectives. In particular, COVID-19 had an effect on the co-financing committed by the Government. As noted above, the Government had allocated in 2019 an amount of 1.5M USD in co-financing for the project, with a commitment to provide additional funding in the following years. However, in August 2020, an economic assessment studying the impact of COVID-19 was conducted and it became clear that the government’s ability to provide co-financing would be much more limited. At this time, the DPMO asked the project team to review options for either moving ahead with the original plan, or alternatively, to pursue a reserve plan. To move ahead with the original plan, the project team indicated that the following conditions would have to be met:

- Government co-financing
- Transportation permits
- A 12-month project extension

A reserve plan was also considered by which the Category 1 waste would be excavated and placed in a long-term storage facility until a more permanent plan involving incineration would be developed. The reserve plan would be based on the following conditions:

- Government co-financing
- Access to a long-term storage facility
- A 6-month project extension

Following lengthy discussions, the PMB concluded that neither option could be pursued given that the amount of co-financing in the 2021 budget was uncertain (due to the economic impacts of COVID-19 and the Nagorno-Karabakh war). Without co-financing the project team would not be able to advertise the tender for the work – and additionally, there would be no point in developing the storage facility either. At this point, the PMB agreed with the project team to pursue an exit strategy.

Other Risks that materialized during the project's lifetime was the:

- escalation of the conflict between Azerbaijan and Armenia, which had a negative impact on project activities. The conflict shifted government priorities towards areas impacted by the conflict, as well as reconstruction efforts which may have implications for the availability of financing for replication activities.
- “Velvet revolution” in 2018 which led to significant political changes that impacted the speed of the project activities.
- very limited market response to the tender that was launched by the project for clean-up operations. The lack of qualified participating companies led to significant delays in the procurement process and limited the choice among high-price proposals.
- inability of the Government to commit the necessary amount of co-financing. This issue has been explored in more detail further in this report.
- unforeseen risk that occurred in 2017 and that shifted national investment priorities was the Government's decision to host Syrian (ethnic Armenians) refugees. Armenia accepted more than 22,000 refugees on its soil.

The following sections of this report describe in greater detail how the project team and UNDP dealt with each of these risks by using various safeguards.

### 3.3. Project Results

This section provides an assessment of the project's progress in the accomplishment of RRF targets, as well as an examination of achievements along the standard dimensions of UNDP evaluations.

#### 3.3.1. Progress Towards Objective and Expected Outcomes

As has been noted previously in this evaluation report, the ultimate goal of removing and securing category 1 and 2 POPs/OPs waste from Nubarashen, subsequent elimination of Category 1 POPs/OPs waste and containment of Category 3 material was not achieved in the course of this project. However, the project did contribute to the improvement of institutional and regulatory capacity of the country in this area.

Annex VI of this report provides an analysis of the achievement of project targets based on the project's results framework. As can be seen from the table in the annex, the amount of progress on most indicators has been limited due to the challenges that have been already highlighted throughout the previous sections of the report.

#### 3.3.2. Relevance

This section provides an assessment of the relevance of the project. While there may be many criteria for assessing relevance, here it will be assessed along the following dimensions: i) relevance to the country's needs and priorities; ii) relevance to country's international commitments; iii) relevance to *UN Country Priorities* and UNDP's *Country Mandate and Strategy*.

##### ***Relevance to the Country's Needs and Priorities***

The Government indicated that the current project is a priority in a number of different contexts. For example, the *Program of the Government of the Republic of Armenia – 2017-2022* mentions that during the 2019-2022 period the government aims to eliminate POPs at the Nubarashen site and address any other organic pollutants as a means of aligning itself with international commitments. Also, the *Armenia Development Strategy – 2014-2025* profiled the Nubarashen initiative as a strong example of a private-public partnership which aimed to reduce the impact of hazardous waste in the country. Furthermore, a decree in December 2016 noted that the Government intended to eliminate OPs at Nubarashen by 2020.

The *National Implementation Plan* (NIP) from 2005 provided a comprehensive review of chemical waste in Armenia and estimated that Nubarashen contained around 500t of OPs. This document referenced a government decision in 2004 to allocate a budget line from the reserve fund to ensure the safety of the Nubarashen site. It discussed the need to study landslide risks, the extent to which the area was fenced off properly and the amount of water/soil contamination in the area. An

updated NIP in 2016 noted that during the 2016-2018 period Armenia aimed to address remaining OP locations in the country, as well as prevent any other POP and OP sites from developing.

The PMB co-chair explained that the project was important given that Armenia lacks environmental infrastructure and technological capacity to address hazardous wastes that have accumulated. In this view, the project aimed to not only provide Armenia with an opportunity to address POPs/OPs, but also to build capacity and infrastructure by strengthening national institutions, technical capacity and contaminated site management.

### ***Relevance to the Country's International Commitments***

The project has operated in an area that is considered an environmental priority for the Government and is fully in line with Armenia's international commitments. Since the 1990's, Armenia has signed/accessed several international conventions related to the management of chemicals/pollutants including the Stockholm, Basel, Rotterdam, Minamata and Vienna conventions, as well as protocols such as the Montreal Protocol (please, see the box below for a list of Armenia's major international commitments in this area).

### **Box 7: Armenia's International Commitments Related to the POPs Project**

- ***Stockholm Convention on Persistent Organic Pollutants*** – international treaty that was signed in May 2001 (effective May 2004) aiming to reduce/eliminate/restrict the production and reduce or eliminate releases from unintentional production of persistent organic pollutants.
- ***Basel Convention*** – international treaty that was signed in March 1989 (effective May 1992) regulates the transboundary movements of hazardous wastes and other wastes and obliges its Parties to ensure that such wastes are managed and disposed of in an environmentally sound manner, also recommends to reduce the movement of hazardous waste between countries, and specifically aiming to prevent transportation from developed to less developed countries.
- ***Rotterdam Convention*** – multilateral treaty that was signed in September 1998 (effective February 2004) to enhance shared actions and responsibilities pertaining to the importation of hazardous chemicals.
- ***Minamata Convention on Mercury*** – international treaty that was signed in October 2013 (effective August 2017) to prevent anthropogenic emissions of mercury and mercury compounds.
- ***Vienna Convention on the Law of Treaties*** – international agreement that was signed in May 1969 (effective January 1980) focusing on the regulation of treaties including drafting procedures, amendments, interpretations, and generally operations.
- ***Montreal Convention*** – multilateral treaty that was signed in May 1999 (effective November 2003) on amendments to the Warsaw Convention on compensation for victims of air disasters.
- ***Aarhus Convention*** - access to information, public participation and access to justice in environmental matters.

All stakeholders interviewed for this evaluation, including PMB members from MES, MoE and DPMO, also cited Armenia’s commitments under these international agreements as an important reason for addressing the POPs/OPs in the country.

***Relevance to UN Country Priorities and the UNDP’s Country Mandate and Strategy***

A *United Nations Development Assistance Framework (UNDAF)* was signed between Armenia and the United Nations in July 2015. The main focus was on:

- Advancing equitable economic growth
- Improving environmental management
- Strengthening accountability
- Delivering quality social services

These items were also in alignment with the *Prospective Development Strategy 2014-2025* and the *Sustainable Development Goals*. Furthermore, the UNDAF framework also included the following five principles:

- A human-rights-based approach
- Gender equality
- Environmental sustainability
- Results-based management
- Capacity development

One of the main pillars of the *UNDAF 2016-2020* focused on “Environmental sustainability and resilience-building” and one of the outcomes identified under this pillar was that by “2020 Sustainable development principles and good practices for environmental sustainability resilience building, climate change adaptation and mitigation, and green economy are introduced and applied”. The Nubarashen site was identified under this pillar as well, noting that there was “approximately 1,000 tons of obsolete POPs waste and around 4,000 tons of contaminated soil stored across the country and that is creates significant risk to human health and the environment”.

Building off the *UNDAF 2016-2020*, the *Country Programme Action Plan (CPAP)* for 2016-2020 was created. The core objective of the *CPAP 2016-2020* was to contribute to sustainability and equity in Armenia. Its vision for development was based on a diverse rural economy; innovation; a healthy SME sector; sustainable economic practices; disaster preparedness; open governance; and strong human rights protections and legislation which demonstrates the promotion of equal opportunities.

The five main environmental outputs in the *CPAP 2016-2020* were:

1. Regulatory framework of social, environmental and economic sectors is updated to better address environmental sustainability and resilience principles
2. Innovative climate change and disaster-risk reduction/resilience measures and practices applied and replicated across the country
3. Government uses innovative mechanisms and tools for evaluation and decision-making over the conservation and sustainable use of natural resources
4. Low carbon and ‘green economy’ issues become priority for the Government, supported by relevant regulatory framework and activities
5. New production and consumption patterns are introduced; new ‘green’ jobs are created

### ***Relevance to GEF’s Strategic Priorities***

The project was funded through the *GEF-5 Focal Area Strategy* under the *Chemical Strategy* goal. The aim of this goal was to manage chemicals in a way that reduces and prevents the adverse effects of chemical hazardous waste on human health and the environment. The total amount of funding under the *Chemical Strategy* was 420M USD, and this included 375M USD available for addressing POPs. Indeed, POPs was one the three main objectives of the *Chemical Strategy* (the other two being Ozone-depleting substances and mercury reduction). Under the POPs objective there were five outcomes identified:

1. Production and use of controlled POPs chemicals phased out
2. Exempted POPs chemicals used in an environmentally sound manner
3. POPs released to the environment reduced
4. POPs waste prevented, managed, and disposed of, and POPs contaminated sites managed in an environmentally sound manner
5. Country capacity built to effectively phase out and reduce releases of POPs

Regarding the *GEF-6* cycle, there continues to be a strong focus on chemicals and hazardous waste with a long-term goal to “*to prevent the exposure of humans and the environment to harmful chemicals and waste of global importance, including POPs, mercury and ozone depleting substances, through a significant reduction in the production, use, consumption and emissions/releases of those chemicals and waste*”.

The *GEF-6* cycle includes two strategic objectives and six programmes. A component of the second objective is “*to reduce the prevalence of harmful chemicals and waste and support the implementation of clean alternative technologies/substances*” and the third programme has a focus on the “*Reduction and elimination of POPs*”. A total envelope of 554M USD for chemicals was identified for the *GEF-6 Chemical Strategy*, including 307M USD allocated to programme.

Based on the examination of project activities and the opinions of stakeholders interviewed in the course of the evaluation, the project is rated as “Relevant”.

### 3.3.3. Effectiveness

The following is a brief summary of the effectiveness of the project.

#### Component 1

Outcome 1 was focused on preparing the Nubarashen site for subsequent phases of work. Activities under this outcome included an assessment of the hazardous waste at the site, the design and requirements of on-site/off-site works, a detailed risk assessment, a health/safety plan, an emergency response plan and an environmental impact assessment. By the end of the project, all activities under Outcome 1 aimed at preparedness for the clean-up of the site were completed, however the waste was not excavated and repackaged ready for removal.

Outcome 2 was focused on the temporary storage facility for storing and treating the waste. The building Hrazdan was initially the location planned for the temporary storage site, however there was a decision to change it following concerns from the local community over potential aquifer contamination, as well as possible risk of theft or damage to the storage site. Subsequently, there were consultations in July 2018 with stakeholders and NGOs regarding the respective storage building in Nairit plant (formerly used for producing rubber) as a second option. However, the meeting participants came to the conclusion that the site should be limited to waste from Yerevan, and staff at the Nairit location were heavily opposed to using the building for the project. The AWHHE also noted that since Nairit was a former chemical plant there were additional risks of fires and other accidents.

The project team then decided the storage facility should be located next to the Nubarashen site (to limit the potential for further contamination when transporting the waste). A large facility was designed and a contract was awarded to install the facility. However, commencement of the construction work was dependent on a decision regarding to whether co-financing would be available to address the Category 1 and 2 waste.

The project's Outcome 3 included a formal review of the remaining OP sites in Armenia. In September 2018, the MES and MoA conducted an analysis which confirmed there were six OP locations for the PT to address, and the amount of OP waste at these sites was approximately 20 tons (or one large truck). The assessment work was completed under this outcome, however ultimately the OP waste was not removed from these sites – completion of activities specified for this outcome was based on the selection of a service provider company. The respective tender was cancelled in June 2020.

#### Component 2

The main focus of Component 2 was on transporting the category one waste to an internationally certified incineration facility (the Project Document noted that transit through Georgia was the preferred export route). The excavation of Category 1 waste (under Outcome 1), followed up by

its transportation and disposal (Outcome 4), as well as treatment of Category 2 waste (Outcome 5) were dependent on availability of co-financing. As has been noted in this report, limited progress was made on Component 2 due to the challenges outlined previously.

### Component 3

Outcome 6 was focused on improving legislative and regulatory frameworks for managing chemical waste in Armenia. By all accounts, it appears there were a number of measures achieved to support the sixth outcome. In September 2018, the Government issued a Decree to introduce amendments to previous chemical waste licensing procedures. In the original set of regulations, the procedures for chemical processing, neutralization, storage, transportation and placement were handled under a single licensing procedure. In the amended Decree, each of these procedures had their own specific license – resulting in additional granularity and scrutiny being applied to each. This was completed to address a 2017 report by technical experts who reviewed gaps in hazardous waste licensing procedures, and subsequently shared this report with the MoE.

Another important development under Outcome 6 was that the project team supported legal regulations for phasing out the use of UPOPs in plastic bags. MoE provided comments, feedback and advice throughout the development of this legislation.

Outcome 7 was focused on determining whether local facilities were able to upgrade their equipment to incinerate Category 1 waste. In January 2017, the project-funded assessment determined that a local cement plant (Ecoprotect plant) would not be able to treat Category 1 waste in a way that was consistent with international standards (the maximum incineration temperatures were below 1000 C°). The assessment concluded that the plant would not be able to burn the waste at a temperature that was high enough, thus precluding an EIA approval. Based on the assessment, the project team noted that it was likely more cost-efficient to build new sites for addressing the waste rather than attempting to upgrade existing ones.

Under Outcome 8 the project team supported national capacity building in the form of two laboratories that have been supported with QA/QC technology. The project purchased an XRF portable analyzer and an analytical sample evaporator/concentrator for MoE and organized training on its use for a study on water and land contamination from different substances, including heavy metals and chloro-organic pesticides.

### Component 4

The purpose of Outcome 9 was to monitor and evaluate project results to improve implementation procedures and to disseminate project knowledge domestically and internationally. Specifically, the focus was on:

- M&E and adaptive management to provide feedback as a means of supporting project needs

- Lessons learned and best practices accumulated, summarized and replicated

The PT noted that extensive capacity building occurred among various national institutions as a result of the POPs/OPs project. As noted in previous sections, there was a robust M&E process for this project – including:

- \$100,000 USD in funding from the GEF grant to support M&E
- 32 indicators identified in the Project Results Framework
- An Inception Workshop which included a review of the RRF and five-year work plan
- Quarterly Progress Reports and Annual Project Implementation Reports
- Site Visits from the UNDP CO and UNDP RCU
- External Mid-term and Final Evaluations
- A Project Terminal Report and audit reports

Given the challenges and the lack of achievement of objectives, but also considering the contributions that have been provided by the project, the rating of the project’s effectiveness is “Marginally Unsatisfactory”.

#### 3.3.4. Efficiency

To assess efficiency, the report focuses on two aspects that are closely associated with efficient project management. These parameters are categorized into the following categories: i) Expenditure and Budget Execution Rates; and, ii) Timeliness of Project Activities.

##### Expenditure and Budget Execution Rates

This report’s section on “*Project Finance and Co-finance*” provides an overview of project expenditure. Table 5 in that section shows the project’s expenditure plan. As has been noted, the largest expenditures were scheduled under Component 2 where the transportation and incineration of Category 1 waste and the decontamination of Category 2 soil would occur. Also, that table noted that project management costs were scheduled to be as 5%, which is a good indicator of efficiency.

Table 6 in the “*Project Finance and Co-finance*” section shows actual expenditures by component area for the project’s duration. As can be seen from that table, of a total of \$4,700,000 USD of GEF financing that was budgeted, only US\$ 897,260 had been spent by the project up to the point of this evaluation, with an additional US\$ 972,513 planned to be spent by the end of the project. So, overall, the project has spent about 20% of the GEF allocation. Obviously, this is a very low execution rate which has resulted from the fact that the largest and most expensive activities were not undertaken – including excavation, removal, repackaging, export and incineration of waste. For this same reason, project management (component 5) have constituted a large share of actual costs, considering the 30-month no-cost extension of the project.

Table 7 in the “*Project Finance and Co-finance*” section shows the project’s execution rates for each year based on planned budgets. Throughout the duration of the project, there was a large

amount of variation with regard to funds that were budgeted in comparison to funds that were spent (ranging from 4% in 2016 to 310% in 2018). The project started with a slow execution rate in 2015 (7%), 2016 (4%) and 2017 (16%) but subsequently the pace accelerated in 2018 (310%) and 2019 (143%). The largest amount of spending was scheduled for 2016 and 2017, however due to delays at the beginning of the project the project team had to accelerate expenditures and invest additional resources in subsequent years.

### Timeliness of Activities

As has been noted in the previous sections of this report, the project experienced a number of delays which were detrimental to the achievement of objectives. The following are the key challenges that caused the delays.

- The project experienced delays during the tendering process while selecting an engineering company to complete an assessment and preparation of the Nubarashen site clean-up works. The activity was focused on designing the technical conditions for the clean-up work that was to follow the waste disposal under component 2. A tender for the site assessment and engineering design of works for Nubarashen site clean-up was issued in early 2016. The project team was unable to identify in mid-2017 a qualified company, which completed the assessment and design of works in August 2018. This had implications for subsequent activities – including the excavation, secure storage, and treatment of waste – given that these activities could not take place until the assessment and the design were completed.
- A tender was issued for the engineering design of renovation of the hazardous waste facility in August 2016. However, as a result of demands for changes to the TOR and the high prices offered by the bidding companies, the tender was cancelled. A revised RFP was issued on December 20, 2016 and a contract was subsequently signed in April 2017 to begin the work.
- The Kotayk site was identified during the PPG phase of the project as the temporary location for the hazardous waste before its transportation abroad, and due to the unexpected negative reaction from the local community the project was delayed. There were numerous attempts to address public concerns through discussions with the local community and environmental NGOs, however agreement on the operation of the storage for project purposes could not be obtained.
- The tender for the main clean-up and waste disposal activities at Nubarashen was launched in August 2019 and the negotiation process ended in June 2020. In most cases, UNDP/GEF projects do not involve negotiations with bidding companies over proposed prices. However, exceptions are made for complex projects. These negotiations failed due to the fact that the bidding company was offering more than twice the market price for comparable services. The negotiating team attempted to lower the prices of the clean-up services – however, bidding company was only able to reduce the costs by 5% rather than the 30% reduction that the project team was trying to achieve. During this time, UNDP CO and UNDP HQ procurement specialists held discussions and communicated extensively – there was a sense among some

project stakeholders that communications were slow due to the highly technical nature of the project. This was further complicated by the emergence of COVID-19 in early 2020 and its impact on meetings.

- Stakeholders also noted that the project was delayed due to the political nature of the project, and that they had perhaps underestimated this when planning the project. In some ways, ENGOs were much more active in both Armenia and Georgia than what had been anticipated – resulting in unexpected delays during public consultations, as well as negotiations over the transportation of the waste. Although Georgia had completed a similar environmental initiative in 2013, the government was concerned about how to present the POPs initiative to the public.

Given the challenges and the delays described above, but also considering the contributions that have been provided by the project, the rating of the project’s efficiency is “Marginally Unsatisfactory”.

### 3.3.5. Overall Project Outcome

Although the core objectives of the project were not completed, the project has created a solid body of knowledge and experience and has also generated significant momentum in this sector. Therefore, there is now good potential for Government counterparts to pursue project objectives in the coming years building on project achievements. Some of these achievements are listed below:

- The Nubarashen site assessment with clean-up and waste disposal design (including the civil-engineering design) was completed in August 2018, including an Environmental Social Impact Assessment. The engineering design package for the temporary metallic storage site was also approved by the Yerevan municipality as part of the site set-up entire package.
- A comprehensive assessment and inventory of POPs/OPs was completed, and the PT analyzed existing legislation on hazardous waste handling – the recommendations were shared with MoE.
- The project developed two documents (including the Prevention and Emergency Plan and the Technical Design Narrative) that can be used as operational procedures for site clean-up works.
- As a result of the project, the public is much more familiar with the impacts of hazardous waste on human health and the environment, and there was extensive learning with regard to stakeholder consultations and consensus-based decision making.
- There has also been extensive technical, legal and environmental capacity development as a result of the project.

The rating of the project’s overall outcome is “Marginally Unsatisfactory”.

### 3.3.6. Sustainability

Although the project was not able to achieve its overall objectives, there was agreement among the PT that there was a good chance of being able to execute on components one and two in the coming years. The content below further reviews considerations that may put this initiative at risk in the coming years.

#### Social

As noted in the Project Document, social impact risks associated with this type of projects are considered low. The project has helped improve social engagement with the issue of chemical waste management. On the one hand, the project has increased awareness around POPs/OPs waste both within the government and in the communities, which is a positive factor of social sustainability. The wide consultations conducted during the process have improved the understanding of this issue in the country. Further, the project has contributed to making the process more open to and inclusive of the environmental community in the country. This is important for the future sustainability of this effort as the process will be more constructive and stable with the environmental movement engaged and informed of the main activities undertaken in this area. Also, the body of knowledge produced by the project has contributed to the improvement of awareness and understanding of this issue. On the other hand, the Nubarashen site will continue to pose a risk if left unaddressed. MES has taken a number of measures to improve security in the site, but the risks of a landslide remain.

Given the outstanding risks mentioned above, this dimension of sustainability is rated as “Moderately Likely”.

#### Financial

As has been noted, the project was developed on the assumption of a GEF grant of USD 4.7M but also on other funding sources totaling over USD 19M, including USD 16M to be provided in cash and in-kind by the government. The co-financing by the government did not materialize during the implementation, although USD 1.5M was planned in the 2019 state budget but was not used. This was discussed in some detail in this report’s section on efficiency. The financial risk to sustainability is real and going forward will be a key determinant to the resolution to the issue of removal of hazardous waste in Armenia. The project was unable to remove this risk given that a secure financial allocation by the government for this matter is still not available. It should also be added that the Nagorno-Karabakh conflict/military hostilities and the onset of the COVID-19 crisis complicated the situation by making the availability of funding by the government more challenging. One positive aspect of the project though is that it has raised the awareness of policymakers and communities on the need to address the risks posed by the chemical waste and has also shown that one key factor in addressing this issue is the planning of financial allocations from the state budget on a mid-term perspective.

Given the above-mentioned, the likelihood of sustainability of the project's outcomes from a financial perspective is rated as "Moderately Unlikely".

### Institutional

The project has contributed to improving a number of institutional aspects related to the management of hazardous waste in Armenia. First, the POPs/OPs issue has become a growing priority for the government – evidenced by the inclusion of the Nubarashen burial site in the "Programme of the Government of the Republic of Armenia – 2017-2022". Moreover, the Yerevan Mayor's Decree and Masterplan of 2016 for the use of the Nubarashen site has further institutionalized this matter. Furthermore, throughout the duration of the project, the project has supported capacity development and strengthening of institutions as a means of improving hazardous waste management practices and enhancing legislative/ regulatory frameworks. The project has developed a number of technical recommendations for handling, transportation, storage and disposal of hazardous waste. Additionally, the project has facilitated training sessions on several topic areas and it is likely the government will be able to use project results well beyond the lifespan of the project.

An important aspect of this project has been the involvement of external expertise in this matter in Armenia, which has been an important factor of capacity building for domestic institutions and a source of a significant body of knowledge.

- Three international consultants were contracted to support project implementation.
- UNDP experts from HQ and Regional Hub were involved in the project management and in the procurement.
- A Czech waste management company was contracted to perform the site assessment and engineering design of works.
- With financing from the Czech Trust Fund, two training sessions were conducted on EU directives for the safe operations of waste storage facilities.
- Swedish company SWECO was contracted to conduct a pre-feasibility assessment of Hrazdan Cement plant, to answer the MoE query whether the plant could be retrofitted and serve for the disposal of hazardous chemical waste.
- With financial support by the Russian Trust Fund, representatives of a Russian company visited Armenia and showcased their manufactured mobile incinerator unit (under testing phase).
- Representatives of two French companies manufacturing incinerator plants visited Armenia, conducted introductory workshops and provided financial proposals for procurement, shipment, installation, commissioning of on-the shelf incinerator units.
- The Project Coordinator and Technical Team Leader visited the Iranian incinerator plant near Isfahan. Throughout the project course, connections were maintained with the staff of the plant. In 2019, the owner and CEO visited Armenia, but plans to visit again were disrupted by COVID-19.

- With support from the Russian Trust Fund, two Russian experts assessed the chemical waste legacy in two former chemical plants.

Given the outstanding risks mentioned above, this dimension of sustainability is rated as “Moderately Unlikely”.

### Environmental

Throughout the duration of the project, the main risk was the accidental release of POPs/OPs while treating the Nubarashen site, which would potentially have health impacts on the local community. Given that no waste was removed or treated in the course of this project, this risk persists. One mitigating factor is that the level of knowledge and awareness around the chemical waste issue in the country has improved thanks to the project. In particular, relevant government institutions have been sensitized, which translates into a higher level of engagement with the issues of the sites. This is for example evident in some measures taken by MES to safeguard the Nubarashen site.

If the stakeholders once again decide to pursue the POPs/OPs initiative in the coming years, existing risks could be mitigated through the following actions:

- International technical support, oversight, and the adoption of international standards
- The completion of internationally benchmarked EIA requirements
- The provision of extensive operational training that is in-line with international standards
- The inclusion of environmental performance verification as part of the M&E process

Given the outstanding risks mentioned above, this dimension of sustainability is rated as “Moderately Likely”.

**Table 10: Sustainability Rating**

<b>Sustainability Dimension</b>	<b>Risk Assessment</b>
Financial risk	MU
Socio-Economic risk	ML
Governance risks	MU
Environmental risks	ML
Overall Likelihood of Sustainability	ML

### **3.3.7. Gender Equality and Women’s Empowerment**

Given the limited infrastructure work that has taken place through this project, the effects of this project on gender are almost inexistent. Therefore, the gender perspective in the framework of this project can be discussed only in terms of how many men and women were involved in project activities.

Throughout the duration of the project, the Project Management Board was composed of nine members (30% to 40% of whom were women). During the most recent reporting period in 2020

three Project Management Board members were women, including from the MOE (co-Chair), the MoH and MoFA. The core of PMU (Project Management Unit) were two women and one man. The three international consultants were all men. Throughout the duration of the project, as communications were sent out for training, public consultations and project updates the project team emphasized that participation of women was strongly encouraged. By the end of the reporting period 188 women and 186 men had participated in training and capacity building activities. There were a number of public consultations by women-led CSOs – including *Armenian Women for Health and a Healthy Environment* and *EcoLur* – who took a leading role in public hearings and public discussions. Additionally, the membership of the Project Advisory Committee included five women (among ten members). Furthermore, the 2017 PIR noted that the gender marker for the project increased from GEN1 to GEN2 due to the fact that women were more vulnerable to POPs contamination than men, mostly in the form of reproductive health.

### **3.3.8. Cross-cutting Issues**

One cross-cutting issue to which this project has contributed is improved governance. As has been already noted in this report, Armenia’s public sector has benefitted from technical, legal and environmental capacity development that occurred as a result of the project. Furthermore, as a result of the project, the Armenian public is much more familiar with the impacts of hazardous waste on human health and the environment, and there was extensive learning with regard to stakeholder consultations and consensus-based decision making. From a human-rights perspective, the affected communities are better aware of their rights in the context of waste management. There has also been significant South-South cooperation promoted in the context of this project. Multiple activities involving the transfer of knowledge from other countries have been reviewed throughout this report.

As has been noted, the project did not succeed in its final objective of the removal of the pesticides. Hence, no direct environmental and income generation/job creation benefits have resulted from its activities.

### **3.3.9. GEF Additionality**

As noted above, no direct incremental environmental benefits have occurred from this project due to the fact that the removal of waste did not take place. There is potential for benefits if the lessons and the experience that have been derived through this project will be put to good use in the coming months and years.

### **3.3.10. Catalytic/Replication Effect**

The project was designed to have a number of features that would serve as examples and provide direct implementation experience in a number of areas that would support replication, both in Armenia and elsewhere. These included:

- Applying an approach to POPs stockpiles, waste and contaminated site elimination based on prioritizing the cost effectiveness, risk mitigation, and global environmental benefit as a primary criterion in incrementally capturing, securing and ultimately eliminating the POPs waste and associated risk.
- Ensuring an appropriate mix of developing national capability and utilizing established, international capability to obtain the most cost-effective, sustainable and achievable results.
- Exploiting and building on national capability and capacity to provide a sustainable expertise core and physical capability in critical areas such as risk assessment, HW management practices, contaminated site assessment/containment/monitoring, and development of optimized analytical support capability.
- Integrating of proactive public consultation and awareness activities into the planning and implementation of sensitive HW and contaminated sites projects inclusive of a prominent role taken by civil society organizations.

The demonstrability and replicability of this project is somehow limited given its failure to achieve the removal and elimination of the waste. However, although the core objectives of the project were not completed, the project has created a solid body of knowledge and experience. Capacity building and training of individuals and institutions was a core aspect of the project that was delivered. Also, knowledge transfer on good waste management practices from abroad was facilitated through the project. While no replication was possible in the lifetime of the project, the lessons and the experience that have been derived through this project may be replicated in the future and could be catalytic to significant change in this area.

### **3.3.11. Progress to Impact**

The project failed to achieve the expected impact related to the removal of obsolete pesticides from the identified locations. However, although the core objectives of the project were not completed, the project has created a solid body of knowledge and experience and has also generated significant momentum in this sector. Therefore, there is now good potential for Government counterparts to pursue project objectives in the coming years building on project achievements. Some of these achievements are listed below:

- The Nubarashen site assessment with clean-up and waste disposal design (including the civil-engineering design) was completed in August 2018, including an Environmental Social Impact Assessment. The engineering design package for the temporary metallic storage site was also approved by the Yerevan municipality as part of the site set-up entire package.
- A comprehensive assessment and inventory of POPs/OPs was completed, and the PT analyzed existing legislation on hazardous waste handling – the recommendations were shared with MoE.

- The project developed two documents (including the Prevention and Emergency Plan and the Technical Design Narrative) that can be used as operational procedures for site clean-up works.
- As a result of the project, the public is much more familiar with the impacts of hazardous waste on human health and the environment, and there was extensive learning with regard to stakeholder consultations and consensus-based decision making.
- The Project Team also noted that there has been extensive technical, legal and environmental capacity development as a result of the project.

As for next steps, MoE will prepare an action plan based on lessons learned from project. MES and Yerevan Municipality will continue to monitor the Nubarashen site in the meantime. Additionally, MoE will undertake changes to legislation to ensure that large importers of pesticides take responsibility for any products they import and the government will be providing guidance for this.

## 4. MAIN FINDINGS, CONCLUSIONS AND LESSONS LEARNED

### MAIN FINDINGS

Overall, the project was designed with clear goals focused on a very specific and well-identified problem. The main challenge with the design phase is the lack of a sufficiently deep engagement with the communities that were expected to be affected by its activities.

In the implementation phase, the project experienced a number of external challenges related to the broader country/regional context over which project stakeholders had no influence. While the project team and stakeholders tried to remain consistent to the original design of the project as much as possible, they were also highly flexible and adaptive, exploring different options and alternatives. Also, the COVID-19 crisis has had a significant impact on the project across a number of dimensions. At the political level, government priorities shifted towards the fight against the health crisis, which detracted attention from the project objectives. In particular, COVID-19 had a negative effect on the co-financing committed by the Government.

As noted in the report, the project was not able to meet its core objectives. Despite the failure to deliver on its objectives, this project has contributed in a number of tangible ways and provides a good foundation for further building on in order to complete the mission that has been undertaken. First of all, this project has created momentum within the country, especially in the Government involving key decision-makers. The knowledge and structures that this project has created will help policy makers keep the process towards the removal of waste alive after the project has ended. Second, the project has considerably improved awareness on the issue of POPs and OPs. Awareness has improved not only within the government circles, but also in the society, especially among affected communities and the environmental movement. Awareness is an important precondition for the resolution of this matter in an inclusive manner. Third, the project has generated a significant body of knowledge which constitutes a very good basis for further work in this area. Many unknowns have been resolved through the activities undertaken by the project. For example, the issues with Georgia, Iran and Turkey have been clearly explored and are understood by decision-makers. The domestic capacity for incineration has been assessed. Also, the cost of importation of incineration technology has been discovered and is public knowledge. A number of institutional and policy changes have been introduced – as noted in this report – and create a good foundation for the continuation of the process. Also, the challenges are better understood now – and a number of them are identified in this report.

From a sustainability perspective, the project has contributed to improving a number of institutional aspects related to the management of hazardous waste in Armenia. First, the POPs/OPs issue has become a growing priority for the government. Furthermore, throughout its duration, the project has supported capacity development and strengthening of institutions as a means of improving hazardous waste management practices and enhancing legislative/ regulatory

frameworks. The project has developed a number of technical recommendations for handling, transportation, storage and disposal of hazardous waste. Additionally, the project has facilitated training sessions on several topic areas and it is likely the government will be able to use project results well beyond the lifespan of the project.

Given the limited infrastructure work that has taken place through this project, the effects of this project on gender equality have been limited (primarily targeted at the awareness-raising and policy level).

## **CONCLUSIONS**

The POPs project represented a great opportunity for Armenia to mobilize its institutional, technical and financial resources to resolve in a definite manner the problem of hazardous chemical waste – an open sore inherited from the times of the Soviet Union. The project was unable to deliver on its final goal which was the removal and elimination of the pesticides. The reasons and challenges for this failure have been identified and discussed throughout this report. Also, a number of lessons learned through this process are listed further down in this section.

However, despite the failure to deliver on its objectives, this project has contributed in a number of tangible ways and provides a good foundation for further building on in order to complete the mission that has been undertaken. First of all, this project has created momentum within the country, especially in the Government involving key decision-makers. The processes and structures that this project has created will help policy makers keep the process alive after the project has ended. Second, the project has considerably improved awareness on the issue of POPs and OPs. Awareness has improved not only within the government circles, but also in the society, especially among affected communities and the environmental movement. Awareness is an important pre-condition for the resolution of this matter in an inclusive manner. Third, the project has generated a significant body of knowledge which constitutes a very good basis for further work in this area. Many unknowns have been resolved through the activities undertaken by the project. For example, the issues with Georgia, Iran and Turkey have been clearly explored and are understood by decision-makers. The domestic capacity for incineration has been assessed. Also, the cost of importation of incineration technology has been discovered and is public knowledge. A number of institutional and policy changes have been introduced – as noted in this report – and create a good foundation for the continuation of the process. Also, the challenges are better understood now – and a number of them are identified in this report.

Although the exportation and incineration of waste was a significant challenge for reasons discussed in this report, the excavation, repackaging and temporary storage of waste in a secure site was a clear possibility under this project. The problem was that too many challenges and delays made that impossible under the framework and lifetime of this project. However, this possibility should be capitalized by the authorities in the coming months and years. The ground for a successful resolution of this matter has been prepared. What is required now is strong leadership

on this matter and resolute decision-making to deliver on the commitment to have this waste and the risks it represents addressed effectively.

The project will come to an end in December 2021. The project team is performing activities under the exit strategy which will be important for the handover of knowledge materials and institutional memory to the respective authorities, particularly the MoE. The project has to hire 5 experts, under MoE's guidance, who reviewed/updated respective project materials and based on those will develop a state funding proposal. The latter has a standardized format and content. So, at the end of this work, the MoE will have the main package with technical content developed in a required format with updated cost-estimates, ready for submission to the MoF for inclusion in the next Mid-Term Expenditures Framework document (the next MTEF will capture the 2023-2025 three-years planning). This approach will strengthen government ownership to implement the project through state funding.

The following are the most important and relevant materials that will lay a basis for the state funding proposal:

- Site mapping and analytical assessment report\_2017
- Review and update risk assessment and classification criteria report\_2017
- Prevention and Emergency Plan
- Technical Design Narrative
- Engineering technical design package – description, drawings, BoQ
- EIA report
- Animated film for recommended site and work set-up
- The winning proposal of the last tender

Going forward, it will be important that the authorities maintain the momentum that has been created by this project under clear and strong leadership. Ideally, this matter should be promoted by a champion in the position of a minister or deputy minister who makes it his/her mission to see this initiative through. It will also be important for the Government to strengthen and elevate the role of the *Inter-Agency Steering Committee on the Elimination of Obsolete Pesticides* in the coordination of all government entities involved.

### **LESSONS LEARNED**

The following are some major lessons that may be drawn from the experience of this project:

#### ***Lesson 1: Need for Strong Leadership and Coordination***

One key lesson that can be derived from the experience of this project is that a complex problem such as the removal and elimination of hazardous waste that falls under the jurisdiction of many government institutions requires strong leadership and coordination. The lack of clear and strong leadership and coordination, combined with external crises such as political instability, military

conflict with Azerbaijan and the COVID-19 crisis, was one of the main factors that slowed down the pace of certain activities, as noted in this report.

The fragmented nature of responsibilities of government institutions over the management of hazardous waste made the need for strong leadership an imperative. As has been noted in the report, while MoE has overall regulatory and legislative functions in the area of waste management, MES has been given the authority over the Nubarashen burial site and has been traditionally closely engaged with it. MoA, on the other hand, has been given the authority to manage community-based OP storehouse sites. Also, MoH should theoretically constitute a major institutional stakeholder based on statutory responsibilities, but in practice has maintained a relatively passive interest and low level of participation. The Ministry of Transport and Communications has responsibilities for overseeing road transport carriers and permitting travel routes for hazardous waste removed from the subject sites. The Ministry of Finance is responsible for allocating co-financing from the national budget. In addition, municipalities have authority for the permitting of landfill and storage sites. Such fragmentation of responsibilities has led to confusion about the division of labour when it comes to the management of hazardous waste and a lack of strong leadership in dealing with the challenges of this sector.

Overall, there is a need for an overall acceptance of the principle that OPs generally, and POPs in particular, are a regulated hazardous waste that should be managed under the regulatory authority of MoE in line with international practice. This applies particularly to OP sites where responsibilities to date have not been clear and hence not managed adequately over an extended period. As also recognized in the project document, this complexity of institutional mandates underlines the importance of having a functioning *Inter-Agency Steering Committee on Implementation of Stockholm Convention* which would facilitate stakeholder engagement and coordination, achieving collective decision making on key issues, as well as resolving key issues related to regulatory jurisdiction and authority. Going forward, it will be important that the removal and elimination of pesticides is led by a strong and clearly designated champion within the Government. It will also be important that the *Inter-Agency Steering Committee on Implementation of Stockholm Convention* be fully functional and play an active role in the coordination of all government entities involved.

### ***Lesson 2: The Importance of Flexibility and Adaptability***

Another lesson that can be drawn from this project is that in an area where there are so many unknowns and so much uncertainty due to the lack of experience and knowledge there is a need for flexibility and adaptability in how the matter is approached and the process managed. Despite the failure to remove and eliminate the waste, this project has been quite versatile in how it responded to the challenges. As has been noted in this report, the project stakeholders have identified and pursued all possible options. The project team and stakeholders explored the export option engaging in discussions with Georgia, Iran and Turkey, the importation of technology option by engaging and inviting foreign companies, the incineration of waste in an existing facility

by assessing the capacity of domestic cement plants, the temporary storage option by trying to identify an appropriate storage site, etc. Also, flexibility was built in the tendering process to allow for different options to be identified and pursued. In the end, this project did not fail because the lack of flexibility or adaptability, but slow decision-making and delays in the process – including undecidedness on the issue of co-financing combined with the challenges posed by the Nagorno-Karabakh and COVID-19 crises. In effect, flexibility or adaptability were key features of this project that should be maintained in the future if a similar project will be launched to finish what has started.

### ***Lesson 3: The Importance of Capacity Building***

Although the project was not able to execute on its main goals, many stakeholders interviewed for this evaluation remain confident they will be able to complete these objectives in the coming years. This is due in large part to the learning and capacity development that occurred during the project. The changes made to hazardous waste licencing procedures are a good example of this. Prior to the project, there was a single licencing procedure for hazardous waste – including for chemical processing, neutralization, storage, transportation and placement. As a result of the project, each of these items are now addressed through individual licences – building additional precautions and rigour into the procedure. Other examples of project learning and capacity building include the support that the project provided for the phasing out UPOPs in plastic bags, the additional lab capacity for studying hazardous waste and the enhanced M&E capacity. The overall learning and capacity development that occurred during the project – along with the comprehensive analysis of contaminated sites – has put Armenia in a strong position to pursue the POPs/OPs initiative in the coming years.

### ***Lesson 4: Importance of Embedding Co-financing in National Planning Frameworks***

A significant challenge this project faced was the issue of co-financing. The project had to negotiate on a continued basis with the Government on its commitments. The process was too long, convoluted and took a lot of energy and effort that could have been spent on key project priorities. In hindsight, there were three problems with how the co-financing was approached in the design of project that should be avoided in the future. First, co-financing should have been included from the very beginning in the project's results framework (RRF). If co-financing was included in the RRF, it would have perhaps been possible to pursue additional solutions earlier. Second, the Ministry of Finance was not envisaged to play a key role in the project. This turned out to have been a wrong assumption, as the Ministry of Finance was key decision-maker in the issue of co-financing. The project design should have foreseen a more central role for the Deputy Prime Minister's Office and the Ministry of Finance. Even a sub-committee on co-finance matters under the Project Management Board would have given greater impetus to the project and would have saved precious time. Third, a great challenge with co-financing was that it was not planned appropriately by the Government through the budgetary processes and hence it was difficult for any Government representative to deliver on the commitments. The lesson here is that these

commitments should have been embedded in the government's budget planning process (Mid-Term Expenditure Framework), which would have also implied a greater engagement of the Ministry of Finance in project activities.

### Overall Project Performance Rating

<b>Monitoring and Evaluation</b>	
Overall quality of M&E	MS
<i>M&amp;E design at entry</i>	MU
<i>M&amp;E Plan Implementation</i>	MS
<b>IA Implementation &amp; EA Execution</b>	
Overall Quality of Project Implementation/Execution	MU
<i>Quality of UNDP Implementation/Oversight</i>	MS
<i>Quality of Implementing Partner Execution</i>	MU
<b>Outcomes</b>	
Overall Project Outcome Rating	MU
<i>Relevance</i>	R
<i>Effectiveness</i>	MU
<i>Efficiency</i>	MU
<b>Sustainability</b>	
Overall Likelihood of Sustainability:	MU
<i>Financial sustainability</i>	MU
<i>Socio-economic sustainability</i>	ML
<i>Institutional framework and governance sustainability</i>	MU
<i>Environmental sustainability</i>	ML

## 5. RECOMMENDATIONS

The evaluation also identified the following key recommendations for project stakeholders. Given that the project is at its closing stage, these recommendations are forward-looking in nature and relate to measures that could be taken to promote the project's objectives and carry the agenda forward.

Recommendation	Responsible Entity	Timeframe
<p><b>1. Handover of Responsibilities and Knowledge</b></p> <p>The first task and priority the project team should focus on is to organize a proper and smooth handover of responsibilities, materials and knowledge to respective government entities. This will require a few steps and actions to be undertaken by the Project Team with the support of project stakeholders:</p> <ul style="list-style-type: none"> <li>• First, the project team should document the whole process and assemble all the knowledge products that have been generated in the course of the project (this includes studies, assessments, project notes, briefs and materials, presentations, tender documents, terms of reference, project correspondence, board meeting notes, etc.). All activities that were undertaken by the project should be carefully documented in order to preserve the institutional memory.</li> <li>• As a second step, the project should identify the respective government entities to which it will hand over the process and documentation – including MoE, as the leading institution in this area, but also MES, MoA, DPMO, etc.</li> </ul>	Project Team	Short Term
<p><b>2. Charting the Path Ahead</b></p> <p>Before the project ceases to exist, it will be crucial for the stakeholder to get together and take stock of the status quo and try to chart the way forward in this area. This evaluation recommends the organization of a closing workshop which should engage all relevant partners both within the government and in the civil society (including affected communities). This event should be used as an opportunity to maintain the momentum created by the project and as a way of creating a road map for the way ahead. The project team and the PMB will have to do some preparatory work and based on consultations with all relevant government departments develop a clear vision for the process going forward based on the experience of the project. The project team is already preparing an exit strategy to this end. At the end of the closing event (workshop), the parties could ideally be able to adopt a unified vision on the way forward</p>	PMB and Project Team	Short Term

<p>and a road map for how to achieve that vision. To be workable, this road map should be specific, concrete and with well-defined milestones. More importantly, such a road map should also identify the key decisions that will need to be made to push this process forward. If such a road map will be developed with the endorsement of all parties, it will also be important for the project team to work out a financial plan that specifies the financial envelope that will be needed and potential sources of funding.</p>		
<p><b>3. <i>Strengthening Institutional Arrangements and Inter-Agency Coordination</i></b></p> <p>Although the scope of the project was primarily environmental in nature, there were major components that were focused on foreign affairs, agriculture, justice, health, emergency responses, infrastructure, finance and municipal affairs. Indeed, although the operational aspects of the project were environmental in nature – the components of the project determining success or failure were in the spheres of foreign affairs and finance. In this context, for projects that require significant coordination across several Ministries, as well as require large financial commitments from the government – it would be beneficial for central institutions such as the Prime Minister’s Office or Deputy Prime Minister’s Office to play a greater role.</p> <p>Also, as was recognized in the project document, this complexity of institutional mandates underlines the importance of having a functioning Inter-Agency Committee on implementation of SC which would facilitate stakeholder engagement and coordination, achieving collective decision making on key issues, as well as resolving key issues related to regulatory jurisdiction and authority. This committee is a key government body responsible for overseeing the management of chemicals under the Stockholm Convention obligations. This body represents a great platform for facilitating institutional stakeholder engagement and coordination at a high government level but also to increase the visibility of the project.</p> <p>Going forward, this area will benefit from stronger leadership and more effective coordination.</p> <ul style="list-style-type: none"> <li>• First, Inter-Agency Committee needs to be strengthened and given the necessary resources and authority to exercise its mandate. The Committee should be given strong secretarial support and its work should be underpinned by a clear work plan – this function could be played by the road map mentioned above.</li> </ul>	<p>All stakeholders</p>	<p>Medium Term</p>

<ul style="list-style-type: none"> <li>• Second, the government could designate a high-level official who has the authority to convene all relevant parties and make crucial decisions in cooperation with colleagues in all relevant areas (environment, safety, health, finance, etc.). This official could chair the Inter-Agency Committee and could be held accountable for progress in this area.</li> <li>• Third, if a clear vision is developed on this process – as mentioned in the recommendation above – and if the necessary decisions by government are identified clearly, the high-level official (champion of this matter) could exercise his/her authority to ensure that all the required decisions are taken in a timely manner.</li> </ul>		
<p><b>4. Continued Role for UNDP</b></p> <p>UNDP has become a key stakeholder in this area in Armenia and it is recommended that, given its positioning, it should continue its support on this important matter. Going forward, UNDP CO should focus on two key matters.</p> <ul style="list-style-type: none"> <li>• UNDP should start exploring funding opportunities for further support in this area. Communications with GEF should be maintained on this matter, as GEF now has a vested interest in this area given its long-standing engagement. Also, UNDP could find interest in IFIs, the EU or emerging donors for engagement in this area.</li> <li>• UNDP should continue its engagement in this area by trying to keep the momentum alive through engagement and advocacy work with the main stakeholders within the Government. UNDP should lobby for strong leadership in this area, for continued action based on the foundations that have been created thus far and for financial commitments by the Government for this important area.</li> </ul>	UNDP	Medium Term
<p><b>5. Continued Stakeholder Consultations</b></p> <p>This project supported stakeholder consultations, which were important given the nature of the project – with potentially negative impacts on human health and the environment. Given that the waste disposal has not been addressed definitely yet, it will be important for the Government to maintain and further promote stakeholder engagement. This work should be grounded on a clear plan and strategy, whose development can be supported by the Project Team before the closure of the project. Furthermore, UNDP has a lot of experience with information and awareness-raising campaigns, so it can provide substantive support to the Government in this area.</p>	All stakeholders	Continuous

# **ANNEXES**

## ANNEX I: EVALUATION'S TERMS OF REFERENCE

### Terminal Evaluation Terms of Reference (ToR) for UNDP-supported GEF-financed project

<b>Job title:</b>	<b>International Consultant on Project Terminal Evaluation</b>
<b>Project title:</b>	<b>Elimination of obsolete pesticide stockpiles and addressing POPs contaminated sites within a sound chemicals management framework (PIMS #4905)</b>
<b>Project:</b>	<b>Output ID: 00091031 / Project ID: 00081909</b>
<b>Contract modality:</b>	<b>Individual Contract (IC)</b>
<b>Duration:</b>	<b>mid-April – mid-September 2021 (estimated 25 consultancy days)</b>
<b>Duty station:</b>	<b>Home based and one mission to Armenia (alternatively distant support, depending on COVID-19 restrictions)</b>

## 1. INTRODUCTION

In accordance with UNDP and GEF M&E policies and procedures, all full- and medium-sized UNDP-supported GEF-financed projects are required to undergo a Terminal Evaluation (TE) at the end of the project. This Terms of Reference (ToR) sets out the expectations for the TE of the full-sized project titled **“Elimination of obsolete pesticide stockpiles and addressing POPs contaminated sites within a sound chemicals management framework” (PIMS #4905)** implemented through the UNDP jointly with the Ministry of Environment and the Ministry of Emergency Situations, in partnership with the staff of the Deputy Prime Minister's office, Ministry of Foreign Affairs of the Republic of Armenia, with other line ministries and with Yerevan Municipality. The project started on May 26, 2015 and is in its sixth year of implementation. The TE process must follow the guidance outlined in the document ‘Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects’ ([http://web.undp.org/evaluation/guideline/documents/GEF/TE\\_GuidanceforUNDP-supportedGEF-financedProjects.pdf](http://web.undp.org/evaluation/guideline/documents/GEF/TE_GuidanceforUNDP-supportedGEF-financedProjects.pdf)).

## 2. PROJECT BACKGROUND AND CONTEXT

The objective of the project is to protect human health and the environment globally as well as locally through elimination of persistent organic pollutants (POPs) and obsolete pesticide (OP) stockpiles and addressing associated contaminated sites within a sound chemical's management framework. The project is directed jointly by the Ministry of Environment and the Ministry Emergency Situations in partnership with Yerevan Municipality, Ministry of Foreign Affairs, Ministry of Agriculture, Ministry of Health. The project was designed to meet this objective by eliminating a large POPs pesticide burial site that

represents the major POPs stockpile and waste legacy for the country. In total, approximately 4,123 tons of POPs waste in the form of heavily contaminated soil, 1,052 tons of POPs pesticides and other obsolete pesticides needed to be recovered, secured and ultimately treated and destroyed in an environmentally sound manner. A further 8,500 tons of less severely POPs contaminated soil was identified to be securely contained. Additionally, the project intended to provide critically needed hazardous waste infrastructure and national technical capability for the ongoing management of POPs and other chemical hazardous wastes as well as supporting the strengthening of institutional and regulatory capacity within the overall chemicals' management framework.

The project objective was planned to be achieved through the four main components:

**Component 1:** Capture and Containment of Obsolete Pesticide Stockpiles and Wastes

**Component 2:** Obsolete Pesticide and POPs Waste Elimination

**Component 3:** Institutional and Regulatory Capacity Strengthening for Sound Chemicals management and Contaminated Sites

**Component 4:** Project Monitoring and Evaluation

The project contributes to:

- ✓ **UNDAF Outcome 7 and CP Outcome 4 (13), CPAP Output 1.3:** "By 2020, sustainable development principles and good practices for environmental sustainability resilience building, climate change adaptation and mitigation, and green economy are introduced and applied".
- ✓ **Strategic Plan 2018-21 Outcome 1:** Advance poverty eradication in all its forms and dimensions  
**Output: 1.4.1.** Solutions scaled up for sustainable management of natural resources, including sustainable commodities and green and inclusive value chains.

The project contributes to the following **SDGs**:

Goal 9: Industry, Innovation and Infrastructure

Goal 11: Sustainable Cities and Communities

**Goal 12: Responsible Consumption and Production**

The project runs on allocations of 4,700,000 USD from GEF and additional input of 200,000 USD from UNDP and committed 16,020,000 USD as in-kind and cash co-financing of contributions from the Government of the Republic of Armenia.

The Project Management Board is responsible for making consensus-based decisions, in particular when guidance is required by the Project Coordinator (PC). The Board played a critical role in project monitoring and evaluations by assuring the quality of these processes and associated products, and by using evaluations for improving performance, accountability and learning. The Project Management Board includes the key national government agencies as followings: Republic of Armenia Deputy Prime Minister's Office, Ministry of Environment, Ministry of Emergency Situations, Ministry of Foreign Affairs,

Yerevan City Municipality, Ministry of Health, Ministry of Economy, Ministry of Finance. Project Management Board contains of three distinct roles: Executive, Senior Supplier, Senior Beneficiary. The project is implemented by the Ministry of Environment (MoE) following UNDP's National Implementation Modality (NIM).

The extended end date of the project is 31 December 2021.

### **3. TE PURPOSE**

The TE report will assess the achievement of project results against what was expected to be achieved and draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming. The TE report will promote accountability and transparency and will assess the extent of project accomplishments.

The Terminal Evaluation of the project will be performed in the final year of the project implementation, with purpose to assess what was achieved or if the expected outcome was not achieved during the base and extended years, will determine the reasons for any failure. The TE will consolidate opinion/interpretations of all sides who in this or other way were involved in the project implementation. That will help build a general picture on direct and circumstantial factors affecting the course of the project, considering that over the past three years at least three critical situations: i) "Velvet revolution"; ii) the COVID-19 pandemic; iii) the Nagorno-Karabakh military conflict and regional instability that enormously affected the project implementation processes.

Definitely, after the information collection, the analysis will be an important part of the TE to show lessons and what can be learned for the future similar projects, initiatives, situations. It will be important to also attract as many as possible former officials – who worked closely with the project as Project Management Board members, for a comprehensive opinion collection. Findings of the TE will be shared with stakeholders and will also serve as a useful source of reference for professional networks, the staff of similar projects in other countries, and other practitioners in the area.

The timing of the TE is defined according to the project extended new end date – 31 December 2021. The TE will be conducted during April – September 2021. The mission to Armenia will depend on the COVID-19 situation and the associated travel limitations. However, it's recommendable to conduct the mission (online or in the country as will be defined) before snap elections in Armenia in June 2021. Besides the fact-finding mission and drafting the report by the TE expert, it is important to consider also the time necessary for the review and feedback to the draft report by stakeholders.

In such evaluations, the face-to-face meeting for conducting in-depth interview is very important to assure the open communication, transparency, completeness of information, etc. However, considering the COVID-19 created limitations, if the mission to Armenia is impossible, the evaluation will be conducted remotely.

### **4. TE APPROACH & METHODOLOGY**

The TE report must provide evidence-based information that is credible, reliable and useful.

The TE Evaluator will review the relevant sources of information including documents prepared during the preparation phase (i.e. PIF, UNDP Initiation Plan, UNDP Social and Environmental Screening

Procedure/SESP), the Project Document, project reports including the annual PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that the Evaluator will consider useful for this evidence-based evaluation. The TE Evaluator will review the baseline and midterm GEF focal area Core Indicators/Tracking Tools submitted to the GEF at the CEO endorsement and midterm stages and the terminal Core Indicators/Tracking Tools that must be completed before the TE field mission begins.

The TE Evaluator is expected to follow a participatory and consultative approach ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), Implementing Partners, the UNDP Country Office(s), the Regional Technical Advisor, direct beneficiaries and other stakeholders.

Ideally, the evaluator is expected to conduct a field mission to Armenia (can be realized depending on elimination of the COVID-19 restrictions). If the smooth travel and in country accommodation, meetings will be possible to arrange without losing mission days, then this will be the preferred arrangement for conducting the evaluation. The alternative format practiced by the CO during the recent year, will be the scheduling and organizing on-line video-interviews with project stakeholders, experts, and beneficiaries.

Engagement of stakeholders is vital to a successful TE. Stakeholder involvement should consist of interviews with stakeholders who have project responsibilities, including (executing agencies, senior officials and task team/component leaders, key experts and consultants in the subject area, members of the Project Management Board/Advisory Committee, project beneficiaries, academia, local government and CSOs, etc.), but not limited to:

- UNDP Country Office in Armenia
- Members of the Project Management Board – representing 7 line-ministries, Yerevan Municipality (including former members, as available)
- Contractors and partners of the Project
- Consultants involved in the project

The Nubarashen obsolete pesticides landfill is the only site of the project, so the TE Evaluator may conduct field visit to this site, located in South-East of Yerevan city.

The specific design and methodology for the TE should emerge from consultations between the TE Evaluator and the above-mentioned parties regarding what is appropriate and feasible for meeting the TE purpose and objectives and answering the evaluation questions, given limitations of budget, time and data. The TE Evaluator must use gender-responsive methodologies and tools and ensure that gender equality and women's empowerment, as well as other cross-cutting issues and SDGs are incorporated into the TE report.

The final methodological approach including interview schedule, field visits and data to be used in the evaluation must be clearly outlined in the TE Inception Report and be fully discussed and agreed between UNDP, stakeholders and the TE Evaluator.

The final report must describe the full TE approach taken and the rationale for the approach making explicit the underlying assumptions, challenges, strengths and weaknesses about the methods and approach of the evaluation.

## 5. DETAILED SCOPE OF THE TE

The TE will assess project performance against expectations set out in the project's Logical Framework/Results Framework (see ToR Annex A). The TE will assess results according to the criteria outlined in the Guidance for TEs of UNDP-supported GEF-financed Projects

([http://web.undp.org/evaluation/guideline/documents/GEF/TE\\_GuidanceforUNDP-supportedGEF-financedProjects.pdf](http://web.undp.org/evaluation/guideline/documents/GEF/TE_GuidanceforUNDP-supportedGEF-financedProjects.pdf)).

The Findings section of the TE report will cover the topics listed below. A full outline of the TE report's content is provided in ToR Annex C.

The asterisk “(\*)” indicates criteria for which a rating is required.

### Findings

#### i. Project Design/Formulation

- National priorities and country drivenness
- Theory of Change
- Gender equality and women's empowerment
- Social and Environmental Standards (Safeguards)
- Analysis of Results Framework: project logic and strategy, indicators
- Assumptions and Risks
- Lessons from other relevant projects (e.g. same focal area) incorporated into project design
- Planned stakeholder participation
- Linkages between project and other interventions within the sector
- Management arrangements

#### ii. Project Implementation

- Adaptive management (changes to the project design and project outputs during implementation)
- Actual stakeholder participation and partnership arrangements
- Project Finance and Co-finance
- Monitoring & Evaluation: design at entry (\*), implementation (\*), and overall assessment of M&E (\*)
- Implementing Agency (UNDP) (\*) and Executing Agency (\*), overall project oversight/implementation and execution (\*)
- Risk Management, including Social and Environmental Standards (Safeguards)

#### iii. Project Results

- Assess the achievement of outcomes against indicators by reporting on the level of progress for each objective and outcome indicator at the time of the TE and noting final achievements
- Relevance (\*), Effectiveness (\*), Efficiency (\*) and overall project outcome (\*)
- Sustainability: financial (\*), socio-political (\*), institutional framework and governance (\*), environmental (\*), overall likelihood of sustainability (\*)
- Country ownership
- Gender equality and women's empowerment

- Cross-cutting issues (poverty alleviation, improved governance, climate change mitigation and adaptation, disaster prevention and recovery, human rights, capacity development, South-South cooperation, knowledge management, volunteerism, etc., as relevant)
- GEF Additionality
- Catalytic Role / Replication Effect
- Progress to impact

### Main Findings, Conclusions, Recommendations and Lessons Learned

- The TE Evaluator will include a summary of the main findings of the TE report. Findings should be presented as statements of fact that are based on analysis of the data.
- The section on conclusions will be written in light of the findings. Conclusions should be comprehensive and balanced statements that are well substantiated by evidence and logically connected to the TE findings. They should highlight the strengths, weaknesses and results of the project, respond to key evaluation questions and provide insights into the identification of and/or solutions to important problems or issues pertinent to project beneficiaries, UNDP and the GEF, including issues in relation to gender equality and women's empowerment.
- Recommendations should provide concrete, practical, feasible and targeted recommendations directed to the intended users of the evaluation about what actions to take and decisions to make. The recommendations should be specifically supported by the evidence and linked to the findings and conclusions around the key questions addressed by the evaluation.
- The TE report should also include lessons that can be taken from the evaluation, including best practices in addressing issues relating to relevance, performance and success that can provide knowledge gained from the particular circumstance (programmatic and evaluation methods used, partnerships, financial leveraging, etc.) that are applicable to other GEF and UNDP interventions. When possible, the TE Evaluator should include examples of good practices in project design and implementation.
- It is important for the conclusions, recommendations and lessons learned of the TE report to incorporate gender equality and empowerment of women.

The TE report will include an Evaluation Ratings Table, as shown below:

**Table 2: Evaluation Ratings for “Elimination of obsolete pesticide stockpiles and addressing POPs contaminated sites within a sound chemicals management framework” full-size project**

<b>1. Monitoring &amp; Evaluation (M&amp;E)</b>	<b>Rating*</b>
M&E design at entry	
M&E Plan Implementation	
Overall Quality of M&E	
<b>2. Implementation &amp; Execution</b>	<b>Rating</b>
Quality of UNDP Implementation/Oversight	
Quality of Implementing Partner Execution	
Overall quality of Implementation/Execution	
<b>3. Assessment of Outcomes</b>	<b>Rating</b>
Relevance	

Effectiveness	
Efficiency	
Overall Project Outcome Rating	
<b>4. Sustainability</b>	<b>Rating</b>
Financial resources	
Socio-political/economic	
Institutional framework and governance	
Environmental	
Overall Likelihood of Sustainability	

\*Outcomes, Effectiveness, Efficiency, M&E, Implementation/Oversight & Execution, Relevance are rated on a 6-point scale: 6=Highly Satisfactory (HS), 5=Satisfactory (S), 4=Moderately Satisfactory (MS), 3=Moderately Unsatisfactory (MU), 2=Unsatisfactory (U), 1=Highly Unsatisfactory (HU). Sustainability is rated on a 4-point scale: 4=Likely (L), 3=Moderately Likely (ML), 2=Moderately Unlikely (MU), 1=Unlikely (U)

## 6. TIMEFRAME

The total duration of the TE will be **25 effective person-days** over a time period of *22 weeks* starting from **15 April 2021**. The tentative TE timeframe is as follows:

Timeframe in 2021	Activity
<b>09 April</b>	Application closes
<b>19 April</b>	Selection of TE Evaluator
<b>27 April</b>	Preparation period for TE Evaluator (handover of documentation)
<b>11 May</b>	Document review and preparation of TE Inception Report
<b>18 May</b>	Finalization and Validation of TE Inception Report; start of TE mission
<b>During 20 May - 04 June</b>	TE remote mission (dates may be adjusted if the visit will be conducted): stakeholder meetings, interviews, field visits, etc.
<b>08 June 2021</b>	Mission wrap-up remote meeting & presentation of initial findings (for the visit the date will be adjusted to 04 June); earliest end of TE mission
<b>30 June</b>	Preparation of draft TE report
<b>20 July</b>	Circulation of draft TE report for comments
<b>30 July</b>	Incorporation of comments on draft TE report into Audit Trail, finalization of TE report
<b>27 August</b>	Preparation and Issuance of Management Response
<b>15 September</b>	Expected date of full TE completion

*If applicable, the options for site visits should be provided in the TE Inception Report.*

## 7. TE DELIVERABLES

#	Deliverable	Description	Timing	Responsibilities
1	TE Inception Report	TE Evaluator clarifies objectives, methodology and timing of the TE	No later than 2 weeks before the TE mission: <b>18 May 2021</b>	TE Evaluator submits Inception Report to Commissioning Unit and project management
2	Presentation	Initial Findings	End of TE mission: <b>08 June 2021</b>	TE Evaluator presents to Commissioning Unit and project management

3	Draft TE Report	Full draft report ( <i>using guidelines on report content in ToR Annex C</i> ) with annexes	Within 3 weeks of end of TE mission: <b>30 June 2021</b>	TE Evaluator submits to Commissioning Unit; reviewed by RTA, Project Coordinating Unit, GEF OFF
5	Final TE Report* + Audit Trail	Revised final report and TE Audit trail in which the TE details how all received comments have (and have not) been addressed in the final TE report ( <i>See template in ToR Annex H</i> )	Within 1 week of receiving comments on draft report: <b>30 July 2021</b>	TE Evaluator submits both documents to the Commissioning Unit

\*All final TE reports will be quality assessed by the UNDP Independent Evaluation Office (IEO). Details of the IEO's quality assessment of decentralized evaluations can be found in Section 6 of the UNDP Evaluation Guidelines - <http://web.undp.org/evaluation/guideline/section-6.shtml>

## 8. TE ARRANGEMENTS

The principal responsibility for managing the TE resides with the Commissioning Unit. The Commissioning Unit for this project's TE is the UNDP Armenia Office.

The Commissioning Unit will contract the TE Evaluator and ensure the timely provision of per diems and travel arrangements within the country, if the travel will be possible. The Project Team will be responsible for liaising with the TE Evaluator to provide all relevant documents, set up stakeholder interviews, and arrange field visits.

## 9. TE TEAM COMPOSITION

The terminal evaluation will be performed by one international evaluator in a team with evaluation support assistant. The consultant shall have prior experience in evaluating similar projects. The international evaluator will be responsible for the overall design and writing of the TE report.

As mentioned, one national specialist will assist the international evaluator in organizing and conducting the mission (in the format that will be agreed), in connecting with parties involved in the evaluation and in collecting information, will support with translations (written and oral), will assist in taking notes and will contribute with interpreting interviewee provided information and reflection in the TE report, also will assist in adjusting the TE itinerary.

The evaluator cannot have participated in the project preparation, formulation and/or implementation (including the writing of the project document), must not have conducted this project's Mid-Term Review and should not have a conflict of interest with the project's related activities.

The selection of evaluators will be aimed at maximizing the overall "team" qualities in the following areas:

Required qualification	Rating points	Weight , %
<u>Education</u> <ul style="list-style-type: none"> <li>• Master’s degree in natural, chemical, social sciences, engineering, economics, or other closely related field. Advanced education is considered an asset</li> </ul>	10	10%
<u>Experience</u> <ul style="list-style-type: none"> <li>• Minimum 7 years of relevant experience with results-based management evaluation methodologies</li> <li>• Experience applying SMART indicators and reconstructing or validating baseline scenarios</li> <li>• Competence in adaptive management, as applied to Chemicals and Waste focal area</li> <li>• Experience in evaluating projects</li> <li>• Experience working in CIS countries and in the Caucasus countries</li> <li>• Minimum 10 years of experience in relevant technical areas</li> <li>• Demonstrated understanding of issues related to gender and the Chemicals and Waste Focal Area; experience in gender responsive evaluation and analysis</li> <li>• Excellent communication skills</li> <li>• Demonstrable analytical skills</li> <li>• Project evaluation/review experience within UN system and GEF financed projects will be considered an asset</li> </ul>	10 5 5 15 15 10 5 5 5 10	50%
<u>Language</u> <ul style="list-style-type: none"> <li>• Fluency in written and spoken English</li> </ul>	5	10%

## 10. EVALUATOR ETHICS

The TE evaluator will be held to the highest ethical standards and is required to sign a code of conduct upon acceptance of the assignment. This evaluation will be conducted in accordance with the principles outlined in the UNEG 'Ethical Guidelines for Evaluation' [UNEG 'Ethical Guidelines for Evaluations'](#). The evaluator must safeguard the rights and confidentiality of information providers, interviewees and stakeholders through measures to ensure compliance with legal and other relevant codes governing collection of data and reporting on data. The evaluator must also ensure security of collected information before and after the evaluation and protocols to ensure anonymity and confidentiality of sources of information where that is expected. The information knowledge and data gathered in the evaluation process must also be solely used for the evaluation and not for other uses without the express authorization of UNDP and partners.

## 11. PAYMENT SCHEDULE

%	Deliverable
60	For deliverables 1, 2, 3. Payment upon satisfactory delivery of the draft TE report and its approval by the Commissioning Unit.
40	For deliverable 4. Payment upon satisfactory delivery of the final TE report and approval by the Commissioning Unit and RTA (via signatures on the TE Report Clearance Form) and delivery of completed TE Audit Trail.

Criteria for issuing the final payment of 40%<sup>24</sup>:

- The final TE report includes all requirements outlined in the TE TOR and is in accordance with the TE guidance.
- The final TE report is clearly written, logically organized, and is specific for this project (i.e. text has not been cut & pasted from other TE reports).
- The Audit Trail includes responses to and justification for each comment listed.

## 12. APPLICATION PROCESS

### TE evaluator will be selected from the UNDP RBEC vetted roster

Recommended Presentation of Proposal:

- a) **Offeror's Letter to UNDP Confirming Interest and Availability** using the template to be provided by UNDP
- b) **CV**, including Education/Qualification, Professional Certification, Employment Records /Experience
- c) **Financial Proposal** that indicates the all-inclusive fixed total contract price and all other travel related costs (such as flight ticket, per diem, etc), supported by a breakdown of costs, as per template attached to the [Letter of Confirmation of Interest template](#). If an applicant is employed by an organization/company/institution, and he/she expects his/her employer to charge a management fee in the process of releasing him/her to UNDP under Reimbursable Loan Agreement (RLA), the applicant must indicate at this point, and ensure that all such costs are duly incorporated in the financial proposal submitted to UNDP.

<sup>24</sup> The Commissioning Unit is obligated to issue payments to the TE Evaluator as soon as the terms under the ToR are fulfilled. If there is an ongoing discussion regarding the quality and completeness of the final deliverables that cannot be resolved between the Commissioning Unit and the TE Evaluator, the Regional M&E Advisor and Vertical Fund Directorate will be consulted. If needed, the Commissioning Unit's senior management, Procurement Services Unit and Legal Support Office will be notified as well so that a decision can be made about whether or not to withhold payment of any amounts that may be due to the evaluator(s), suspend or terminate the contract and/or remove the individual contractor from any applicable rosters. See the UNDP Individual Contract Policy for further details:

[https://popp.undp.org/\\_layouts/15/WopiFrame.aspx?sourcedoc=/UNDP\\_POPP\\_DOCUMENT\\_LIBRARY/Public/PSU\\_Individual%20Contract\\_Individual%20Contract%20Policy.docx&action=default](https://popp.undp.org/_layouts/15/WopiFrame.aspx?sourcedoc=/UNDP_POPP_DOCUMENT_LIBRARY/Public/PSU_Individual%20Contract_Individual%20Contract%20Policy.docx&action=default)

All application materials should be submitted to the address: [silva.abelyan@undp.org](mailto:silva.abelyan@undp.org) indicating the following reference "Consultant for Terminal Evaluation of **"Elimination of obsolete pesticide stockpiles and addressing POPs contaminated sites within a sound chemicals management framework"** full sized project, no later than day/time indicated in the distribution email. Incomplete applications will be excluded from further consideration.

**Criteria for Evaluation of Proposal:** Only those applications which are responsive and compliant will be evaluated. Applications obtaining a minimum of 70 points for Technical Criteria would be considered for the Financial Evaluation. Offers will be evaluated according to the Combined Scoring method – where the educational background and experience on similar assignments will be weighted at 70% and the price proposal will weigh as 30% of the total scoring. The applicant receiving the Highest Combined Score that has also accepted UNDP's General Terms and Conditions will be awarded the contract.

### **13. TOR ANNEXES**

- ToR Annex A: Project Logical/Results Framework
- ToR Annex B: Project Information Package to be reviewed by TE evaluator
- ToR Annex C: Content of the TE report
- ToR Annex D: Evaluation Criteria Matrix template
- ToR Annex E: UNEG Code of Conduct for Evaluators
- ToR Annex F: TE Rating Scales
- ToR Annex G: TE Report Clearance Form
- ToR Annex H: TE Audit Trail

## ToR Annex A: Project Logical/Results Framework

### Elimination of obsolete pesticide stockpiles and addressing POPs contaminated sites within a Sound Chemicals Management Framework in Armenia” UNDP-GEF full-sized project

Objective/Outcome	Indicator	Baseline	Mid-term target	End-project target
<p><b>Objective:</b> Protection of health and environment through elimination of obsolete pesticide stockpiles and addressing contaminated sites within a sound chemicals management strategy</p>	<p>Obsolete pesticides (OPs) stockpiles including POPs pesticides (Category 1 waste) and highly contaminated soil (Category 2 waste) are securely packaged and/or stored pending elimination; low contaminated soil (Category 3 waste) stored pending backfilling</p>	<p>The major current obsolete pesticides (OPs) stockpile site and major remaining location of POPs pesticides at the Nubarashen burial site is in a state that creates a risk to health and the environment. And has expanded to create a significant contaminated site</p> <p>Lesser stockpiles and associated site contamination exist unaddressed at 24 OP storehouses</p> <p>Contaminated soils classified sufficiently to constitute a potent risk remain uncontained at some of these storehouse sites</p>	<p>1,052 t of obsolete pesticides (OPs) and POPs pesticides (Category 1 waste) excavated, packaged and securely stored pending removal and environmental sound disposal</p> <p>4,123 t of highly contaminated POPs waste/soil (Category 2 waste) and 8,500 t of POPs low contaminated waste/soil (Category 3 soil) excavated and safeguarded for temporary storage on-site</p>	<p>Removal of 1,052 t of obsolete pesticides (OPs) and POPs pesticides (Category 1 waste) for environmentally sound disposal</p> <p>4,123 t of Category 2 waste safeguarded and securely stored on-site before treatment</p> <p>8,500 t of Category 3 waste/soil securely stored on-site before backfilling</p>
	<p>Major stockpiles of OPs and POPs pesticide wastes have been disposed in an environmental sound manner</p>	<p>No elimination of national stockpiles of OPs has been attempted</p>	<p>Commercial arrangements made for the export and disposal of 1,052 t of Category 1 waste</p> <p>Technology selection and demonstration along with commercial arrangements made for the treatment/disposal of 4,123 t of Category 2 waste</p>	<p>1,052 t of Category 1 waste exported and disposed</p> <p>4,123 t of Category 2 waste treated/disposed</p> <p>8,500 t of Category 3 waste/soil backfilled and monitored at the restored and stabilized Nubarashen ex-burial site</p>

Objective/Outcome	Indicator	Baseline	Mid-term target	End-project target
	National legal instruments and regulatory framework for hazardous waste (HW) and contaminated sites are updated with gaps filled, conflicts resolved and consistent with relevant international requirements	Current legal and regulatory framework for HW and contaminated site management has significant gaps and conflicting provisions	Completed analysis and definition of current gaps and requirements for legal and regulatory changes documented and actions agreed (to be completed when Component 3 inputs received)	Respectively updated regulatory framework for chemical HW management documented
	Core national technical capacity in place relative to HW management, risk assessment and contaminated site management	Limited technical capacity in key areas of expertise and support infrastructure	Identification and documentation of key methodologies and scope for the required risk assessment and initial application in the project activities	Environmental and health risk assessment methodologies documented, disseminated and implemented as part of the national regulatory assessment process for chemical HW and contaminated site management  Professionals in regulatory agencies, academia, NGOs and environmental service providers trained on their application
	Co-financing is available timely to complete the planned activities	Government commitment letter on 16,02 million USD co-financing including in-kind and cash contribution	Development of a plan on timely availability of necessary co-financing cash component developed and agreed with the Government	Timely availability of necessary co-financing cash component
<b>ACTIVITY 1. Capture and Containment of Obsolete Pesticide Stockpiles and Wastes</b>				
<b>Outcome 1.1:</b> Removal of priority OP and POPs pesticides waste from the Nubarashen burial site, secure containment of residual contamination on-site, site stabilization and restoration, with	Detailed site assessment, design documentation, tender specification, implementation procedures including Environmental Health and Safety (EHS) procedures, Environmental Impact Assessment (EIA) and required approvals in place to initiate Nubarashen burial site works	Preliminary site assessment completed during PPG  Conceptual design for waste excavation and containment, site stabilization completed during the PPG  No formal EIA or site approvals initiated	Detailed design with supporting tender documents and site clean-up specifications developed  EIA and formal approvals in place  Operational procedures including EHS procedures in place and utilized	Implementation of designed works, conformance of operational procedures with approved conditions verified

Objective/Outcome	Indicator	Baseline	Mid-term target	End-project target
the site secured under appropriate institutional arrangements providing effective access limitations, monitoring and future land use control, all endorsed by an informed public	Volume of Category 1 waste excavated and removed and volume of Category 2 waste/soil excavated, displaced for temporary secure storage on-site and secure containment in stabilized Nubarashen ex-burial site	<p>An estimated 5,175 t of Category 1 and Category 2 waste is found in and around the Nubarashen burial site</p> <p>Risk assessments identified the need to ensure removal of high risk POPs waste</p>	<p>Excavation and packaging of 1,052 t Category 1 waste for secure temporary storage on-site</p> <p>Excavation and safeguarding of 4,123 t of Category 2 waste for secure temporary storage on-site</p>	<p>Removal of 1,052 t Category 1 waste for secure temporary storage</p> <p>Displacement of 4,123 t of Category 2 waste for secure temporary storage on-site and containment in stabilized Nubarashen ex-burial site after environmentally sound treatment</p>
	Excavation, displacement and secure storage of 8,500 t of Category 3 soil and backfilling in stabilized Nubarashen ex-burial site	<p>Containment of pure pesticide burial cells compromised</p> <p>Contamination has spread to soil across and around the Nubarashen site</p>	Excavation, displacement of 8,500 t of Category 3 soil for secure temporary storage on-site	On-site secure permanent backfilling of 8,500 t of Category 3 soil at the restored and stabilized Nubarashen ex-burial site
	Availability of restoration, monitoring and access control provisions for the Nubarashen burial site and completion of civil works to stabilize the surrounding land and drainage system	<p>Only temporary containment works in place involving basic drainage, and cover of the burial site itself</p> <p>Site is generally intact but poorly maintained and sparsely vegetated, subject to erosion, drainage blockage and surrounding geotechnical and hydrogeological instability</p> <p>Basic ground water monitoring capability in place</p> <p>Site security and access control as part of an emergency measures order but general public access to area permitted</p>	<p>Upgraded and enforced public access controls</p> <p>Upgraded access roads, security controls and site protection measures suitable for the active excavation and restoration works</p> <p>Temporary repairs and modification to on-site upstream and downstream drainage to assure minimum water ingress during active site excavation and remediation works</p>	<p>Fully restored site with sustainable phytoremediation vegetation, appropriately fenced and gated with signage including a 100m buffer zone around the former burial site</p> <p>Upgraded and functional site drainage system</p> <p>Permanent measures to maintain land stability upstream and downstream of site</p> <p>Long term monitoring program in place and funded by national budgets</p> <p>Institutional arrangements made respecting long-term land use of the site and surrounding territory</p>

Objective/Outcome	Indicator	Baseline	Mid-term target	End-project target
	Availability of trained capability in the practical handling/management of chemicals HW and contaminated site clean-up	Limited national capability in the practical management of hazardous chemicals wastes and contaminated site clean-up	Training delivered to 20 national technical and regulatory staff in support of Nubarashen burial site HW waste excavation, packaging, secure storage, transportation and site restoration operations	Developed sustainable operational capability in the public and private sector for chemical HW and contaminated site clean-up management
	High level of public awareness, engagement and support for the clean-up activities and ongoing custody and monitoring arrangements for the Nubarashen burial site supported by appropriate awareness products	Limited awareness on the site, risks and activities being undertaken with respect to its clean-up	3 public consultation events held and 10 public documents/web/media products produced	5 public consultation events held and 15 public documents/web/media products produced (cumulative numbers)  Survey indicating the views of affected public stakeholders conducted upon completion
<b>Outcome 1.2:</b> Development of the national chemical hazardous waste (HW) management site and upgrading with secure storage and basic infrastructure capacities to allow the secure storage of chemical HW	Availability of detailed design documentation, tender specification, implementation procedures including EHS procedures, EIA and required approvals to initiate the chemical HW management site development	Ministry of Emergency Situations site in Kotayk marz assessed as suitable for development  Preliminary conceptual design survey and cost estimate complete  Initial public consultation with authorities and local public undertaken	Developed detailed design with supporting tender documents and construction specifications for chemical HW site development  EIA and formal approvals in place  Operational procedures including EHS procedures developed and utilized	Implementation of designed works, conformance of operational procedures with approved conditions verified
	National chemical HW management site developed and operates to international standards and number of trained and equipped staff for the practical operation of the facility	No suitable chemical HW storage or management facilities available in Armenia	Construction and upgrading works of the national chemical HW management site completed to national and international standards  Training delivered to 10 national technical and regulatory staff in support of national chemical HW facility operations  National chemical HW management site operational and being used for the storage of chemical HW	National chemical HW management site utilized for general chemical HW management activities on a sustainable basis  Sustainable operational capability for chemical HW management facility developed

Objective/Outcome	Indicator	Baseline	Mid-term target	End-project target
	Number of public consultation held and public documents/web/ media products delivered to display high level of public awareness, engagement and enhancement support for the national chemical HW facility activities	Initial public consultations with local authorities and affected public stakeholders undertaken	3 public consultation events held and 5 public documents/web/media products delivered	5 public consultation events held and 10 public documents/web/media products delivered
<b>Outcome 1.3:</b> Remaining significant historical obsolete pesticides (OPs) storehouses addressed, OP stocks packaged and removed and residual site contamination cleaned up	Availability of completed/ documented screening assessments of identified historical OP storehouse stockpile sites and volume of OP stockpiles and cleaned residuals packed and removed to storage	Fragmented historical assessment and inventory work consolidated for project preparation  24 OP stockpile sites identified and up to 6 sites considered priorities for substantive clean-up  Preliminary commitment for EU funding of initial work pending	EU/Ministry of Agriculture - MoA/FAO administered site assessment, packaging and surficial clean-up undertaken to make available 150 t of OPs and residuals for storage and environmentally sound disposal arranged by FAO  Public consultation conducted at priority OP storehouse sites	Under MoA supervision the former priority OP storehouse sites are maintained for other productive uses
	Availability of completed/ documented detailed contaminated site and risk assessments and remediation/clean-up designs on identified priority storehouse sites and a number of public consultation events held at number of priority storehouse sites and public acceptance of actions	Limited site assessment work done by local and international NGOs  No dedicated public consultation activities on priority sites to date	Preliminary site assessment reports received from MoA and reviewed/evaluated  Priority OP storehouse sites for substantive clean-up agreed with MoA and MNP	Detailed contaminated site and risk assessments and remediation/clean-up designs on identified up to 6 priority OP storehouse sites completed/documentated  6 public consultation events held in the communities of 6 priority OP storehouse sites
	Volume of OPs stockpiles packed, removed from a number of priority OP storehouse sites and residual site contamination cleaned-up	No clean-up activity undertaken at any OP storehouse site	No action	Excavation/removal, disposal and/or containment of up to 150 t of POPs waste from up to 6 priority OP storehouse sites completed
<b>ACTIVITY 2. Obsolete Pesticide Stockpile and Waste Elimination</b>				

Objective/Outcome	Indicator	Baseline	Mid-term target	End-project target
<b>Outcome 2.1:</b> Export and environmentally sound disposal of Category 1 waste	Volume of Category 1 waste exported and disposed under an environmentally sound	No destruction of POPs pesticides, POPs wastes or OPs yet undertaken	International pre-qualification of Category 1 waste disposal facility, tender and contract documents prepared and implemented  Export from Armenia and environmentally sound disposal of 1,052 t Category 1 waste for destruction at a qualified disposal facility	Environmentally sound disposal of any contingency volumes of Category 1 waste at a qualified disposal facility
<b>Outcome 2.2:</b> Environmentally sound treatment of Category 2 waste/soil	Volume of treated Category 2 waste below the low POPs content and demonstration of commercial viability of the Category 2 waste/soil treatment technology in Armenia	No highly contaminated soil treatment/remediation facilities available in the country	International pre-qualification of Category 2 waste treatment technology, tender and contract documents prepared and implemented  Waste treatability testing of candidate shortlisted technologies completed  Site preparation arrangements for hosting the feasible technology as required completed	Environmentally sound treatment of 4,123 t of Category 2 waste to levels below the low POPs content
	Number of national technical personnel completed operational training, availability of service providers of a modern contaminated soil treatment technology	No currently qualified technical personnel or service providers in Armenia for treatment of POPs contaminated soil	20 national technical personnel trained on a modern contaminated soil treatment technology	20 national technical personnel qualified on a modern contaminated soil treatment technology operation
<b>ACTIVITY 3. Institutional and Regulatory Capacity Strengthening for Sound Chemicals Management and Contaminated Sites</b>				
<b>Outcome 3.1:</b> Legal/regulatory and technical guidance tools for management of chemical wastes, including POPs, and, contaminated sites management within a national sound	Policies, legislation and regulatory measures respecting chemical HW and contaminated sites management reviewed, updated and appropriate revisions implemented	Basic framework legislation in place but has gaps, inconsistencies and conflicts with international standards and obligations under Stockholm and Basel Conventions	Systematic review and clarification of existing legislation and regulations on chemical HW and contaminated sites management completed  Action plan for streamlining and filling gaps in existing legislation consistent with international practice adopted and implemented	List of project specific legislative and regulatory review measures

Objective/Outcome	Indicator	Baseline	Mid-term target	End-project target
chemicals management framework strengthened	Availability of technical guidance on environmental and health risk assessment methodologies and practices applicable to chemical HW and contaminated sites and on operational and EHS procedures for chemical HW handling, transport, storage and disposal, developed in accordance with international practices and a number of relevant national personnel trained	<p>While requirements exist in legislation requiring technical guidelines on operational safety procedures for hazardous chemicals waste handling, transport, storage and disposal to be in place these have not been developed and adopted</p> <p>Limited national expertise exists in implementation of operational procedures for HW management</p> <p>No nationally adopted guidance materials exist for environmental and health risk assessment</p>	<p>Draft guidance materials on environmental and health risk assessment methodologies and practices applicable to chemical HW and contaminated sites developed in accordance with international practice prepared and reviewed</p> <p>Draft guidance materials on operational and EHS procedures for chemical HW handling, transport, storage and disposal consistent with international practices prepared and reviewed</p> <p>Training program on chemical HW handling, transport, storage and disposal developed</p> <p>Training sessions involving at least 10 train-the-trainers is undertaken</p>	<p>Guidance materials on environmental and health risk assessment methodologies/practices and on operational and EHS procedures applicable to chemical HW and contaminated sites handling, transport, storage and disposal consistent with international practice adopted and implemented</p> <p>At least 50 relevant technical professionals from regulatory authorities, academia, NGOs and environmental service provider personnel in regulatory and private sectors attained relevant certification for completion of the national training program</p>
<b>Outcome 3.3:</b> Basic national capacity for effective POPs containing hazardous chemicals sampling and analysis developed, operational to be certified to international standards	Availability of adopted national strategy for rationalization and upgraded national laboratory capability to serve a sound chemicals management framework focusing for POPs analysis and management	<p>Highly fragmented under-equipped and resourced laboratory infrastructure distributed across the regulatory, academic and private sector</p> <p>Lack of fully creditable capability to service the needs of regulators and the industrial/private sector</p>	National laboratory enhancement strategy developed, endorsed by major institutional and public stakeholders and endorsed for implementation by the government	National laboratory enhancement strategy supporting the availability of capability for effective hazardous chemicals sampling and analysis for sound POPs chemicals management implemented
	Number of designated national laboratories upgraded with suitable capability for POPs hazardous chemical waste sampling/analysis and number of laboratory personnel completed training program	<p>Reasonably good but somewhat outdated capability in MNP regulatory laboratory and one modern academic laboratory.</p> <p>Growing number of private sector laboratories</p>	<p>Selection of 2 designated laboratories from regulatory and academic/private sector for upgrading</p> <p>Approved specifications and plans for upgrading of designated laboratories</p>	<p>2 designated laboratories upgraded and operational</p> <p>Long term national budget commitments and/or business plans in place ensuring sustainable operation of upgraded laboratories</p>

Objective/Outcome	Indicator	Baseline	Mid-term target	End-project target
		Variable levels of training and qualifications in existing laboratory personnel	10 technical personnel from designated laboratories and regulatory institutions trained	15 technical laboratory personnel from designated laboratories and regulatory institutions completed training program
	Number of designated national laboratories initiated introduction of international certification methods and practices	Only one laboratory operating with partial internationally certified methods	1 designated laboratory initiated introduction of international certification methods and practices for POPs analysis	2 designated laboratories initiated introduction of international certification methods and practices for POPs analysis
<b>Activity 4. Monitoring, learning, adaptive feedback, outreach, and evaluation</b>				
<b>Outcome 4:</b> Monitoring, learning, adaptive feedback, outreach, and evaluation	M&E and adaptive management applied to project in response to needs, mid-term evaluation findings with lessons learned extracted	No Monitoring and Evaluation system  No evaluation of project output and outcomes	Monitoring and Evaluation system developed  Mid-term evaluation of project output and outcomes conducted with lessons learned	Final evaluation report developed in the end of the project

## ToR Annex B: Project Information Package to be reviewed by TE Evaluator

#	Item (electronic versions preferred if available)
1	Project Identification Form (PIF)
2	UNDP Initiation Plan
3	Final UNDP-GEF Project Document with all annexes
4	CEO Endorsement Request
5	UNDP Social and Environmental Screening Procedure (SESP) and associated management plans (if any)
6	Inception Workshop Report
7	Mid-Term Review report and management response to MTR recommendations
8	All Project Implementation Reports (PIRs)
9	Progress reports (quarterly, semi-annual or annual, with associated workplans and financial reports)
10	Oversight mission reports
11	Minutes of Project Board Meetings and of other meetings (i.e. Project Appraisal Committee meetings)
12	GEF Tracking Tools (from CEO Endorsement, midterm and terminal stages)
13	GEF/LDCF/SCCF Core Indicators (from PIF, CEO Endorsement, midterm and terminal stages); for GEF-6 and GEF-7 projects only
14	Financial data, including actual expenditures by project outcome, including management costs, and including documentation of any significant budget revisions
15	Co-financing data with expected and actual contributions broken down by type of co-financing, source, and whether the contribution is considered as investment mobilized or recurring expenditures
16	Audit reports
17	Electronic copies of project outputs (booklets, manuals, technical reports, articles, etc.)
18	Sample of project communications materials
19	Summary list of formal meetings, workshops, etc. held, with date, location, topic, and number of participants
20	Any relevant socio-economic monitoring data, such as average incomes / employment levels of stakeholders in the target area, change in revenue related to project activities
21	List of contracts and procurement items over ~US\$5,000 (i.e. organizations or companies contracted for project outputs, etc., except in cases of confidential information)
22	List of related projects/initiatives contributing to project objectives approved/started after GEF project approval (i.e. any leveraged or "catalytic" results)
23	Data on relevant project website activity – e.g. number of unique visitors per month, number of page views, etc. over relevant time period, if available
24	UNDP Country Programme Document (CPD)
25	List/map of project sites, highlighting suggested visits
26	List and contact details for project staff, key project stakeholders, including Project Board members, RTA, Project Team members, and other partners to be consulted
27	Project deliverables that provide documentary evidence of achievement towards project outcomes
	<i>Additional documents, as required</i>

## ToR Annex C: Content of the TE report

- i. Title page
  - Title of UNDP-supported GEF-financed project
  - UNDP PIMS ID and GEF ID
  - TE timeframe and date of final TE report
  - Region and countries included in the project
  - GEF Focal Area/Strategic Program
  - Executing Agency, Implementing partner and other project partners
  - TE Team members
- ii. Acknowledgements
- iii. Table of Contents
- iv. Acronyms and Abbreviations
1. Executive Summary (3-4 pages)
  - Project Information Table
  - Project Description (brief)
  - Evaluation Ratings Table
  - Concise summary of findings, conclusions and lessons learned
  - Recommendations summary table
2. Introduction (2-3 pages)
  - Purpose and objective of the TE
  - Scope
  - Methodology
  - Data Collection & Analysis
  - Ethics
  - Limitations to the evaluation
  - Structure of the TE report
3. Project Description (3-5 pages)
  - Project start and duration, including milestones
  - Development context: environmental, socio-economic, institutional, and policy factors relevant to the project objective and scope
  - Problems that the project sought to address, threats and barriers targeted
  - Immediate and development objectives of the project
  - Expected results
  - Main stakeholders: summary list
  - Theory of Change
4. Findings
 

(in addition to a descriptive assessment, all criteria marked with (\*) must be given a rating<sup>25</sup>)

  - 4.1 Project Design/Formulation
    - Analysis of Results Framework: project logic and strategy, indicators
    - Assumptions and Risks

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<sup>25</sup> See ToR Annex F for rating scales.

- Lessons from other relevant projects (e.g. same focal area) incorporated into project design
- Planned stakeholder participation
- Linkages between project and other interventions within the sector

#### 4.1 Project Implementation

- Adaptive management (changes to the project design and project outputs during implementation)
- Actual stakeholder participation and partnership arrangements
- Project Finance and Co-finance
- Monitoring & Evaluation: design at entry (\*), implementation (\*), and overall assessment of M&E (\*)
- UNDP implementation/oversight (\*) and Implementing Partner execution (\*), overall project implementation/execution (\*), coordination, and operational issues
- Risk Management, including Social and Environmental Standards (Safeguards)

#### 4.2 Project Results and Impacts

- Progress towards objective and expected outcomes (\*)
- Relevance (\*)
- Effectiveness (\*)
- Efficiency (\*)
- Overall Outcome (\*)
- Sustainability: financial (\*), socio-economic (\*), institutional framework and governance (\*), environmental (\*), and overall likelihood (\*)
- Country ownership
- Gender equality and women's empowerment
- Cross-cutting Issues
- GEF Additionality
- Catalytic/Replication Effect
- Progress to Impact

#### 5. Main Findings, Conclusions, Recommendations & Lessons

- Main Findings
- Conclusions
- Recommendations
- Lessons Learned

#### 6. Annexes

- TE ToR (excluding ToR annexes)
- TE Mission itinerary, including summary of field visits
- List of persons interviewed
- List of documents reviewed
- Evaluation Question Matrix (evaluation criteria with key questions, indicators, sources of data, and methodology)
- Questionnaire used and summary of results
- Co-financing tables (if not include in body of report)
- TE Rating scales

- Signed Evaluation Consultant Agreement form
- Signed UNEG Code of Conduct form
- Signed TE Report Clearance form
- *Annexed in a separate file:* TE Audit Trail
- *Annexed in a separate file:* relevant terminal GEF/LDCF/SCCF Core Indicators or Tracking Tools, as applicable

## ToR Annex D: Evaluation Criteria Matrix template

<b>Evaluative Criteria Questions</b>	<b>Indicators</b>	<b>Sources</b>	<b>Methodology</b>
Relevance: How does the project relate to the main objectives of the GEF Focal area, and to the environment and development priorities at the local, regional and national level?			
<i>(include evaluative questions)</i>	<i>(i.e. relationships established, level of coherence between project design and implementation approach, specific activities conducted, quality of risk mitigation strategies, etc.)</i>	<i>(i.e. project documentation, national policies or strategies, websites, project staff, project partners, data collected throughout the TE mission, etc.)</i>	<i>(i.e. document analysis, data analysis, interviews with project staff, interviews with stakeholders, etc.)</i>
Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?			
Efficiency: Was the project implemented efficiently, in line with international and national norms and standards?			
Sustainability: To what extent are there financial, institutional, socio-political, and/or environmental risks to sustaining long-term project results?			
Gender equality and women's empowerment: How did the project contribute to gender equality and women's empowerment?			
Impact: Are there indications that the project has contributed to, or enabled progress toward reduced environmental stress and/or improved ecological status?			
<i>(Expand the table to include questions for all criteria being assessed: Monitoring &amp; Evaluation, UNDP oversight/implementation, Implementing Partner Execution, cross-cutting issues, etc.)</i>			

## ToR Annex E: UNEG Code of Conduct for Evaluators

Independence entails the ability to evaluate without undue influence or pressure by any party (including the hiring unit) and providing evaluators with free access to information on the evaluation subject. Independence provides legitimacy to and ensures an objective perspective on evaluations. An independent evaluation reduces the potential for conflicts of interest which might arise with self-reported ratings by those involved in the management of the project being evaluated. Independence is one of ten general principles for evaluations (together with internationally agreed principles, goals and targets: utility, credibility, impartiality, ethics, transparency, human rights and gender equality, national evaluation capacities, and professionalism).

### Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.
8. Must ensure that independence of judgement is maintained, and that evaluation findings and recommendations are independently presented.
9. Must confirm that they have not been involved in designing, executing or advising on the project being evaluated and did not carry out the project's Mid-Term Review.

### Evaluation Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Evaluator: \_\_\_\_\_

Name of Consultancy Organization (where relevant): \_\_\_\_\_

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at \_\_\_\_\_ (Place) on \_\_\_\_\_ (Date)

Signature: \_\_\_\_\_

## ToR Annex F: TE Rating Scales

Ratings for Outcomes, Effectiveness, Efficiency, M&E, Implementation/Oversight, Execution, Relevance	Sustainability ratings:
<p>6 = Highly Satisfactory (HS): exceeds expectations and/or no shortcomings</p> <p>5 = Satisfactory (S): meets expectations and/or no or minor shortcomings</p> <p>4 = Moderately Satisfactory (MS): more or less meets expectations and/or some shortcomings</p> <p>3 = Moderately Unsatisfactory (MU): somewhat below expectations and/or significant shortcomings</p> <p>2 = Unsatisfactory (U): substantially below expectations and/or major shortcomings</p> <p>1 = Highly Unsatisfactory (HU): severe shortcomings</p> <p>Unable to Assess (U/A): available information does not allow an assessment</p>	<p>4 = Likely (L): negligible risks to sustainability</p> <p>3 = Moderately Likely (ML): moderate risks to sustainability</p> <p>2 = Moderately Unlikely (MU): significant risks to sustainability</p> <p>1 = Unlikely (U): severe risks to sustainability</p> <p>Unable to Assess (U/A): Unable to assess the expected incidence and magnitude of risks to sustainability</p>

Evaluation Ratings Table	
<b>1. Monitoring &amp; Evaluation (M&amp;E)</b>	<b>Rating<sup>26</sup></b>
M&E design at entry	
M&E Plan Implementation	
Overall Quality of M&E	
<b>2. Implementation &amp; Execution</b>	<b>Rating</b>
Quality of UNDP Implementation/Oversight	
Quality of Implementing Partner Execution	
Overall quality of Implementation/Execution	
<b>3. Assessment of Outcomes</b>	<b>Rating</b>
Relevance	
Effectiveness	
Efficiency	
Overall Project Outcome Rating	
<b>4. Sustainability</b>	<b>Rating</b>
Financial resources	
Socio-political/economic	
Institutional framework and governance	
Environmental	
Overall Likelihood of Sustainability	

<sup>26</sup> Outcomes, Effectiveness, Efficiency, M&E, I&E Execution, Relevance are rated on a 6-point rating scale: 6 = Highly Satisfactory (HS), 5 = Satisfactory (S), 4 = Moderately Satisfactory (MS), 3 = Moderately Unsatisfactory (MU), 2 = Unsatisfactory (U), 1 = Highly Unsatisfactory (HU). Sustainability is rated on a 4-point scale: 4 = Likely (L), 3 = Moderately Likely (ML), 2 = Moderately Unlikely (MU), 1 = Unlikely (U)

## ToR Annex G: TE Report Clearance Form

<b>Terminal Evaluation Report for (Project Title &amp; UNDP PIMS ID) Reviewed and Cleared By:</b>	
<b>Commissioning Unit (M&amp;E Focal Point)</b>	
Name: _____	
Signature: _____	Date: _____
<b>Regional Technical Advisor (Nature, Climate and Energy)</b>	
Name: _____	
Signature: _____	Date: _____

## ToR Annex H: TE Audit Trail

*The following is a template for the TE Team to show how the received comments on the draft TE report have (or have not) been incorporated into the final TE report. This Audit Trail should be listed as an annex in the final TE report but not attached to the report file.*

**To the comments received on (date) from the Terminal Evaluation of “Elimination of obsolete pesticide stockpiles and addressing POPs contaminated sites within a sound chemicals management framework” UNDP Project PIMS #4905**

The following comments were provided to the draft TE report; they are referenced by institution/organization (do not include the commentator’s name) and track change comment number (“#” column):

Institution/ Organization	#	Para No./ comment location	Comment/Feedback on the draft TE report	TE Evaluator’s response and actions taken

## ANNEX II: KEY QUESTIONS DRIVING THE ANALYSIS OF DATA

Dimension	Key Questions
Relevance	<p>Were project activities relevant to national priorities?</p> <p>Were project activities relevant for the main beneficiaries?</p> <p>Were project activities aligned to UNDP goals and strategies?</p> <p>Has the project tackled key challenges and problems?</p> <p>Were cross-cutting issues, principles and quality criteria duly considered/mainstreamed in the project implementation and how well is this reflected in the project reports? How could they have been better integrated?</p> <p>How did the project link and contribute to the Sustainable Development Goals?</p> <p>To what extent was the project relevant to the strategic considerations of the governments involved?</p> <p>To what extent was the project implementation strategy appropriate to achieve the objectives?</p>
Effectiveness	<p>To what level has the project reached the project purpose and the expected results as stated in the project document (logical framework matrix)?</p> <p>What challenges have been faced? What has been done to address the potential challenges/problems? What has been done to mitigate risks?</p>
Sustainability	<p>How is the project ensuring sustainability of its results and impacts (i.e. strengthened capacities, continuity of use of knowledge, improved practices, etc.)? Did the project have a concrete and realistic exit strategy to ensure sustainability?</p> <p>Were there any jeopardizing aspects that have not been considered or abated by the project actions? In case of sustainability risks, were sufficient mitigation measures proposed?</p> <p>Is ownership of the actions and impact on track to being transferred to the corresponding stakeholders? Do the stakeholders / beneficiaries have the capacity to take over the ownership of the actions and results of the project and maintain and further develop the results?</p>
Efficiency	<p>Have the resources been used efficiently? How well have the various activities transformed the available resources into the intended results in terms of quantity, quality and timeliness? (in comparison to the plan)</p> <p>Were the management and administrative arrangements sufficient to ensure efficient implementation of the project?</p>
Stakeholders and Partnership Strategy	<p>How has the project implemented the commitments to promote local ownership, alignment, harmonization, management for development results and mutual accountability?</p>
Theory of Change or Results/Outcome Map	<p>Is the Theory of Change or project logic feasible and was it realistic? Were assumptions, factors and risks sufficiently taken into consideration?</p>

## ANNEX III: QUESTIONNAIRE GUIDE

<b>RELEVANCE</b>
<ul style="list-style-type: none"> <li>• To what extent was this project <b>aligned with country needs and national priorities</b>?</li> <li>• To what extent were the <b>approaches taken by the project</b> appropriate in terms of the project <b>design and ‘focus’</b>?</li> <li>• How coherent was the project in terms of how it fit with the policies, programmes and projects undertaken <b>by other government counterparts</b>? Were there any other government programmes previously or concurrently in the area of cleaning and disposal of obsolete pesticides (OPs) burial site?</li> <li>• How strong was the Government ownership and leadership of this project? How active were the Government respective departments on the activities and challenges involved in this project? (Please, provide as many details as possible and describe the roles played by each key player - MoE, MoES and MoFA).</li> <li>• How well-coordinated was the engagement of the various government entities in this project?</li> </ul>
<b>EFFECTIVENESS</b>
<ul style="list-style-type: none"> <li>• What were the approaches that were attempted by the Project and its counterparts to clean and dispose the OPs in the Nubarashen burial site and other sites? It will be great to have a detailed description of all the options that were conceived (theoretically) and tried (practically), so that these efforts can be profiled in the evaluation report.</li> <li>• If the transportation of OPs to an incineration facility was impossible because of geopolitical factors, what was the reason for the inability to transfer the OPs to a safe long-term storage site within Armenia?</li> <li>• What would you list as the key factors for the inability to clean and dispose the OPs in the Nubarashen burial site and other sites?</li> <li>• What of the above-mentioned factors were not identified as potential risks in the Project Document and at the inception stage of the project?</li> <li>• Despite the project’s inability to remove the OPs from the respective sites, what would you list as the project’s main achievements (legislation, policies, studies, equipment, training, awareness raising, etc.)? Please, provide details for each dimension.</li> <li>• In hindsight and based on what you know now, would there have been a way to resolve this issue successfully, if it had been pursued from the beginning?</li> <li>• What international actors were involved to contribute this project (including UNDP’s Regional Hub)? What role did they play? How did the project facilitate their engagement?</li> <li>• Did the project make use of any international “good practices” in this area? If so, which practices were used and how did the project tap into them in concrete terms? Was there</li> </ul>

a systematic study of these practices conducted by the project? Were there lessons that were shared in a formal way with the government and that contributed to the government's capacity to deal with this matter?

### **EFFICIENCY**

- What amount of project's resources have been spent thus far?
- What was the amount of co-financing secured for the project? How much of it was spent?
- What was the rationale for the request for project extension? On what basis was it granted?
- What was **project management structure** (incl. reporting structure; **oversight** responsibility)?
- How efficient was the decision-making process in this project? Was the role of the Project Management Board efficiently implemented?
- How efficient was the communication between the Project Team and the Project Management Board?
- How useful was the role of the Project Advisory Committee? What role did it play in practical terms and what were its key contributions?
- What were the main project delays and what were the reasons for each of them? Please provide a detailed list of delays and factors that led to them.
- Were risks/challenges identified sufficiently quickly by the project and brought to the attention of the Project Management Board?
- With hindsight, what would you have structured differently in terms of how this project was set up?

### **SUSTAINABILITY**

- What has visibly changed thanks to this project in the ability of the Government to deal with the important issue?
- What are the options now for the Government to carry this work forward? Is there an approved action plan/strategy in place? Is there any concrete line of action that has the agreement of the government? Is there consensus among the political body in Armenia on how to deal with this matter going forward?
- From the project's (technical) perspective, what do you see as the most feasible path forward (irrespective of what the government thinks)?
- What are the key materials (knowledge products) that the project is handing over to the Government on this matter and how useful are they (please detail their usefulness in terms of what help they practically provide)?

## ANNEX IV: LIST OF INTERVIEWEES

<b>Stakeholders Engaged in the Evaluation</b>
<p>UNDP</p> <ul style="list-style-type: none"> <li>• Ms. Mihaela Stojkoska, UNDP Resident Representative a.i.</li> <li>• Mr. Hovhannes Ghazaryan, Climate, Environment, Resilience Portfolio Analyst and the Project Team</li> <li>• Ms. Gayane Gharagebakyan, Project Coordinator</li> <li>• Mr. Georgi Arzumanyan, Environment and Green Economy Specialist, UNDP RBEC/UNDP Armenia</li> <li>• Mr. Maksim Surkov, Programme Specialist, RBEC/Lead RTA</li> <li>• Mr. Armen Martirosyan, former Portfolio Manager for Sustainable Growth and Resilience, UNDP Armenia</li> <li>• Mr. Suren Saghatelyan, Procurement Analyst</li> <li>• Ms. Armine Hovhannisyan, M&amp;E Analyst</li> <li>• Mr. Carlo Lupi, Project’s International Consultant</li> </ul>
<p>Ministry of Environment (MoE)</p> <ul style="list-style-type: none"> <li>• Mr. Tigran Simonyan, Deputy Minister, PMB co-chair</li> <li>• Mrs. Ruzanna Grigoryan, Department of International Cooperation</li> </ul> <p>Ministry of Emergency Situations (MoES)</p> <ul style="list-style-type: none"> <li>• Mr. Hovhannes Yamishyan, Deputy Head of Rescue service, PMB co-chair</li> </ul> <p>Ministry of Agriculture (MoA)</p> <ul style="list-style-type: none"> <li>• Mrs. Karine Yesayan, Ex-Head of the Horticulture Development and Plant Protection Division of Department of Plant Growing and Plant Protection, /Ministry of Agriculture by 2019 (retired) PAC member</li> </ul> <p>Ministry of Health / National Center for Disease Control</p> <ul style="list-style-type: none"> <li>• Mrs. Nune Bakunts – Deputy Director (PAC member)</li> </ul> <p>Deputy Prime Minister’s Office</p> <ul style="list-style-type: none"> <li>• Mr. Bagrat Badalyan, Head of Deputy PM’s office / PMB member</li> </ul>
<p>Ministry of Foreign Affairs</p> <ul style="list-style-type: none"> <li>• Mr. Gagik Hairapetian, Expert at the Department of International Security / PMB member</li> </ul>

Municipality of Yerevan

- Mr. Hrachya Sargsyan, First Deputy Mayor of Yerevan / PMB member

Municipality of Voxtjard

- Mr. Norayr Melkonyan, Mayor of Voxtjard (impacted community)

NGO Armenian Women for Health and Healthy Environment

- Mrs. Elena Manvelyan, President of the (AWHHE)
- Mrs. Knarik Grigoryan / PAC member

Sweco International AB

- Mr. Henrik Toremark, Project Manager, (Project contractor)

## ANNEX V: DOCUMENTATION REVIEWED

- 2020 GEF Project Implementation Review (PIR) - Elimination of Obsolete Pesticide Stockpiles
- “Elimination of Obsolete Pesticide Stockpiles and Addressing POPs Contaminated Sites within a Sound Chemicals Management Framework in Armenia” Document
- Independent Auditor’s Report on Statement of Expenses (UNDP CDR)
- PMB and PAC Protocols and meeting minutes
- Mid-Term Review Report
- POPs Budget Revision 2021
- Monitoring Action and Standard Progress Report
- Strengthening National Capacities on Comprehensive Chemicals (Persistent Organic Pollutants) Contaminated Site Assessment in Armenia - Analytical Report on Sampling on Nubarashen Site<sup>27</sup>
- Comprehensive site mapping and analytical assessment report<sup>28</sup>
- Site Assessment and Feasibility Study of the Nubarashen Burial Site of Obsolete and Banned Pesticides in Nubarashen, Armenia<sup>29</sup>

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<sup>27</sup> [https://procurement-notices.undp.org/view\\_file.cfm?doc\\_id=122690](https://procurement-notices.undp.org/view_file.cfm?doc_id=122690)

<sup>28</sup> [https://procurement-notices.undp.org/view\\_file.cfm?doc\\_id=160528](https://procurement-notices.undp.org/view_file.cfm?doc_id=160528)

<sup>29</sup> [https://procurement-notices.undp.org/view\\_file.cfm?doc\\_id=122691](https://procurement-notices.undp.org/view_file.cfm?doc_id=122691)

## ANNEX VI: PROJECT'S RESULTS FRAMEWORK

<p><b>This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD:</b> Armenia is better able to address key environmental challenges including climate change and natural resource management</p>
<p><b>Country Programme Outcome Indicators:</b> <i>Ind: Environmental Performance Index (EPI)</i></p>
<p><b>Applicable Outcome and Output (from UNDP's 2014-17 Strategic Plan):</b>  Outcome 1: Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded  Output 1.3. Solutions developed at national and sub-national levels for sustainable management of natural resources, ecosystem services, chemicals and waste</p>
<p><b>Applicable GEF Strategic Objective and Program:</b>  GEF-5 Chemicals Strategy: Objective CHEM-1: Phase out POPs and Reduce POPs Releases</p>
<p><b>Applicable GEF Expected Outcomes:</b>  Outcome 1: POPs waste prevented, managed and disposed of, and contaminated sites managed in an environmentally sound manner.  Outcome 1.5: Country capacity built to effectively phase out and reduce releases of POPs.</p>
<p><b>Applicable GEF Outcome Indicators:</b>  Indicator 1.4.2 Amount of obsolete pesticides, including POPs, disposed of in an environmentally sound manner; measured in tons.  Indicator 1.5.1 Progress in developing and implementing a legislative and regulatory framework for environmentally sound management of POPs, and for the sound management of chemicals in general, as recorded in the POPs tracking tool.</p>

	Indicator	Baseline	Targets		Sources of verification	Risks and assumptions
			Mid-term	End of project		
<p><b>Objective:</b> Protection of health and environment through elimination of obsolete pesticide stockpiles and addressing contaminated sites within a sound chemicals management strategy</p>	<p>Obsolete Pesticide stockpiles including POPs Pesticides and wastes are securely packaged, contained and stored pending elimination</p>	<ul style="list-style-type: none"> <li>The major current obsolete pesticide stockpile site and major remaining location of POPs pesticides is at the Nubarashen burial site in a state that creates a risk to health and the environment. And has expanded to create a significant contaminated site.</li> <li>Lesser stockpiles and associated site contamination exist unaddressed at 24 OP storehouses.</li> <li>Contaminated soils classified sufficiently to constitute a potent risk remain uncontained at some of these storehouse sites.</li> </ul>	<ul style="list-style-type: none"> <li>The major stockpiles of pure pesticides 605 t including 284 t of pure POPs pesticides along with 295 t of highly contaminated POPs waste excavated, packaged and removed from the Nubarashen burial site.</li> <li>150 t of obsolete pesticide stockpiles packaged for removal from 24 storehouses.</li> <li>National HW facility site operational and 1,050 t of consolidated priority obsolete pesticides and POPs waste securely stored pending environmental sound destruction.</li> <li>7000 t of highly contaminated POPs waste (soil) and 12,500 t of POPs contaminated soil contained at the Nubarashen site</li> </ul>	<ul style="list-style-type: none"> <li>Removal and export of Pure obsolete pesticides and highly contaminated POPs waste for environmentally sound destruction</li> <li>12,700 of POPs contaminated soil securely from the Nubarashen site and OP storage sites permanently contained and monitored at the restored and stabilized Nubarashen site.</li> <li>7,100 of treated Category 2 POPs waste contained at the Nubarashen site.</li> </ul>	<ul style="list-style-type: none"> <li>Inventory control documentation of excavated, packaged and transported material</li> <li>Supervisory consultant reports.</li> <li>Regulatory inspection reports</li> <li>Citizen/NGO independent monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Substantive cash direct government co-financing is available for the civil works required at the Nubarashen and the physical infrastructure improvements required at the Kotayk site.</li> <li>Public acceptance and regulatory approvals are in place for the Kotayk storage facility in a timely manner.</li> <li>Timely implementation of the EU funded activities at the OP storehouses through MoA.</li> </ul>
	<p>Major stockpiles of Obsolete Pesticides and POPs pesticide wastes have been destroyed in an environmental sound manner</p>	<ul style="list-style-type: none"> <li>No elimination of national stockpiles of obsolete has been attempted</li> </ul>	<ul style="list-style-type: none"> <li>Commercial arrangements made for the export of 1,050 t of pure obsolete pesticides and highly contaminated POPs waste.</li> <li>Technology selection and demonstration along with commercial arrangements made for the treatment/remediation of 7,100 t of POPs waste in the form of heavily contaminated soil</li> </ul>	<ul style="list-style-type: none"> <li>1,050 t of pure obsolete pesticides and highly contaminated POPs waste exported and destroyed.</li> <li>7,100 t of POPs waste in the form of heavily contaminated soil treated/remediated</li> </ul>	<ul style="list-style-type: none"> <li>Inventory control, shipping manifest, tracking and destruction certificate documentation of material shipped, received and destroyed</li> <li>Operational management and project supervision reports.</li> <li>Independent due diligence peer review reports</li> <li>Regulatory inspection reports</li> </ul>	<ul style="list-style-type: none"> <li>No major barriers prevent the export of pure obsolete pesticides and highly contaminated POPs waste for environmentally sound destruction.</li> <li>Appropriate cost effective commercial contaminated soil treatment/remediation technology is available either for application in Armenia or at</li> </ul>

	Indicator	Baseline	Targets		Sources of verification	Risks and assumptions
			Mid-term	End of project		
						facilities outside the country.
	National legal instruments and regulatory framework for hazardous waste and contaminated sites update with gaps filled, conflicts resolved and consistent with relevant international requirements.	<ul style="list-style-type: none"> <li>Current legal and regulatory framework for hazardous waste and contaminated site management has significant gaps and conflicting provisions</li> </ul>	<ul style="list-style-type: none"> <li>Complete definition of current gaps and requirements for legal and regulatory changes documented and actions agreed (To be completed when Component 3 inputs received)</li> </ul>	<ul style="list-style-type: none"> <li>Fully updated regulatory framework for hazardous and chemicals waste management implemented</li> </ul>	<ul style="list-style-type: none"> <li>Operational management and project supervision reports.</li> <li></li> </ul>	<ul style="list-style-type: none"> <li>Full commitment of MNP and government generally to improvement of the waste management legal and regulatory framework.</li> <li>Failure to fully engage the necessary institutional stakeholders</li> </ul>
	Core national technical capacity in place relative to hazardous waste management, risk assessment and contaminated site management	<ul style="list-style-type: none"> <li>Limited technical capacity in key areas of expertise and support infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Identification and documentation key methodologies and scope for the required risk assessment and initial application on a pilot</li> </ul>	<ul style="list-style-type: none"> <li>Environmental and health risk assessment methodologies documented, disseminated and implemented as part of the national regulatory assessment process for contaminated sites.</li> <li>Professional in regulatory agencies, academia, NGOs and environmental service providers trained on their application</li> </ul>	<ul style="list-style-type: none"> <li>Operational management and project supervision reports</li> <li>Independent peer review of results</li> </ul>	<ul style="list-style-type: none"> <li>Active cooperation of all beneficiaries in the development and implementation of the risk assessment initiative</li> <li>Failure to fully engage the necessary institutional stakeholders</li> </ul>
<b>Component 1: Capture and Containment of Obsolete Pesticide Stockpiles and Wastes</b>						
<b>Outcome 1.1:</b> Removal of priority POPs pesticide waste from the Nubarashen burial site, secure containment of residual contamination on-site, site stabilization and restoration, with the site secured under	Detailed site assessment, design documentation, tender specification, implementation procedures including EHS procedures, EIA and required approvals in place to initiate Nubarashen burial site	<ul style="list-style-type: none"> <li>Preliminary site assessment completed during PPG</li> <li>Conceptual excavation, containment, site stabilization sign completed during the PPG.</li> <li>No formal EIA or site approvals initiated.</li> </ul>	<ul style="list-style-type: none"> <li>Detailed design in place with supporting tender documents and construction specifications.</li> <li>Contracting complete</li> <li>EIA and formal approvals in place</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of design, operational procedures and conformance with approval conditions verified</li> </ul>	<ul style="list-style-type: none"> <li>Peer review of technical documentation.</li> <li>Supervisory consultant reports.</li> <li>Regulatory submission/ approval documents</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary site assessment and conceptual design does not fully define scope/</li> <li>More complex EIA approval processes than foreseen are applied.</li> </ul>

	Indicator	Baseline	Targets		Sources of verification	Risks and assumptions
			Mid-term	End of project		
appropriate institutional arrangements providing effective access limitations, monitoring and future land use control, all endorsed by an informed public.	works	<ul style="list-style-type: none"> <li>No national standards and procedures in place</li> </ul>	<ul style="list-style-type: none"> <li>Operational procedures including EHS procedures in place and utilized.</li> </ul>		<ul style="list-style-type: none"> <li>Citizen/NGO independent monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Public acceptance of activities proposed will be obtained</li> </ul>
	Removal of pure pesticides/.high concentration POPs wastes (Category 1) and soil highly contaminated with POPs pesticides (Category 2) from the Nubarashen burial site to secure storage	<ul style="list-style-type: none"> <li>An estimated 7,900 t of pure pesticides, high concentration POPs waste and soil highly contaminated with POPs have been identified is found in and around the Nubarashen burial site.</li> <li>Risk assessments identify the need to ensure removal of high risk POPs waste</li> </ul>	<ul style="list-style-type: none"> <li>Excavation, packaging and removal to secure storage of 900 t of pure pesticides and high concentration POPs wastes (Category 1) from the Nubarashen burial site to secure storage</li> </ul>	<ul style="list-style-type: none"> <li>Removal to secure storage of 7,000 t of POPs pesticide waste in the form of highly contaminated soil (Category 2) from the Nubarashen burial site.</li> </ul>	<ul style="list-style-type: none"> <li>On-site visual and analytical screening records differentiating between Category 1, 2 and 3 POPs wastes</li> <li>Inventory control documentation of excavated, packaged and transported material.</li> <li>Supervisory consultant reports.</li> <li>Regulatory inspection reports</li> <li>Citizen/NGO independent monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Actual estimated quantities are reasonable accurate.</li> <li>Effective affordable on-site analytical screening is available</li> <li>Effective trained labour and on-site supervision is used</li> </ul>
	Onsite secure containment of 12,000 t of low and moderately contaminated soil (Category 3) in an engineered landfill within the Nubarashen site in place	<ul style="list-style-type: none"> <li>Containment of pure pesticide burial cells compromised.</li> <li>Contamination has spread to soil across and around the Nubarashen site</li> </ul>	<ul style="list-style-type: none"> <li>Onsite secure temporary containment of 7,000 t of POPs pesticide waste in the form of highly contaminated soil and 12,000 t of low and moderately contaminated soil in an engineered landfill within the Nubarashen site in place</li> </ul>	<ul style="list-style-type: none"> <li>Onsite secure permanent containment of 12,000 t of low and moderately contaminated soil in an engineered landfill within the Nubarashen site in place</li> </ul>	<ul style="list-style-type: none"> <li>On-site visual and analytical screening records differentiating between Category 1, 2 and 3 POPs wastes</li> <li>Inventory control documentation of excavated, packaged and transported material</li> <li>Supervisory consultant reports.</li> <li>Regulatory inspection reports</li> <li>Citizen/NGO independent monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Actual estimated quantities are reasonable accurate.</li> <li>Effective affordable on-site analytical screening is available</li> <li>Effective trained labour and on-site supervision is used</li> </ul>

	Indicator	Baseline	Targets		Sources of verification	Risks and assumptions
			Mid-term	End of project		
	Restoration, monitoring and access control provisions for the Nubarashen burial site are in place and civil works to stabilize the surrounding land and drainage are completed.	<ul style="list-style-type: none"> <li>• Only temporary containment works in place involving basic drainage, and cover of the burial site itself.</li> <li>• Site is generally intact but poorly maintained and sparsely vegetated, subject to erosion, drainage blockage and surrounding geotechnical and hydrogeological instability.</li> <li>• Basic ground water monitoring capability in place</li> <li>• Site security and access control as part of a an emergency measures order but general public access to area permitted</li> </ul>	<ul style="list-style-type: none"> <li>• Upgraded and enforced public access controls in place for works activities.</li> <li>• Upgraded access roads, security controls and site protection measures suitable for the active excavation and restoration works are in place.</li> <li>• Temporary repairs and modification to on-site as well and upstream and downstream drainage to assure minimum water ingress during active site excavation and remediation civil works</li> </ul>	<ul style="list-style-type: none"> <li>• Site fully restored with sustainable phytoremediation vegetation, appropriately fenced and gated with signage including a 100m buffer zone around the former burial site.</li> <li>• The site drainage system upgraded and functional inclusive of a monitored phytoremediation reed bed downstream pond.</li> <li>• Permanent measures to maintain land stability upstream and downstream of site including removal of perched water table and upstream ponds.</li> <li>• Long term monitoring program in place and funded by national budgets.</li> <li>• Institutional arrangements respecting long term land use of the site and surrounding territory involving its administration as part of the adjoining ecological reserve.</li> </ul>	<ul style="list-style-type: none"> <li>• Supervisory consultant reports.</li> <li>• Regulatory inspection reports</li> <li>• Citizen/NGO independent monitoring</li> <li>• Site monitoring data</li> </ul>	<ul style="list-style-type: none"> <li>• Public and City of Yerevan acceptance of land use restrictions and protected area designation.</li> <li>• MNP capability to establish and maintain appropriate protected area land use arrangements.</li> <li>• National budget commitments made for site maintenance and monitoring.</li> </ul>
	Availability of trained capability in the practical management of hazardous chemicals wastes and contaminated site clean up	<ul style="list-style-type: none"> <li>• Limited national capability in the practical management of hazardous chemicals wastes and contaminated site clean up</li> </ul>	<ul style="list-style-type: none"> <li>• Training delivered to 20 national technical and regulatory staff in support of Nubarashen burial site POPs wastes excavation, packaging, transportation and site containment/ restoration operations</li> </ul>	<ul style="list-style-type: none"> <li>• Sustainable operational capability in the public and private sector for hazardous chemical waste management and contaminated site clean-up in place</li> </ul>	<ul style="list-style-type: none"> <li>• Supervisory consultant reports.</li> <li>• Reports on training delivered</li> <li>• Information on availability of services in other applications</li> </ul>	<ul style="list-style-type: none"> <li>• Availability of suitable candidates and operating entities for training.</li> </ul>
	High level of public awareness, engagement and support for the clean-up activities and ongoing custody and monitoring arrangements for the Nubarashen burial site supported by appropriate awareness products,	<ul style="list-style-type: none"> <li>• Limited awareness of the site, its risks and activities being undertaken with respect to its clean up.</li> </ul>	<ul style="list-style-type: none"> <li>• 3 public consultation events held and 50 public documents/web/media products produced</li> </ul>	<ul style="list-style-type: none"> <li>• 2 additional public consultation events held and 5 public documents/web/media products produced.</li> <li>• Survey indicating the views of affected public stakeholders upon completion</li> </ul>	<ul style="list-style-type: none"> <li>• Feedback from public events.</li> <li>• Independent media reports.</li> <li>• Citizen/NGO independent monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Immediately affected public will recognize the benefit of dealing with the Nubarashen site.</li> <li>• Responsive and proactive approach by institutional stakeholders to public concerns and input</li> </ul>

	Indicator	Baseline	Targets		Sources of verification	Risks and assumptions
			Mid-term	End of project		
<b>Outcome 1.2:</b> Development of the Kotayk national hazardous waste management site at equipped with secure storage and basic infrastructure to allow introduction of HW treatment soil remediation technologies constructed and operated for the secure storage of POPs pesticide waste and OP stockpiles, and the treatment of POPs pesticide contaminated soil	Detailed design documentation, tender specification, implementation procedures including EHS procedures, EIA and required approvals in place to initiate development of the Kotayk HW facility site	<ul style="list-style-type: none"> <li>• MTAES site in Kotayk Marz assessed as suitable for development.</li> <li>• Preliminary conceptual design survey and cost estimate complete.</li> <li>• Initial public consultation with authorities and local public undertaken.</li> </ul>	<ul style="list-style-type: none"> <li>• Detailed design in place with supporting tender documents and construction specifications.</li> <li>• Contracting complete</li> <li>• EIA and formal approvals in place</li> <li>• Operational procedures including EHS procedures in place and utilized.</li> </ul>	<ul style="list-style-type: none"> <li>• Implementation of design, operational procedures and conformance with approval conditions verified</li> </ul>	<ul style="list-style-type: none"> <li>• Peer review of technical documentation.</li> <li>• Supervisory consultant reports.</li> <li>• Regulatory submission and approval documents</li> <li>• Citizen/NGO independent monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• No unforeseen institutional or legal barriers exist to accessing the site.</li> <li>• Preliminary site assessment and conceptual design sufficiently defines scope.</li> <li>• More complex EIA an approval processes than foreseen are applied.</li> <li>• Public acceptance of activities proposed will be obtained</li> </ul>
	Kotayk national HW management site developed to and operated to international standards	<ul style="list-style-type: none"> <li>• No suitable HW storage or management facilities available in Armenia.</li> </ul>	<ul style="list-style-type: none"> <li>• Upgrading works on the Kotayk national HW management site completed to national and international standards</li> <li>• Kotayk national HW management site operational and being used for the project.</li> </ul>	<ul style="list-style-type: none"> <li>• Kotayk national HW management site utilized for general HW management activities on a sustainable basis.</li> </ul>	<ul style="list-style-type: none"> <li>• Supervisory consultant reports.</li> <li>• Regulatory inspection reports</li> <li>• Site environmental monitoring reports.</li> <li>• Citizen/NGO independent monitoring</li> <li>• Future business and operational plans for the facility and site.</li> </ul>	<ul style="list-style-type: none"> <li>• Site proves suitable for project and ongoing operations</li> <li>• National commitment remains to sustain its operation.</li> </ul>
	Successful operation of the facility for the storage of Category 1 POPs pesticide waste and OP stockpiles pending export for environmentally sound destruction.	No suitable HW storage capacity currently exists in Armenia that would meet project requirements.	<ul style="list-style-type: none"> <li>• Secure receiving and storage of 1,050 t of Category 1 pesticide waste and OP stockpiles</li> <li>• Handling and export shipment of of 1,050 t of Category 1 pesticide waste and OP stockpiles for environmentally sound destruction.</li> </ul>	<ul style="list-style-type: none"> <li>• Secure receiving and storage of any contingency volumes of Category 1 pesticide waste and OP stockpiles from Nubarashen and OP stockpile site remediation operations.</li> <li>• Handling and export shipment of any contingency volumes of Category 1 pesticide waste and OP stockpiles from Nubarashen and OP stockpile site remediation operations for</li> </ul>	<ul style="list-style-type: none"> <li>• Inventory control and shipping manifest documentation of material received and placed in storage.</li> <li>• Operational management and project supervision reports.</li> <li>• Regulatory inspection reports</li> <li>• Citizen/NGO</li> </ul>	<ul style="list-style-type: none"> <li>• Amount received is as estimated</li> <li>• Facility operates as designed and expected.</li> <li>• Survey indicating the views of affected public stakeholders.</li> <li>• Responsive and proactive approach by institutional stakeholders to public concerns and input</li> </ul>

	Indicator	Baseline	Targets		Sources of verification	Risks and assumptions
			Mid-term	End of project		
				environmentally sound destruction.	independent monitoring	
	Successful operation of the facility to host treatment/remediation technology treating for soil highly contaminated with POPs pesticide in an environmentally sound manner.	No HW qualified site for the operation of HW treatment and soil remediation technology currently exist in Armenia that would meet project requirements.	<ul style="list-style-type: none"> <li>Secure receiving and secure storage of 7,000 t of Category 2 material (soil highly contaminated with POPs pesticide) from Nubarashen.</li> </ul>	<ul style="list-style-type: none"> <li>Secure receiving and secure storage of approximately 100 t amount of additional soil highly contaminated with POPs pesticide) from OP storehouse cleanup activities.</li> <li>Treatment and remediation of at least 7,100 t of Category 2 material from Nubarashen and OP storage site clean-ups or alternatively export of this material to suitable treatment and remediation facilities elsewhere.</li> </ul>	<ul style="list-style-type: none"> <li>Inventory control and shipping manifest documentation of material received and placed in storage.</li> <li>Operational management and project supervision reports.</li> <li>Regulatory inspection reports</li> <li>Citizen/NGO independent monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Competitive treatment and remediation technology can be attracted through an international tendering process for establishment on the Kotyak site.</li> <li>Infrastructure developed and provided by the facility is suitable.</li> </ul>
	Availability of trained and equipped staff for the practical operation of the Kotayk HW management facility including safeguards and EHS practices	<ul style="list-style-type: none"> <li>Limited national capability in the practical management of hazardous chemicals wastes and particularly the operation of HW storage and treatment facilities</li> </ul>	<ul style="list-style-type: none"> <li>Training delivered to 20 national technical and regulatory staff in support of Kotayk HW facility operations.</li> </ul>	<ul style="list-style-type: none"> <li>Sustainable operational capability for hazardous chemical waste management facility in place</li> </ul>	<ul style="list-style-type: none"> <li>Supervisory consultant reports.</li> <li>Reports on training delivered</li> <li>Information on availability of services in other applications</li> </ul>	<ul style="list-style-type: none"> <li>Availability of suitable candidates and operating entities for training.</li> </ul>
	High level of public awareness, engagement and support for the Kotayk HW facility site activities and ongoing operations supported by the delivery of appropriate awareness products and activities delivered.	<ul style="list-style-type: none"> <li>Initial public consultations with local authorities and affected public stakeholders undertaken.</li> </ul>	<ul style="list-style-type: none"> <li>3 public consultation events held and 5 public documents/web/media products delivered</li> </ul>	<ul style="list-style-type: none"> <li>2 public consultation events held and 5 public documents/web/media products delivered</li> </ul>	<ul style="list-style-type: none"> <li>Feedback from public events.</li> <li>Independent media reports.</li> <li>Citizen/NGO independent monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Sustained acceptance by immediately affected public for the operation of the facility.</li> </ul>
<b>Outcome 1.3:</b> Remaining significant historical OP storehouses have OP stocks packaged and removed and residual	Screening assessments completed/documentated on identified historical OP storehouse stockpile sites and OP stockpiles and clean up residuals	<ul style="list-style-type: none"> <li>Fragmented historical assessment and inventory work consolidated for project preparation</li> <li>24 OP stockpile sites identified and up to 6 sites</li> </ul>	<ul style="list-style-type: none"> <li>EU/MoA/FAO administered site assessment, packaging and surficial clean up undertaken to a make available 150 t of OPs and</li> </ul>	<ul style="list-style-type: none"> <li>Under MoA supervision all former OP stores are maintained in other productive uses.</li> </ul>	<ul style="list-style-type: none"> <li>Inventory control and shipping manifest documentation of material received and placed in storage.</li> </ul>	<ul style="list-style-type: none"> <li>The EU funding will be confirmed and acted upon over the next two years.</li> <li>The preliminary estimates of quantities</li> </ul>

	Indicator	Baseline	Targets		Sources of verification	Risks and assumptions
			Mid-term	End of project		
site contamination cleaned up.	packaged and removed to the Kotayk HW facility.	considered priorities for substantive clean up. <ul style="list-style-type: none"> <li>• Preliminary commitment for EU funding of initial work pending</li> </ul>	residuals for storage at the Kotayk facility. <ul style="list-style-type: none"> <li>• Environmentally sound disposal of 150 t of OPs arranged by FAO</li> <li>• Public consultation conducted at all OP storehouse sites</li> </ul>		<ul style="list-style-type: none"> <li>• Operational management and project supervision reports.</li> <li>• Regulatory inspection reports</li> <li>• Citizen/NGO independent monitoring</li> </ul>	and site conditions are generally accurate. <ul style="list-style-type: none"> <li>• Acceptance of access and involvement of private sector owners and/or appropriate regulatory action.</li> <li>• Institutional and legal issues related to local jurisdiction and licensing requirements resolved</li> </ul>
	Detailed contaminated site and risk assessments and remediation/clean up designs on identified priority sites completed/documented	<ul style="list-style-type: none"> <li>• Limited site assessment work done by local and international NGOs</li> </ul>	<ul style="list-style-type: none"> <li>• Preliminary site assessment reports received from, MoA and assessed.</li> <li>• Priority sites for substantive clean up agreed with MoA and MNP</li> </ul>	<ul style="list-style-type: none"> <li>• Detailed contaminated site and risk assessments and remediation/clean up designs on identified on up to 6 priority sites completed/documented</li> </ul>	<ul style="list-style-type: none"> <li>• Peer review of technical documentation.</li> <li>• Supervisory consultant reports.</li> <li>• Regulatory submission/ approval documents</li> <li>• Citizen/NGO independent monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• The preliminary identification of priority sites through EU/MoA/FAO work generally accurate.</li> <li>• Acceptance of access and involvement of private sector owners and/or appropriate regulatory action.</li> </ul>
	Excavation/removal, remediation and/or containment on identified priority sites completed.	<ul style="list-style-type: none"> <li>• No clean up activity undertaken at any OP stores.</li> </ul>	<ul style="list-style-type: none"> <li>• No action</li> </ul>	<ul style="list-style-type: none"> <li>• Excavation/removal, remediation and/or containment of 200 t of contaminated soil from up to 6 identified priority sites completed</li> </ul>	<ul style="list-style-type: none"> <li>• Inventory control and shipping manifest documentation of material received and placed in storage.</li> <li>• Operational management and project supervision reports.</li> <li>• Regulatory inspection reports</li> <li>• Citizen/NGO independent monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• No unforeseen institutional, legal jurisdictional barriers exist to accessing the site.</li> <li>• Preliminary site assessment and conceptual design sufficiently defines scope.</li> <li>• Regulatory approvals are available</li> <li>• Public acceptance of activities proposed will be obtained</li> </ul>
	Public consultation events held at 6 priority sites and public	<ul style="list-style-type: none"> <li>• No dedicated public consultation activities on priority sites to date.</li> </ul>	<ul style="list-style-type: none"> <li>• No Action</li> </ul>	<ul style="list-style-type: none"> <li>• 6 public consultation events held at 6 priority sites</li> </ul>	<ul style="list-style-type: none"> <li>• Feedback from public events.</li> </ul>	<ul style="list-style-type: none"> <li>• Immediately affected public will recognize the benefit</li> </ul>

	Indicator	Baseline	Targets		Sources of verification	Risks and assumptions
			Mid-term	End of project		
	acceptance of actions are obtained				<ul style="list-style-type: none"> <li>• Independent media reports.</li> <li>• Citizen/NGO independent monitoring</li> </ul>	<p>of dealing with the site issues.</p> <ul style="list-style-type: none"> <li>• Responsive and proactive approach by institutional stakeholders to public concerns and input</li> </ul>
<b>Component 2: Obsolete Pesticide Stockpile and Waste Elimination</b>						
<b>Outcome 2.1:</b> Removal from Armenia of all substantially all high priority POPs pesticides, associate very high concentration wastes and OP stockpiles.	Destruction of Category 1 POPs pesticide wastes from Nubarashen and OP stockpiles in an environmentally sound destruction in accordance with the SC Article 6, Basel Convention and GEF guidance performance requirements.	<ul style="list-style-type: none"> <li>• No destruction of POPs pesticides, POPs wastes or OPs yet undertaken</li> </ul>	<ul style="list-style-type: none"> <li>• International pre-qualification, tender and contract documents prepared and implemented</li> <li>• Shipment and environmental sound destruction of 900t Category 1 POPs pesticide wastes and 150 t of OP stockpiles at a qualified competitive export destruction facility. supported</li> </ul>	<ul style="list-style-type: none"> <li>• Shipment and environmental sound destruction of any contingency volumes of Category 1 pesticide waste and OP stockpiles from Nubarashen and OP stockpile site remediation operations at qualified competitive export destruction facility.</li> </ul>	<ul style="list-style-type: none"> <li>• Inventory control, shipping manifest, tracking and destruction certificate documentation of material shipped, received and destroyed</li> <li>• Operational management and project supervision reports.</li> <li>• Independent due diligence peer review reports</li> <li>• Regulatory inspection reports</li> </ul>	<ul style="list-style-type: none"> <li>• Qualified and competitive export facilities and supporting logistics service providers are available.</li> <li>• Timely export, transit country and destination import approvals are available.</li> </ul>
<b>Outcome 2.2:</b> Environmentally sound remediation of heavily POPs pesticide contaminated soil inclusive of destruction of extracted POPs pesticides demonstrated.	Treatment/remediation of Category 2 heavily contaminated POPs contaminated soil (POPs pesticide waste) remediated to levels below the low POPs content and demonstration of its commercial viability in Armenia for remediation	<ul style="list-style-type: none"> <li>• No highly contaminated soil treatment/remediation facilities available in the country</li> </ul>	<ul style="list-style-type: none"> <li>• International pre-qualification, tender and contract documents prepared and implemented</li> <li>• Trial treatment testing on candidate shortlisted technologies completed.</li> <li>• Site preparation arrangements for hosting the required technology as may be required completed.</li> </ul>	<ul style="list-style-type: none"> <li>• Shipment and environmental sound destruction of 7,100 t of Category 1heavily contaminated POPs contaminated soil (POPs pesticide waste) remediated to levels below the low POPs content at the Kotayk site and returned/contained on the Nubarashen site, or exported to a qualified facility.</li> </ul>	<ul style="list-style-type: none"> <li>• Inventory control, shipping manifest, tracking and destruction certificate documentation of material shipped, received and treated/remediated</li> <li>• Operational management and project supervision reports including analysis of treated soil.</li> </ul>	<ul style="list-style-type: none"> <li>• Qualified and competitive export facilities and supporting logistics service providers are available.</li> <li>• Feasibility of primary option of treatment and remediation in Armenia.</li> <li>• Timely export, transit country and destination import</li> </ul>

	Indicator	Baseline	Targets		Sources of verification	Risks and assumptions
			Mid-term	End of project		
	of POPs contaminated soil*=-67				<ul style="list-style-type: none"> <li>Independent due diligence peer review reports</li> <li>Regulatory inspection reports</li> </ul>	approvals are available as a contingency.
	Operational training of national technical personal and service providers on a modern contaminated soil treatment/remediation technology	<ul style="list-style-type: none"> <li>No currently qualified technical personal or service providers in Armenia for treatment/remediation of POPs contaminated soil.</li> </ul>	<ul style="list-style-type: none"> <li>20 national technical personal trained on a modern contaminated soil treatment/remediation technology</li> </ul>	<ul style="list-style-type: none"> <li>20 national technical personal operationally qualified and experienced on a modern contaminated soil treatment/remediation technology.</li> <li>Commercial service provider capability available for other contaminated soil treatment/remediation projects in Armenia.</li> </ul>	<ul style="list-style-type: none"> <li>Supervisory consultant reports.</li> <li>Reports on training delivered</li> <li>Information on availability of services in other applications</li> </ul>	<ul style="list-style-type: none"> <li>Availability of suitable candidates and operating entities for training.</li> </ul>
<b>Component 3: Institutional and Regulatory Capacity Strengthening for Sound Chemicals Management and Contaminated Sites</b>						
<b>Outcome 3.1:</b> Legal/regulatory and technical guidance tools for management of chemical wastes, including POPs, and, contaminated sites management within a national sound chemicals management framework strengthened	Policies, legislation and regulatory measures respecting hazardous chemical wastes and contaminated sites management reviewed, updated and appropriate revisions implemented	<ul style="list-style-type: none"> <li>Basic framework legislation in place but has gaps, inconsistencies and conflicts with international standards and MEA obligations</li> </ul>	<ul style="list-style-type: none"> <li>Systematic review and clarification of HW management and contaminated sites existing legislation and regulation completed.</li> <li>Action plan for streamlining and filling gaps in existing legislation consistent with international practice adopted and implemented,</li> </ul>	(List of specific legislative and regulatory measures to be provided by MNP/UNDP CO)	<ul style="list-style-type: none"> <li>Project supervision reports.</li> <li>Peer reviews of documents produced</li> </ul>	<ul style="list-style-type: none"> <li>Broad institutional support for the development process across government stakeholders.</li> <li>Sustained high level government commitment to the adoption of required legislation and regulations.</li> </ul>
	Adopted technical guidelines on operational and EHS procedures for hazardous chemicals waste handling, transport, storage and disposal, developed in accordance with international	<ul style="list-style-type: none"> <li>While requirements exist in legislation requiring technical guidelines on operational safety procedures for hazardous chemicals waste handling, transport, storage and disposal to be in place these</li> </ul>	<ul style="list-style-type: none"> <li>Draft guidance materials on operational and EHS procedures for hazardous chemicals waste handling, transport, storage and disposal consistent with international practice prepared and under public review.</li> </ul>	<ul style="list-style-type: none"> <li>Adopted guidance materials operational and EHS procedures for hazardous chemicals waste handling, transport, storage and disposal consistent with international practice implemented.</li> <li>National training program delivered to at least 50</li> </ul>	<ul style="list-style-type: none"> <li>Project supervision reports.</li> <li>Peer reviews of documents produced</li> </ul>	<ul style="list-style-type: none"> <li>Qualified personnel are available and interested in the field.</li> <li>Private sector service provider interest.</li> </ul>

	Indicator	Baseline	Targets		Sources of verification	Risks and assumptions
			Mid-term	End of project		
	practice and relevant national personal trained	have not been developed and adopted. <ul style="list-style-type: none"> <li>Limited national expertise exist in implementation of operational procedures for HW management.</li> </ul>	<ul style="list-style-type: none"> <li>Training program hazardous chemicals waste handling, transport, storage and disposal developed with a designated accredited national institution.</li> </ul>	relevant technical personnel in regulatory and private sector service provider positions who would attain relevant certification.		<ul style="list-style-type: none"> <li>Availability of a qualified training institution</li> </ul>
	Guidance documentation on environmental and health risk assessment methodologies and practices applicable to hazardous waste stockpiles and contaminated sites developed in accordance with international practice introduced and adopted, and relevant national professional trained.	<ul style="list-style-type: none"> <li>No nationally adopted guidance materials exist for environmental and health risk assessment.</li> </ul>	<ul style="list-style-type: none"> <li>Draft guidance materials on environmental and health risk assessment methodologies and practices applicable to hazardous waste stockpiles and contaminated sites developed in accordance with international practice prepared and under public review.</li> <li>Training sessions involving at least 10 train the trainers is undertaken</li> </ul>	<ul style="list-style-type: none"> <li>Adopted guidance materials on environmental and health risk assessment methodologies and practices applicable to hazardous waste stockpiles and contaminated sites developed in accordance with international practice implemented.</li> <li>Training of at least 50 professionals from regulatory authorities, academia, NGOs and environmental service providers</li> </ul>	<ul style="list-style-type: none"> <li>Project supervision reports.</li> <li>Peer reviews of documents produced</li> </ul>	<ul style="list-style-type: none"> <li>Qualified personnel are available and interested in the field.</li> <li>Private sector service provider interest.</li> <li>Availability of a qualified training institution</li> </ul>
<b>Outcome 3.2:</b>	The EcoProject incineration facility is fully qualified based on international standards for management of HW and chemical wastes.	<ul style="list-style-type: none"> <li>Facility has been constructed and is operational for biomedical and other industrial waste destruction with its operator expressing interest in expanding its range of wastes to various HW up to and including POPs wastes</li> </ul>	<ul style="list-style-type: none"> <li>Test burn program designed, baseline studies undertaken and wastes identified for testing assembled.</li> </ul>	<ul style="list-style-type: none"> <li>Full test burn program completed and licensing decisions made on an expanded menu of HW made.</li> <li>A technical assessment and upgrading investment plan is completed for purposes of improving facility efficiency and environmental performance including potential application to chlorinated waste streams.</li> </ul>	<ul style="list-style-type: none"> <li>Project supervision reports.</li> <li>Test burn results and technical assessment study documents</li> <li>Peer reviews of documents produced</li> </ul>	<ul style="list-style-type: none"> <li>Continued enterprise financial commitment to further investment as a HW service provider.</li> <li>Maintenance of public acceptance of the facility and its location in Yerevan.</li> <li>An efficient and technical sound regulatory licensing regime exists and is applied.</li> </ul>

	Indicator	Baseline	Targets		Sources of verification	Risks and assumptions
			Mid-term	End of project		
<b>Outcome 3.3:</b> Basic national capacity for effective hazardous chemicals sampling and analysis for multi-environmental media and contaminated sites in place, operational and certified to international standards	Adopted national strategy for rationalization and upgrading national laboratory capability to serve a sound chemicals management framework including hazardous waste and contaminated sites management.	<ul style="list-style-type: none"> <li>Highly fragmented under equipped and resourced laboratory infrastructure distributed across the regulatory, academic and private sector.</li> <li>Lack of fully creditable capability to service the needs of regulators and the industrial/private sector</li> </ul>	<ul style="list-style-type: none"> <li>National laboratory strategy developed, endorsed by major institutional and public stakeholders and endorsed for implementation by the government.</li> </ul>	<ul style="list-style-type: none"> <li>National strategy implemented as reflected by availability of effective support capability for sound chemicals management particular hazardous waste management and contaminated sites.</li> </ul>	<ul style="list-style-type: none"> <li>Project supervision reports.</li> <li>Peer reviews of documents produced</li> </ul>	<ul style="list-style-type: none"> <li>Consensus on a strategy is achieved</li> <li>Government commitment and political will is sustained to make necessary decisions on rationalization of existing infrastructure and effective allocation of resources to focus capability in sufficient quantity.</li> </ul>
	Designated national laboratories, including one each in the regulatory, academic and private sector upgraded with suitable capability for hazardous chemical waste and contaminated site sampling and analysis	<ul style="list-style-type: none"> <li>Reasonably good but somewhat dated capability in MNR regulatory laboratory and one modern academic laboratory.</li> <li>Growing private sector laboratories.</li> </ul>	<ul style="list-style-type: none"> <li>Selection of three designated laboratories, one in each of regulatory, academic and private sector for capital and infrastructure upgrading.</li> <li>Approved specifications and plans for upgrading endorsed by the government</li> </ul>	<ul style="list-style-type: none"> <li>Three designated laboratories upgraded and operational.</li> <li>Long term national budget commitments and/or business plans in place ensuring sustainable operation</li> </ul>	<ul style="list-style-type: none"> <li>Project supervision reports.</li> <li>Peer reviews of documents produced</li> </ul>	<ul style="list-style-type: none"> <li>Consensus on a selection of designated laboratories.</li> <li>Sustained government commitment and funding available.</li> </ul>
	Training program for laboratory and associated personal delivered.	<ul style="list-style-type: none"> <li>Variable levels of training and qualifications in existing laboratory personnel</li> </ul>	<ul style="list-style-type: none"> <li>15 key laboratory personal from designated laboratories trained</li> </ul>	<ul style="list-style-type: none"> <li>15 additional key laboratory personal from designated laboratories trained</li> </ul>	<ul style="list-style-type: none"> <li>Project supervision reports.</li> <li>Peer reviews of documents produced</li> <li></li> </ul>	<ul style="list-style-type: none"> <li>Consensus on a selection of designated laboratories.</li> <li>Sustained government commitment and funding available.</li> </ul>
	Designated national laboratories with international certification and international methods and practice in place	<ul style="list-style-type: none"> <li>Only one laboratory with partial international certification</li> </ul>	<ul style="list-style-type: none"> <li>3 designated laboratories initiated formal international certification</li> </ul>	<ul style="list-style-type: none"> <li>3 designated laboratories achieved full international certification</li> </ul>	<ul style="list-style-type: none"> <li>Project supervision reports.</li> <li>Peer reviews of documents produced</li> <li>Certification documentation</li> </ul>	<ul style="list-style-type: none"> <li>Consensus on a selection of designated laboratories.</li> <li>Sustained government commitment and funding available.</li> </ul>
<b>Component 4: Monitoring, learning, adaptive feedback, outreach, and evaluation</b>						

	Indicator	Baseline	Targets		Sources of verification	Risks and assumptions
			Mid-term	End of project		
<b>Outcome 4:</b> Monitoring, learning, adaptive feedback, outreach, and evaluation.	M&E and adaptive management applied to project in response to needs, mid-term evaluation findings with lessons learned extracted.	<ul style="list-style-type: none"> <li>• No Monitoring and Evaluation system</li> <li>• No evaluation of project output and outcomes</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring and Evaluation system developed.</li> <li>• Mid-term-evaluation of project output and outcomes conducted with lessons learnt at 30 months of implementation.</li> </ul>	<ul style="list-style-type: none"> <li>• Final evaluation report ready in the end of project</li> </ul>	<ul style="list-style-type: none"> <li>• Project document inception workshop report.</li> <li>• Independent mid-term evaluation report.</li> </ul>	<ul style="list-style-type: none"> <li>• Availability of reference material and progress reports</li> <li>• Cooperation of stakeholder agencies and other organizations.</li> </ul>

## ANNEX VII: ANALYSIS OF PROJECT'S RESULTS

PROJECT RESULTS FRAMEWORK				
Indicator	Baseline	Targets		Status of Achievement
		Mid-term	End of project	
<b>Objective:</b> <b>Protection of health and environment through elimination of obsolete pesticide stockpiles and addressing contaminated sites within a sound chemicals management strategy</b>				
Obsolete pesticides (OPs) stockpiles including POPs pesticides (Category 1 waste) and highly contaminated soil (Category 2 waste) are securely packaged and/or stored pending elimination; low contaminated soil (Category 3 waste) stored pending backfilling	The major current obsolete pesticide stockpile site and major remaining location of POPs pesticides is at the Nubarashen burial site in a state that creates a risk to health and the environment. And has expanded to create a significant contaminated site.  Lesser stockpiles and associated site contamination exist unaddressed at 24 OP storehouses.	1,052 t of consolidated obsolete pesticides (OPs) and POPs pesticides (Category 1 waste) excavated, packaged and securely stored pending removal and environmental sound disposal  4,123 t of highly contaminated POPs waste/soil (Category 2 waste) and  8,500 t of POPs low contaminated waste/soil (Category 3 soil) excavated and safeguarded for	Removal of 1,052 t of consolidated obsolete pesticides (OPs) and POPs pesticides (Category 1 waste) for environmentally sound disposal  4,123 t of Category 2 waste safeguarded and securely stored on-site before treatment  8,500 t of Category 3 waste/soil securely stored on-site before backfilling	The estimated 1,032 t of OPs/POP Category 1 waste (1,011t+21t – 2% re-packaging materials) was not removed from Nubarashen burial site and was not disposed.  The estimated 4,123 t Category 2 soil was not safeguarded/eliminated and the topsoil portion (4,080 t) of the Category 3 soil was not backfilled.  Contributing to this indicator, the Nubarashen site assessment with clean-up and waste disposal design (including the civil-engineering design) was completed in August 2018. The Environmental Social Impact Assessment (ESIA) for envisaged works was conducted in parallel. A conditional positive feedback was received from the ESIA State Expertise Committee in April 2019, pending the final approval after completion of the report with data on Category 1 waste disposal destination.  The engineering design package (including technical description, drawings and spreadsheets) for the repackaged OPs/POP waste temporary storage construction has been developed, and then approved by Yerevan Municipality.  The progress was estimated at 20%.

	Contaminated soils classified sufficiently to constitute a potent risk remain uncontained at some of these storehouse sites.	temporary storage on-site		
Major stockpiles of OPs and POPs pesticide wastes have been disposed of in an environmental sound manner	No elimination of national stockpiles of obsolete has been attempted	Commercial arrangements made for the export and disposal of 1,052 t of Category 1 waste  Technology selection and demonstration along with commercial arrangements made for the treatment/disposal of 4,123 t of Category 2 waste	1,052 t of Category 1 waste exported and disposed  4,123 t of Category 2 waste treated/disposed  8,500 t of Category 3 waste/soil backfilled and monitored at the restored and stabilized Nubarashen ex-burial site	Activities for disposal of OPs/POP waste is pending upon completion of works specified for the indicators 2 and 3, under the Outcome 1 (Please see details under the Outcome 1).  Launching and completion of activities specified for this indicator was conditioned on the selection and contracting of a service provider company. The respective tender was cancelled in June 2020.  The progress (referring to preparations for subject works) is estimated at 15%.
National legal instruments and regulatory framework for hazardous waste and contaminated sites update with gaps filled, conflicts resolved and consistent with relevant international requirements.	Current legal and regulatory framework for hazardous waste and contaminated site management has significant gaps and conflicting provisions	Completed analysis and definition of current gaps and requirements for legal and regulatory changes documented and actions agreed	Respectively updated regulatory framework for chemical HW management documented	The project analyzed the existing legislation (including laws and by-laws) on hazardous waste handling in Armenia. Main recommendations, particularly targeting the licensing of hazardous waste (HW) handling activities were shared with the Ministry of Nature Protection (then renamed Ministry of Environment - MoE) in early 2017. Per the former legislation, all types of HW management activities were subject for one license.  The licensing principle was changed. The amended Gov. Decree was issued in September 2918 (Decree # 1029-N) on licensing

		(to be completed when Component 3 inputs received)		<p>for HW management reflecting differentiated requirements separate for licensing of each listed activity (Eg.: collection, transportation, location, storage, processing, recycling, utilization, removal, disposal, landfilling).</p> <p>Specific norms, based on international best practices (such as 2008/98/EC, 2006/12/EC, 1999/31/EC, 2003/33/EC, 2000/532/EC, 2009/128/EC), were presented and recommended for a reference, to be adapted and used by the project contractor engineering-design company (“Elektronnakhagits” CJSC), in the works for civil-engineering design of reconstruction / development of the originally approved Hrazdan storage site.</p> <p>In response to the MNP request, the project supported development of the first draft package of legal regulations for phasing out of plastic bags (considered generating U-POPs waste under uncontrolled combustion). The MNP further modified legal provisions and amendments were reviewed to the related legislation and provided comments/suggestions.</p> <p>Per the revealed needs, the progress is estimated at 85%.</p>
Core national technical capacity in place relative to hazardous waste management, risk assessment and contaminated site management	Limited technical capacity in key areas of expertise and support infrastructure	Identification and documentation of key methodologies and scope for the required risk assessment and initial application in the project activities	Environmental and health risk assessment methodologies documented, disseminated and implemented as part of the national regulatory assessment process for chemical HW and contaminated site management	<p>The project developed a report entitled “Review and update risk assessment and classification criteria” methodology, and, based on that, another report entitled “Nubarashen Risk Assessment Report” was produced. During the burial site clean-up works, the risk assessment methodology will serve as a guiding document for operational procedures and application of supervisory functions over the operational staff.</p> <p>Professionals/specialists (total 95 persons including 45 women and 50 men) were trained on hazardous waste management, risk assessment and analytical measurements:</p>

			<p>Professionals in regulatory agencies, academia, NGOs and environmental service providers trained on their application</p>	<ul style="list-style-type: none"> <li>- Two seminars with 2-days sessions each were conducted in November 2016 and April 2017 with financial support from the UNDP/Czech Trust Fund on Technical requirements and environmental, health risk assessment and safety (EHS) aspects in the view of international/EU best practices. In total 56 persons (26 women and 30 men) participated in these two training courses including 16 women and 16 men in November and 10 women and 14 men in April training.</li> <li>- In August 2017, the “Soil Sampling and Lab QA/QC Training” was delivered, the training agenda consisted of a 2-day theoretical classroom training on methodologies and 1-day practical training on-site (at Nubarashen burial site), with total 29 participants (15 women, 14 men).</li> <li>- Two hands-on training sessions were conducted on May 4 and 7 2019 the first in UNDP premises and then in the Institute of Chemical-physics of the National Academy of Sciences for the specialists of the 3 national laboratories (6 men and 4 women) on use of project's purchased portable X-ray fluorescence XRF VANTA-C field analyzer.</li> <li>- A specialized one-day training for environmental mass-media representatives was delivered on 13 December 2017, on hazardous chemical waste management, associated risks and emergency responses, as well as ESIA procedures, participated 9 women and 1 man (environmental photojournalist).</li> </ul> <p>The main subject training for the operational and supervisory staff of Nubarashen site and HW storage site was planned to be delivered before the site clean-up and waste disposal works start.</p> <p>The progress is estimated at 50%.</p>
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Co-financing is available timely to complete the planned activities	Government commitment letter on 16,02 million USD co-financing including in-kind and cash contribution	Government commitment letter on 16,02 million USD co-financing including in-kind and cash contribution	Timely availability of necessary co-financing cash component	<p>A USD 1.5 million equivalent AMD was allocated in the Y2019 state budget (point 12 under the Ministry of Energy Infrastructures and Natural Resources chapter) for co-financing the project implementation.</p> <p>Political commitment was present at the Government for allocation of next similar amount portions in the subsequent 2020 and 2021 years. In fact, the allocated fund was not used due to delays in selection of service provider company and launching the field works.</p> <p>During the August-September 2020 an agreement was reached with the Deputy Prime Minister's office that they will facilitate the allocation of 4.5 million USD co-financing in the 2021 state budget. This was formally committed also through the decision of the PMB meeting dated 10 September 2020. The project started close work with the DPM's office providing necessary supporting information.</p> <p>The hostilities that began at the end of September 2020 made it too late to integrate the initiated actions into the budget cycle, as the head of the DPM office (also PMB member), who was assigned to facilitate the allocation of co-financing in the state budget, was initially at the forefront of the hostilities and then resigned at the end of November.</p> <p>The progress is estimated at 25%.</p>
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**Outcome 1 /Outcome 1.1/**

**Removal of priority OP and POPs pesticides waste from the Nubarashen burial site, secure containment of residual contamination on-site, site stabilization and restoration, with the site secured under appropriate institutional arrangements providing effective access limitations, monitoring and future land use control, all endorsed by an informed public**

Indicator	Baseline	Targets		Status of Achievement
		Mid-term	End of project	

<p>Detailed site assessment, design documentation, tender specification, implementation procedures including Environmental Health and Safety (EHS) procedures, Environmental Impact Assessment (EIA) and required approvals in place to initiate Nubarashen burial site works</p>	<p>Preliminary site assessment completed during PPG</p> <p>Conceptual design for waste excavation and containment, site stabilization completed during the PPG</p> <p>No formal EIA or site approvals initiated</p> <p>No national standards and procedures in place</p>	<p>Detailed design with supporting tender documents and site clean-up specifications developed</p> <p>EIA and formal approvals in place</p> <p>Operational procedures including EHS procedures in place and utilized</p>	<p>Implementation of designed works, conformance of operational procedures with approved conditions verified</p>	<p>The Technical Engineering Design with other materials were developed and completed in August 2018. These materials included (1) the EHS Plan, (2) Site Assessment and Characterization, (3) Technical design of waste clean-up/disposal works, (4) Operational Plan with (5) Prevention and Emergency Plan and (6) Cost Estimates.</p> <p>The ESIA report was submitted and a conditional positive feedback/approval was received from the State Expertise Committee, pending to be finalized with data on the Category 1 waste disposal destination and solution for Category 2 disposal technology on-site. This data could be available after having a successful tender.</p> <p>All these documents were supplemented as appendices to the Scope of Works (modified several times per the ACP's - UNDP Advisory Committee for Procurement, comments and finalized in July 2019) for Nubarashen site clean-up and waste disposal assignment: including the excavation, removal and disposal of an estimated 1,032 t Category 1 Nubarashen POP/OPs waste (1,011t+21t - 2% re-packaging materials) and an estimated 4,123+40 t Category 2 and Category 4 waste).</p> <p>The progress is estimated at 90%.</p>
<p>Volume of Category 1 waste excavated and removed and volume of Category 2 waste/soil excavated, displaced for temporary secure storage on-site and secure containment in stabilized Nubarashen ex-burial site</p>	<p>An estimated 5,175 t of Category 1 and Category 2 waste is found in and around the Nubarashen burial site</p> <p>Risk assessments identified the need to</p>	<p>Excavation and packaging of 1,052 t Category 1 waste for secure temporary storage on-site</p> <p>Excavation and safeguarding of 4,123 t of Category 2 waste</p>	<p>Removal of 1,052 t Category 1 waste for secure temporary storage</p> <p>Displacement of 4,123 t of Category 2 waste for secure temporary storage on-site and containment in stabilized Nubarashen</p>	<p>The excavation, displacement, storage and disposal or secure containment of Category 1 and Category 2 waste were not performed.</p> <p>The below summarized initiatives were realized for the preparation of core activities to contribute achieving this indicator.</p> <p>Being advised per the internationally available experiences, initially an Expression of Interest (EoI) was announced in late 2017 for identification of Category 2 soil decontamination</p>

	ensure removal of high risk POPs waste	for secure temporary storage on-site	ex-burial site after environmentally sound treatment	<p>relevant technology and for pre-qualification of a company to perform the Category 2 soil treatment/disposal. Six applications were received from international consulting and technology companies.</p> <p>Representatives of all companies visited Armenia, participated in the site visit and in 3-hours workshops separate for each company (one company connected remotely) and presented their proposed technologies for Category 2 soil decontamination.</p> <p>Summarizing the finding of the EoI the evaluation panel concluded to not separate the Category 2 soil decontamination works from the entire site set-up, waste excavation, etc. works, which are interlinked – should be synchronized, and will take place in the same area. The decision was to develop an integral assignment for all necessary on-site and disposal works.</p> <p>Starting from early 2018, drafting of ToR for Nubarashen site clean-up and waste disposal <u>integral</u> assignment started - initially split into two lots under one tender. The 2-lot approach, though agreed by the Project Management Board (PMB), was not approved by the ACP after the lasting discussions, and the ToR was converted for an integral one assignment, to be tendered in two phases – EoI and RFP.</p> <p>For the integral assignment, as a 1st phase, an EoI was announced in September 2018 with two: baseline and alternative options for each Category 1 and Category 2 types of waste disposal. Eight companies applied, 5 were qualified for the 2nd phase, announced in August of 2018 after having the ex-ante approval of the tender package ultimately reflecting one baseline option for the Category 1 waste disposal: - disposal abroad; and two: baseline – “technological decontamination”, and alternative – “safeguarding and backfilling with no decontamination”,</p>
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				<p>options, for Category 2 soil disposal. Five companies were qualified from 8 applications received in October 2018.</p> <p>Per the ACP's recommendation, for the second phase initially an RFP modality tender package was developed starting in early 2019, then recommended and modified for an ITB format tender, approved together with the risk and evaluation matrix by ACP in late July 2019. The package was directly shared with five pre-qualified companies, from which three companies withdrawn, and 2 bids received (per bidders' request the submission deadline was extended two times). On 3rd September a bidder site visit and Q&amp;A workshop was organized (attended by three companies). On 4th November 2019 two proposals were received, only one proposal was technically qualified, and submitted the lowest price, which however substantively exceeded (around 45%) the international market prices/rates for similar works.</p> <p>In early December 2019 a Pre-award negotiation permit was requested from the ACP. Negotiation strategies for two different scenarios (linked to baseline and alternative options of Category 2 soil disposal) were developed, international subject-matter experts were nominated as members for the negotiation panel. The ACP's approval for negotiation package and for conducting it was received on 4th May 2020, and on 5th May 2020, the recommendable bidder was invited to the price negotiation. The remote event took place on 22nd May 2020. On 4th June the negotiated price-proposal was submitted.</p> <p>The negotiation resulted to the price reduction in 4-21% interval 4/9/21% for revised three versions of the baseline option, and 4% reduction for the alternative option, still not assuring the best value for money, consequently the RBEC procurement recommended to terminate the tender with no contract award, since the aimed price reduction target was not achieved.</p>
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				<p>This critical phase of the project implementation (finalizing the ITB 003/19 tender with negotiation) was coincided with the onset of COVID-19 pandemic, and any measure has been conditioned by ongoing COVID-19 restrictions/limitations, including travel restrictions, expected difficulties with importing necessary technology elements to Armenia and meeting limitations definitely impacting the negotiation result. In addition, the unprecedented pressure of double force majeure situation on the state budget due to COVID-19 pandemic emergency and Nagorno Karabakh war influenced on co-funding allocation in 2020.</p> <p>In order to construct the two-block 1,450 sq.m facility near Nubarashen site for temporary storage of removed 1,032 t repackaged Category 1 waste, an ITB 115/18 local tender has been conducted and the selected local construction company was awarded the contract for construction works, which were scheduled to be launched linked to the contract award for site clean-up works, pending completion of ITB 003/19 tender.</p> <p>The progress is estimated at 30%.</p>
Excavation, displacement and secure storage of 8,500 t of Category 3 soil and backfilling in stabilized Nubarashen ex-burial site	<p>Containment of pure pesticide burial cells compromised</p> <p>Contamination has spread to soil across and around the Nubarashen site"</p> <p>· Containment of pure pesticide burial cells compromised.</p>	Excavation, displacement of 8,500 t of Category 3 soil for secure temporary storage on-site	On-site secure permanent backfilling of 8,500 t of Category 3 soil at the restored and stabilized Nubarashen ex-burial site	<p>Per the assessment, it was estimated the presence of around 8,500 t of Category 3 soil (low POP/OPs content) covering the burial site body with the topsoil – counting around 4,080 t, and the rest is located in the adjacent area. This amount of the Category 3 topsoil that covers the body of burial site - should be subject to excavation and displacement (then followed by removal of Category 1 and displacement of Category 2/4 waste from the landfill) to dedicated platforms, then backfilled into re-engineered landfill.</p> <p>Three dedicated platforms for the interim storage of the soil have been identified adjacent to Nubarashen burial site, and as temporary infrastructural elements were reflected in the Nubarashen site set-up engineering design package, to accept</p>

				<p>and securely store the displaced Category 2/4 waste before treatment (Category 4 is the concrete debris around 40 tons expected/lying in the bottom of the cell 1 of the burial site) and Category 3 soil before their backfilling into a stabilized and re-engineered Nubarashen landfill.</p> <p>Per one of the tasks in the Scope of Works (SoW) of the ITB 003-19 tender, interim geotechnical and environmental stabilization of the emptied cells and the burial site body area with hydro-geologically secure engineered structure was required: e.g. usage of high-density polymer layers preventing/isolating any spread of further backfilled/contained soil with reinforcing construction elements. This interim stabilization measures were planned be performed before containment of the Category 2/4 (after treatment) and Category 3 soil back into re-engineered landfill.</p> <p>The engineering-design package of the on-site works should enable appropriate interim stabilization of the landfill (including high-density plastic lining with hydro-geologically secure engineered structure and monitoring wells) before its backfilling along with Category 2/4 treated (decontaminated) soil/waste.</p> <p>The progress is estimated at 40%.</p>
Availability of restoration, monitoring and access control provisions for the Nubarashen burial site and completion of civil works to stabilize the surrounding land and drainage system	<p>Only temporary containment works in place involving basic drainage, and cover of the burial site itself</p> <p>Site is generally intact but poorly maintained and sparsely vegetated,</p>	<p>Upgraded and enforced public access controls</p> <p>Upgraded access roads, security controls and site protection measures suitable for the active</p>	<p>Fully restored site with sustainable phytoremediation vegetation, appropriately fenced and gated with signage including a 100m buffer zone around the former burial site</p>	<p>Necessary actions for implementation of required engineering and environmental measures for the landfill's interim and final stabilization, recapping, restoration, with monitoring and access control elements were included in the SoW of the site clean-up and waste disposal assignment and should be performed in line with on-site works, and after the soil is backfilled and the site is closed.</p> <p>All these elements were part of the tendered assignment, which also detailed a separate task requesting to develop and implement a post-closure site monitoring plan, then to be</p>

	<p>subject to erosion, drainage blockage and surrounding geotechnical and hydrogeological instability</p> <p>Basic ground water monitoring capability in place</p> <p>Site security and access control as part of an emergency measures order but general public access to area permitted</p>	<p>excavation and restoration works</p> <p>Temporary repairs and modification to on-site upstream and downstream drainage to assure minimum water ingress during active site excavation and remediation works</p>	<p>Upgraded and functional site drainage system</p> <p>Permanent measures maintain land stability upstream and downstream of site</p> <p>Long term monitoring program in place and funded by national budgets</p> <p>Institutional arrangements made respecting long-term land use of the site and surrounding territory</p>	<p>transferred to the site custodian for execution after the project closure.</p> <p>The project facilitated the approval of the Decree #2327-A on provision of land (with exact mapping of the allocated area), which was issued by Yerevan Mayor office on 27 June 2016, formalized the permit for use of the burial site area and its surrounding lands.</p> <p>Correspondingly, the Council of Voghjaberd community (located in 3.5 km from the burial site, one of impacted communities, administering the land surrounding the burial site on the top of the adjacent hill), issued a Decree # 34-A, dated 03 November 2018 on the allocation of respective area for installation of temporary storage facility, in the area administered by the community which is adjacent to Nubarashen site.</p> <p>The progress is estimated at 30%.</p>
<p>High level of public awareness, engagement and support for the clean-up activities and ongoing custody and monitoring arrangements for the Nubarashen burial site supported by appropriate awareness products</p>	<p>Limited awareness on the site, its risks and activities being undertaken with respect to its clean-up</p> <p>Limited awareness of the site, its risks and activities being undertaken with respect to its clean up.</p>	<p>3 public consultation events held and 10 public documents/web/media products produced</p>	<p>5 public consultation events held and 15 public documents/web/media products produced (cumulative numbers)</p> <p>Survey indicating the views of affected public stakeholders conducted upon completion</p>	<p>An NGO, The Armenian Women for Health and Healthy Environment (AWHHE), acted as the “Initiator” for development and submission of ESIA report. The ESIA requires 4 public hearings to be held. Public information on the results of the events was disseminated, as well as published online:</p> <p><a href="http://armtimes.com/hy/article/125041">http://armtimes.com/hy/article/125041</a></p> <p><a href="http://www.lragir.am/index/arm/0/country/view/164708">http://www.lragir.am/index/arm/0/country/view/164708</a></p> <p><a href="https://armenpress.am/arm/news/912295/masnagetnery-qnnarkel-en-nubarasheni-tunaqimikatneri.html">https://armenpress.am/arm/news/912295/masnagetnery-qnnarkel-en-nubarasheni-tunaqimikatneri.html</a></p> <p><a href="https://goo.gl/ZXGhUH">https://goo.gl/ZXGhUH</a></p>

				<p><a href="https://soundcloud.com/armradio/2303-2018a">https://soundcloud.com/armradio/2303-2018a</a></p> <p><a href="https://mediamax.am/am/news/special-report/27250/">https://mediamax.am/am/news/special-report/27250/</a></p> <p><a href="https://goo.gl/M6oSrJ">https://goo.gl/M6oSrJ</a></p> <p>Conditional positive feedback from the ESIA expert-examination authority (acting under the MoE structure) was received in April 2019, stating the feasibility of providing conditional positive expert conclusion. The final approval remained pending the report to be amended with data on the waste disposal facility – subject to be selected through the tender.</p> <p>In all communities surrounding the Nubarashen burial site, including Voghjaberd, Geghadir, Mushakan, Hrazdan, Lernanist a waste management related survey combined with public awareness building meetings were conducted in April 2018 - supported by the Small Grants Programme (103 participants including 43 women and 60 men), information was provided on the intended site clean-up initiatives, on risk mitigation measures. With this parallel initiative, the NGO AWHHE provided great support for organizing and conducting these events.</p> <p>A specialized one-day training for environmental mass-media representatives has been organized and delivered on 13 December 2017, the objective of which was to provide public information on the project activities, and to assist in improving the sectoral experience of mass-media representatives and journalists on environmental and technical issues pertaining to hazardous chemical waste management, associated risks and emergency responses, as well as ESIA procedures, with a specific focus on Nubarashen POPs/OPs burial site. Training</p>
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				certificates were awarded to the participants – 9 women and 1 man (environmental photojournalist).  The progress is estimated at 70%.
Availability of trained capability in the practical handling/management of chemicals HW and contaminated site clean-up	Limited national capability in the practical management of hazardous chemicals wastes and contaminated site clean-up	Training delivered to 20 national technical and regulatory staff in support of Nubarashen burial site HW waste excavation, packaging, secure storage, transportation and site restoration operations	Developed sustainable operational capability in the public and private sector for chemical HW and contaminated site clean-up management	Activities under this indicator were part of the tendered assignment, were planned to be performed integrated with the on-site works.  The progress is estimated at 0%.
<b>Outcome 2 /Outcome 1.2/</b>				
<b>Development of the national chemical hazardous waste (HW) management site and upgrading with secure storage and basic infrastructure capacities to allow the secure storage of chemical HW</b>				
Indicator	Baseline	Targets		Status of Achievement
		Mid-term	End of project	
Availability of detailed design documentation, tender specification, implementation procedures including EHS procedures, EIA and required approvals to initiate the chemical HW management site development	Ministry of Emergency Situations site in Kotayk marz assessed as suitable for development  Preliminary conceptual design survey and cost estimate complete	Developed detailed design with supporting tender documents and construction specifications for chemical HW site development	Implementation of designed works, conformance of operational procedures with approved conditions verified	Detailed design package including the EHS, ESIA for the HW management site development has been completed in 2018, and as required the approval of the construction works per the design package was received from Yerevan Municipality – the authorized local governing body.  The engineering-design company was selected/contracted to develop the construction design package for reconstruction/development of the initially approved HW storage site (under the MES subordination), located in a 2-km distance from the town Hrazdan. Drafting of the ESIA report was initiated, and the required public hearings started. The staff

	Initial public consultation with authorities and local public undertaken	EIA and formal approvals in place  Operational procedures including EHS procedures developed and utilized		<p>of this design company were involved in this assignment and participated in the training supported by the UNDP/Czech Trust Fund (detailed under the indicator 4 of the Objective). Design company proposed all technological-engineering solutions for safe operation of the storage site, in compliance with the requirements of local norms on such facilities and corresponding to international best practices.</p> <p>However, the ESIA public hearings revealed complains/grievances of Hrazdan impacted community population and CSOs (including environmental NGOs) allowing to comment, that an ESIA screening should have been conducted during the PPG stage, and only having the positive feedback from this community and CSOs the pre-selected Hrazdan storage site could be include into the ProDoc.</p> <p>During the ad-hoc special PMB meeting on 16 June 2017, it was decided to temporarily suspend the HW storage design works, due to the concerns and grievance of the impact community and make a political decision to select another alternative low-risk site/facility.</p> <p>The newly selected and pre-assessed former rubber storehouse of “Nairit” Chemical Plant was considered feasible for the establishment of the hazardous chemical waste (HCW) storage/management facility.</p> <p>Consultations on public agreement of using the former rubber storage building of Nairit plant for project’s purposes was held in July 2018, with participation of relevant stakeholders and CSOs. Meeting participants came to the consent that this storage can be used for accepting any waste displaced from Yerevan city-located institutions and areas only, which was respectively documented. Nubarashen burial site is located in Yerevan administrative area.</p>
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				<p>The allocation of the Nairit storage site for project's purposes was approved by the GoA Decree N383-A, issued on 05 April 2018.</p> <p>After the change of the Government of Armenia through the Velvet Revolution, leaders of the Bankruptcy Committee managing the former Nairit plant, requested the government to consider their plans on rehabilitation of some production processes in Nairit plant, where the allocated storage site should be part in the chain. The storage building belongs to the Ministry of Emergency Situations, however the purpose of its use remained disputable, since the resistance on this allocation was periodically expressed by the former staff members of the Nairit plant.</p> <p>The project shifted to the next solution – a temporary metallic “sandwich panel” type construction to be installed on the hill in the adjacent area of Nubarashen site, then dismantled after the on-site works completion, and be provided to partner ministries for re-installation to serve for other national purposes.</p> <p>The engineering design package (including technical drawings and spreadsheets for the repackaged OPs/POP waste temporary storage construction) has been developed, and then approved by Yerevan Municipality. The corresponding ESIA process has been conducted within larger ESIA for Nubarashen on-site works.</p> <p>The progress is estimated at 100%.</p>
National chemical HW management site developed and operates to international standards and number of trained and equipped staff for the	No suitable chemical HW storage or management facilities available in Armenia	Construction and upgrading works of the national chemical HW management site completed to national	National chemical HW management site utilized for general chemical HW management activities on a sustainable basis	For the temporary light-metallic construction a local company was contracted, launching of this construction remained pending upon the start of Nubarashen site clean-up on-site works.

practical operation of the facility including safeguards and EHS practices available		and international standards  Training delivered to 10 national technical and regulatory staff in support of national chemical HW facility operations  National chemical HW management site operational and being used for the storage of chemical HW	Sustainable operational capability for chemical HW management facility developed	Respective training for operational staff was envisaged to be conducted together with other on-site operational and supervisory staff training.  The progress is estimated at 0%.
Number of public consultation held and public documents/web/media products delivered to display high level of public awareness, engagement and enhancement support for the national chemical HW facility activities	Initial public consultations with local authorities and affected public stakeholders undertaken	3 public consultation events held and 5 public documents/web/media products delivered	5 public consultation events held and 10 public documents/web/media products delivered	The following 8 most important public consultation meetings were held, and with at least 25 publications, TV/radio broadcasts were published or shown to the public:  2016 period:  October 2016 (in MNP 21 participants, 9W+12M);  October 2016 (Aarhus Center 21 participants, 14 women/W+7men/M)  November 2016 (MNP, 20 participants, 8W+12M)  (in total 62 persons - 31 women and 31 men)  2017 period:

				<p>May 2017 (Aarhus Center, 15 participants, 10W+5M)</p> <p>May 2017 (MNP, 17 participants, 4W+13M)</p> <p>November 2017 (Erebuni district municipality, 10 participants, 4W+6M)</p> <p>(in total 42 persons - 18 women and 24 men)</p> <p>November 2017 – RadioLur</p> <p>2018-19 period:</p> <p>January 2018 – InvestMagazine</p> <p>March 2018 (Erebuni district municipality, 38 participants, 23W+15M), Azdarar Armenian TV channel and Yerevan Radio</p> <p>July 2018 (UN house, 18 participants, 7W+11M)</p> <p>(in total 56 participants - 30 women and 26 men)</p> <p>June 2019 - Azdarar Armenian TV channel</p> <p>The progress is estimated at 90%.</p>
Successful operation of the facility to host treatment/remediation technology treating for soil highly contaminated with POPs pesticide in an environmentally sound manner.	No HW qualified site for the operation of HW treatment and soil remediation technology currently exist in Armenia that would meet project requirements.	<i>(not set or not applicable)</i>	Secure receiving and secure storage of approximately 100 t amount of additional soil highly contaminated with POPs pesticide) from OP storehouse cleanup activities.  Treatment and remediation of at least	<p>Activities under this indicator were planned to be carried out pending upon implementation of the preceding indicators on the start of the actual excavation and stabilization works at Nubarashen.</p> <p>The progress is estimated at 0%.</p>

			7,100 t of Category 2 material from Nubarashen and OP storage site clean-ups or alternatively export of this material to suitable treatment and remediation facilities	
Availability of trained and equipped staff for the practical operation of the Kotayk HW management facility including safeguards and EHS practices	Limited national capability in the practical management of hazardous chemicals wastes and particularly the operation of HW storage and treatment facilities	<i>(not set or not applicable)</i>	Sustainable operational capability for hazardous chemical waste management facility in place	Activities under this indicator were planned to be carried out pending upon implementation of the preceding indicators on the start of the actual excavation and stabilization works at Nubarashen.  The progress is estimated at 0%.
High level of public awareness, engagement and support for the Kotayk HW facility site activities and ongoing operations supported by the delivery of appropriate awareness products and activities delivered.	Initial public consultations with local authorities and affected public stakeholders undertaken.	<i>(not set or not applicable)</i>	public consultation events held and 5 public documents/web/media products delivered	Kotayk site was removed from consideration (detailed above under the first indicator of the Outcome 2), the indicator was not applicable.  The progress is estimated at 0%.
<b>Outcome 3 /Outcome 1.3/</b>				
<b>Remaining significant historical obsolete pesticides (OPs) storehouses addressed, OP stocks packaged and removed, and residual site contamination cleaned</b>				
Indicator	Baseline	Targets		Status of Achievement

<p>Availability of completed/ documented screening assessments of identified historical OP storehouse stockpile sites and volume of OP stockpiles and cleaned residuals packed and removed to storage</p>	<p>Fragmented historical assessment and inventory work consolidated for project preparation</p> <p>24 OP stockpile sites identified and up to 6 sites considered priorities for substantive clean-up</p> <p>Preliminary commitment for EU funding of initial work pending</p>	<p>EU/Ministry of Agriculture - MoA/FAO administered site assessment, packaging and surficial clean-up undertaken to make available 150 t of OPs and residuals for storage and environmentally sound disposal arranged by FAO</p> <p>Public consultation conducted at priority OP storehouse sites</p>	<p>Under MoA supervision the former priority OP storehouse sites are maintained for other productive uses</p>	<p>The assessments of identified historical OP storehouse stockpile sites and volume of OPs waste was conducted within the project's PPG stage and under the EU/FAO GCP/RER/040/EC supported projects and documented in 2013-2014 reports/inventories respectively.</p> <p>The OPs residuals located in historical storehouses was not packed and removed to storage.</p> <p>In response to a UNDP query, the Ministry of Agriculture confirmed that the planned/envisaged MoA/EU/FAO co-financing (800,000 US dollars) for Activity 1.3 (collection and packaging of the pre-assessed 150 tons of POP/OP waste) can not be made available.</p> <p>On September 18-20 2018, site visits were made, jointly with Ministry of Emergency Situations (MES) and Ministry of Agriculture (MoA) representatives, to former OPs regional storehouses and dumpsites located in 5 marzes/regions of Armenia. This was done to explore and update the status of the six (6) priority sites, potentially containing POP/OP pesticides.</p> <p>Based on the visits, a summary report has been developed on status, conditions and set of recommended measures to be undertaken for the existing POP/OPs waste identification and possible disposal, clean-up and safeguarding of the storehouse sites.</p> <p>The progress is estimated at 20%.</p>
<p>Availability of completed/ documented detailed contaminated site and risk assessments and remediation/clean-up designs on identified</p>	<p>Limited site assessment work done by local and international NGOs</p>	<p>Preliminary site assessment reports received from MoA and reviewed/evaluated</p>	<p>Detailed contaminated site and risk assessments and remediation/clean-up designs on identified up to 6 priority OP</p>	<p>The project planned to address the elimination of POP/OPs waste from 6 major community-based storehouses – where the POP are concentrated, under the state allocated co-financing and supported by the MES and Ministry of Economy/Agriculture, parallel to Nubarashen site clean-up works.</p>

priority storehouse sites and a number of public consultation events held at number of priority storehouse sites and public acceptance of actions	No dedicated public consultation activities on priority sites to date	Priority OP storehouse sites for substantive clean-up agreed with MoA and MNP	storehouse sites completed/documentated  6 public consultation events held in the communities of 6 priority OP storehouse sites	Sixteen (16) OP stockpile/storehouse sites (including the 6 priority sites), located in 8 regions, were visited by the project partner NGO AWHHE during October 2017 – May 2018 period, to update on their status, conditions. Clarifications on the waste handling were provided to 8 rural municipality's' staff and information awareness materials were distributed.  The progress is estimated at 25%.
Volume of OPs stockpiles packed, removed from a number of priority OP storehouse sites and residual site contamination cleaned-up	No clean-up activity undertaken at any OP storehouse site	No action	Excavation/removal, disposal and/or containment of up to 150 t of POPs waste from up to 6 priority OP storehouse sites completed	Please see previous status updates presented in the section above.  Activities under this indicator remained pending upon implementation status of the preceding indicators.  The progress is estimated at 0%.
Public consultation events held at 6 priority sites and public acceptance of actions are obtained	No dedicated public consultation activities on priority sites to date.	<i>(not set or not applicable)</i>	6 public consultation events held at 6 priority sites	Sixteen (16) OP stockpile/storehouse sites (including the 6 priority sites), located in 8 regions, were visited by the project partner NGO AWHHE during October 2017 – May 2018 period, to update on their status, conditions. During these visits meetings were conducted with the community administration and staff, with health post and ambulatory staff to reveal the level of risk perception by local communities.  Explanation on environmentally sound handling of the waste was provided to the municipality staff and information awareness materials were distributed.  The progress is estimated at 100%.
<b>Outcome 4 /Outcome 2.1/</b>				
<b>Export and environmentally sound disposal of Category 1 waste</b>				

Indicator	Baseline	Targets		Status of Achievement
		Mid-term	End of project	
Volume of Category 1 waste exported and disposed under an environmentally sound measure in accordance with the Stockholm Convention Article 6, Basel Convention and GEF guidance performance requirements	No destruction of POPs pesticides, POPs wastes or OPs yet undertaken	International pre-qualification of Category 1 waste disposal facility, tender and contract documents prepared and implemented  Export from Armenia and environmentally sound disposal of 1,052 t Category 1 waste for destruction at a qualified disposal facility	Environmentally sound disposal of any contingency volumes of Category 1 waste at a qualified disposal facility	<p>The 1,032 tons of Category 1 waste was not disposed.</p> <p>Armenia is a landlocked country. It does not have direct access to the sea and borders with two neighboring countries Turkey and Azerbaijan are blocked. The priority export/transit direction is through Georgia, and the other available route is to/through Iran.</p> <p>Different potential alternative solutions for export and transit of Category 1 waste to disposal destination were examined by the project in parallel.</p> <p><u>Efforts to learn on Georgia's intent to provide HW waste transit permit.</u></p> <p>In October 2017, the Ministry of Foreign Affairs (MoFA) of Armenia sent a formal notice to the MoFA of Georgia expressing Armenia's intent in transiting a hazardous waste (HW) through Georgia territory. Perhaps due to multiple structural changes of the Government in Georgia no answer has been received.</p> <p>In September 2018, the Minister of Nature Protection (MNP) of Armenia sent a formal letter to the Minister of NP and Agriculture of Georgia informing on the potential need to transit hazardous waste through Georgia territory, and requesting information on the possibility of providing a one-time waste transit permit by the Government of Georgia.</p> <p>Formal response was not received from Georgia, however for this letter and for other several follow-up verbal/call communications the Georgian side at the Minister's level provided assurance that a respective solution under the intergovernmental agreement will be offered.</p>

			<p>In the result of these efforts and facilitated by the project, the issue of the need to get Georgia's permit for transiting the waste through Georgia was agreed bilaterally and included in the agenda of 10th session of Armenia-Georgia Intergovernmental Commission on Trade-Economic Cooperation and an Armenian-Georgian Business Forum (took place in Armenia on 27-28 June 2019) to also agree on details of its realization. The aspects reflected in the Forum agenda are considered pre-agreed by sides. After discussion on details those are fixed and enforced by mutually signed protocol.</p> <p>Political instabilities which started in Georgia on 20 June 2019 made the HW transit issue politically sensitive topic for discussion and reflection in the protocols following after the Forum, and the Georgian side requested to remove it from the agenda of the above Forum.</p> <p>On 22 October 2019 the Deputy Prime Ministers (DPM) of Armenia and Georgia met, and among other issues the transit of the waste also was touched. The DPM of Georgia referenced to the national legal regulation putting ban or limitations on the waste transit. The HW transit is regulated under the Basel Convention (BC) to which Georgia is a signatory party, as well as have exported and transited similar waste from Georgia in 2013.</p> <p>The final response received from Georgia remained the same as before and it referred to the Georgian national law prohibiting the transit of hazardous waste.</p> <p>Among alternative solutions for the Category 1 waste disposal the option of importing the destruction technology to Armenia and in-country destruction was examined, along with using such technology capacity for destruction of other chemicals leftover</p>
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				<p>in the “Nairit” chemical plant, per the request from the Ministry of Emergency Situations.</p> <p>Studies of alternative solutions for the Category 1 waste disposal included the following:</p> <ol style="list-style-type: none"> <li>1. On 17-18 September 2019, workshops were held at UNDP and MES of the Republic of Armenia, during which the representative of French company “ATI” presented models of high-temperature hazardous waste incinerators, assumed feasible to be imported to and operationalized in Armenia. On 19-20 September 2019, a workshop with presentation and a meeting at the MES high level officials were conducted by the representative of another French company of similar profile “DAMRYS”, with participation of representatives of “MAPSA” hazardous waste disposal company (Iran). Both French companies shared cost-estimates. All visits from three companies were financed by their companies, and the project supported the organization of the events. Provided documents were translated and shared with the MES, in its turn submitted to the Government for consideration.</li> </ol> <p>The project didn’t recommend considering these off-the-shelf technologies (incinerating up to 5 t waste per day) for POP/OPs waste disposal, since the permeable presence of the organo-chlorine waste should be below 2% in each combustion feed, meaning that the disposal of 1,032 t waste could last more than 25 years. However, the capacity of these technologies also was discussed for their use to incinerate and dispose a chemical waste remnant inherited from soviet time in large chemical plants.</p> <ol style="list-style-type: none"> <li>2. In early 2020 (February – mid-April), supported by the Swedish consulting company SWECO International AB, a pre-feasibility assessment was conducted and recommendations provided on Hrazdan cement plant</li> </ol>
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				<p>targeting the: i) relevance of plant's existing capacity to be restructured and accept waste materials, and the ii) needed restructuring/upgrading steps to accept the most common hazardous chemical and other waste materials (including POPs pesticides) under technologically and environmentally safe operation conditions in compliance with international regulations – concluded in a simple roadmap, energy recovery gain and costs for the plant upgrading were calculated.</p> <p>The final report was shared with the Ministry of Environment (MoE), a remote presentation on findings was delivered on 17 April 2020 to the MoE, questions and answers were recorded and included in the final report. Per the resulting recommendations, one rotary kiln of the plant needs to undergo retrofitting, and additional units for the waste acceptance and pre-treatment should be constructed. However, since the Nubarashen OPs waste contains mercury and arsenic elements in few pesticides, the destruction of this waste in cement plant was not recommended, due to high costs of safe elimination/filtering/disposal of mercury content.</p> <p>3. The project closely follows initiatives of Eco-Group International Russian company, intending to import a Russian licensed mobile incinerator to Armenia, per the request from MES and Nairit chemical plant for disposal of chemical legacy waste left in the plant territory. The company has passed ESIA and received positive feedback/approval from the ESIA state expertise committee. As expected the module will be transported to Armenia and located in Nairit area under the lease contract for disposal of around 350 t chemicals (some contain chlorine). Similar unit operates in Russia and incinerates OPs materials.</p> <p>4. In October 2017, the Project team visited Iran and had working meetings at hazardous chemical waste incineration</p>
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				<p>plant, MAPSA company (Rah Poyan Saleh Co.), located in Harand about 90 km from Isfahan, with a perspective of exporting excavated POPs/OPs from Nubarashen burial site for environmentally sound incineration. The plant operates French ATI International company manufactured EC 76/2000 certified technology, passed emissions' control independent auditing (in 2017) by professional European companies and performs disposal of similar OPs/POP waste (including DDT).</p> <p>Considering uncertainties of Category 1 waste export and transit through Georgia (more details under Outcome 4), the disposal of waste in the MAPSA plant seemed feasible, taking into account also the interest of the company to cooperate with Armenian institutions and UNDP.</p> <p>A transit of waste via Iran to reach the sea-routes were also considered.</p> <p>The progress is estimated at 20%.</p>
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**Outcome 5 /Outcome 2.2/****Environmentally sound treatment of Category 2 waste/soil**

Indicator	Baseline	Targets		Status of Achievement
		Mid-term	End of project	
Volume of treated Category 2 waste below the low POPs content and demonstration of commercial viability of the Category 2 waste/soil treatment technology in Armenia	No highly contaminated soil treatment/remediation facilities available in the country	International pre-qualification of Category 2 waste treatment technology, tender and contract documents prepared and implemented	Environmentally sound treatment of 4,123 t of Category 2 waste to levels below the low POPs content	<p>The Category 2 soil was not treated.</p> <p>The initiatives summarized below were realized for the preparation of core activities to contribute achieving this indicator.</p> <p>As detailed under the second indicator of the Outcome 1 above, per the international experiences it was recommended to process the step-wise tendering and testing demonstration of capability of candidate/feasible technologies for ensuring that technical and environmental performance requirements to decontaminate</p>

		<p>Waste treatability testing of candidate shortlisted technologies completed</p> <p>Site preparation arrangements for hosting the feasible technology as required completed</p>		<p>the soil below the Stockholm Convention's recommended low-POPs content 50 ppm levels will be achieved for decontamination of the Category 2 soil. However, this approach didn't result in preliminary selection of the exact technology.</p> <p>The analysis of presentations and dialogues conducted with 2017 EoI preliminary tender applicant companies, allowed to conclude that there is a likelihood that the market may not react as responsive as expected in terms of assuring the physical and/or financial, as well as timely (with permits for full scale operation received), availability of the necessary technology to perform the soil decontamination.</p> <p>Reasoned by this assumption, the alternative option for the soil remediation/treatment, namely: safeguarding and backfilling into re-engineered landfill, was included in the scope of the ITB 003/19 tender, in addition to the ProDoc approved baseline option – decontamination and backfilling.</p> <p>The detailed analysis of the negotiated prices per BoQ items (reflected in the SoW of the ITB 003/19) demonstrated that the bidder proposed price 4.26 million USD for the baseline solution for decontamination of 4,123 t Category 2 soil (with an assessed average concentration of respectively 173 ppm of <math>\Sigma</math> DDT and 269 ppm of <math>\Sigma</math> HCH/Lindane, and presence of a lesser amounts of other organic and inorganic non-POPs pesticides, contains an estimated 20.7 tons POP/OPs chemicals, that will be extracted and disposed) will consume the 40% of the tendered assignment's entire proposed price, and that is 1.36 times higher than the bidder offered 3.1 million USD budget for site opening, excavation, re-packaging/labeling/removal, transportation and disposal of 1,032 t Category 1 waste – containing 605 tons pure POP/OPs chemicals mix.</p>
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				<p>These simple calculations clearly demonstrate that the technological decontamination of Category 2 soil was the substantial contributor in disruption of the value for money under the conducted ITB 003/19 tender, with much smaller contribution to achieving the project committed Global Environmental Benefits (GEBs) measured in tonnage.</p> <p>The project prepared for seeking consent from the Project Management Board to focus on the “safeguarding and backfilling” into engineered and stabilized landfill methodology of the Category 2 soil disposal instead of the high cost “technological decontamination and backfilling”, understanding that for the implementation of this alternative solution suggested in the ProDoc as a default risk mitigation measure might be ultimately exercised in case GEF’s approval will be granted.</p> <p>The proposed alternative solution was aligned with the instructions of the Stockholm Convention, suggesting measures to be applied for: “prevention and reduction of POPs materials release from intentional and unintentional production and use”.</p> <p>The progress is estimated at 25%.</p>
Operational training of national technical personal and service providers on a modern contaminated soil treatment/remediation technology	No currently qualified technical personal or service providers in Armenia for treatment/remediation of POPs contaminated soil.	<i>(not set or not applicable)</i>	<ul style="list-style-type: none"> <li>· 20 national technical personal operationally qualified and experienced on a modern contaminated soil treatment/remediation technology.</li> <li>· Commercial service provider capability available for other contaminated soil</li> </ul>	<p>Activities under this indicator were envisaged to be carried out pending upon implementation of the preceding indicators.</p> <p>The progress is estimated at 0%.</p>

			treatment/remediation projects in Armenia.	
<b>Outcome 6 /Outcome 3.1/</b>				
<b>Legal/regulatory and technical guidance tools for management of chemical wastes, including POPs, and, contaminated sites management within a national sound chemicals management framework strengthened</b>				
Indicator	Baseline	Targets		Status of Achievement
		Mid-term	End of project	
Policies, legislation and regulatory measures respecting chemical HW and contaminated sites management reviewed, updated and appropriate revisions implemented	Basic framework legislation in place but has gaps, inconsistencies and conflicts with international standards and obligations under Stockholm and Basel Conventions	Systematic review and clarification of existing legislation and regulations on chemical HW and contaminated sites management completed  Action plan for streamlining and filling gaps in existing legislation consistent with international practice adopted and implemented	List of project specific legislative and regulatory review measures (to be provided by Ministry of Nature Protection/UNDP CO)	<p>In 2016, the project conducted regulatory reviews on national ESIA and expert examination procedures, and on national licensing for dealing with hazardous waste handling, treatment/decontamination, storage, transportation and disposal, in relation to the planned field activities of the project, and in a broader sense of improving future handling of hazardous waste (HW) in the country. The recommendation to consider each HW handling activity as a subject for separate license, was shared with the MNP early 2017.</p> <p>The Government of Armenia (GoA) issued a Decree # 1029-N on 27 September 2018 introducing Amendments to the GoA Decree # 121-N of 30 January 2003 “On approval of the licensing procedure for processing, decontamination, storage, transportation and emplacement activity of hazardous wastes in the Republic of Armenia”. All listed HW management activities now are summarized under one definition “handling” of HW, and the Decree is titled “Approval of the procedure for licensing of HW handling in the Republic of Armenia.</p> <p>All HW (hazardous waste) management activities listed in the respective Law and Governmental Decree (collection, transportation, location, storage, processing, recycling, utilization, removal, disposal, landfilling) under the previously existing legal regulations were subject for one license, though requiring different capacities for handling under each type of</p>

				<p>activity. The new Government of Armenia Decree # 1029-N issued on 27 September 2018 introduced amendments in the licensing for HW management, reflects differentiated requirements for licensing of each listed activity.</p> <p>Country-specific legislation under the requirements of Basel Convention on hazardous waste transboundary transit and import regulations were analyzed for all countries that could potentially serve as transit countries for Category 1 waste transportation to the disposal destination. The summary report has been shared with the PMB and other stakeholder institutions, for proper understanding and planning of the waste transit.</p> <p>As Georgia represents the priority transit country to reach the Black Sea' maritime routes, the project prepared an unofficial translation (into Armenian and English languages) of the draft amended Georgian “Law on Waste export, transit and import” and analyzed the hazardous waste transit permitting feasibility under the new legal solutions. Also, communication with Armenia's Standing Committee of National Assembly on Nature Protection, and with the President’s Office, was promoted, and these authorities were involved into a dialog with Georgian governmental institutions, trying to lobby for a legislative or other - higher level (Intergovernmental Agreement) solution in favor of permitting the waste transit through Georgia.</p> <p>The progress is estimated at 85%.</p>
Availability of technical guidance on environmental and health risk assessment methodologies and	While requirements exist in legislation requiring technical guidelines on operational safety	Draft guidance materials on environmental and health risk assessment methodologies and	"Guidance materials on environmental and health risk assessment methodologies/practices and on operational and	Several related international (EU) guidelines were presented during the two (2) training sessions (supported by the Czech Trust Fund, more details are above under the 4th indicator of the Objective), recommended for use, and distributed for adapting to daily-work activities to respective national initiatives. Relevant

<p>practices applicable to chemical HW and contaminated sites and on operational and EHS procedures for chemical HW handling, transport, storage and disposal, developed in accordance with international practices and a number of relevant national personnel trained</p>	<p>procedures for hazardous chemicals waste handling, transport, storage and disposal to be in place these have not been developed and adopted</p> <p>Limited national expertise exists in implementation of operational procedures for HW management</p> <p>No nationally adopted guidance materials exist for environmental and health risk assessment</p>	<p>practices applicable to chemical HW and contaminated sites developed in accordance with international practice prepared and reviewed</p> <p>Draft guidance materials on operational and EHS procedures for chemical HW handling, transport, storage and disposal consistent with international practices prepared and reviewed</p>	<p>EHS procedures applicable to chemical HW and contaminated sites handling, transport, storage and disposal consistent with international practice adopted and implemented</p> <p>At least 50 relevant technical professionals from regulatory authorities, academia, NGOs and environmental service provider personnel in regulatory and private sectors attained relevant certification for completion of the national training program</p>	<p>recommendations were used while developing a design of the OP temporary storehouse.</p> <p>In total:</p> <ul style="list-style-type: none"> <li>✓ 56 (26 women, 30 men) technical staff representing the public, private, academia, NGO sectors participated in these training sessions, and received course completion certificates</li> <li>✓ 29 (15 women, 14 men) laboratory, public, NGO, academia staff were trained on soil sampling and analysis</li> <li>✓ 10 (4 women and 6 men) laboratory and academia staff were trained on XRF use</li> </ul> <p>Relevant International (EU) guidelines were presented, recommended and distributed electronically by international experts during the training-seminar for use and for adaptation to local requirements: “Risk Assessment of Nubarashen Burial Site Clean-up Design and Remedy Measures in the View of International Practices”.</p> <p>All the training materials and reference documents were delivered to the participants electronically. These guidelines further were used in delivering a training for national specialists and decision-makers in the training seminar “Management and monitoring of hazardous / harmful chemicals storage facility” organized by the project partner NGO AWHHE (Armenian Women for Environment) and conducted in 2019 by the staff from Ministry of Emergency Situations.</p> <p>The progress is estimated at 50%</p>
<p>Guidance documentation on environmental and health risk assessment methodologies and</p>	<p>· No nationally adopted guidance materials exist for</p>	<p><i>(not set or not applicable)</i></p>	<p>· Adopted guidance materials on on environmental and health risk assessment</p>	<p>The reporting on this activity has been combined with the preceding indicator. See as above.</p>

practices applicable to hazardous waste stockpiles and contaminated sites developed in accordance with international practice introduced and adopted, and relevant national professional trained.	environmental and health risk assessment.		methodologies and practices applicable to hazardous waste stockpiles and contaminated sites developed in accordance with international practice implemented.  · Training of at least 50 professionals from regulatory authorities, academia, NGOs and environmental service providers	The progress is estimated at 50%.
<b>Outcome 7 /Outcome 3.2/</b> <b>no description</b>				
<b>Indicator</b>	<b>Baseline</b>	<b>Targets</b>		<b>Status of Achievement</b>
		<b>Mid-term</b>	<b>End of project</b>	
The EcoProject incineration facility is fully qualified based on international standards for management of HW and chemical wastes.	Facility has been constructed and is operational for biomedical and other industrial waste destruction with its operator expressing interest in expanding its range of wastes to various HW up to and including POPs wastes	<i>(not set or not applicable)</i>	Full test burn program completed and licensing decisions made on an expanded menu of HW made.  A technical assessment and upgrading investment plan is completed for purposes of improving facility efficiency and environmental	After the MTR/MTE exercise, when reviewing the Project's Results Frameworks, it was decided to close further activities under this section as EcoProject' facility was recognized as a basic trash burner not suitable for handling HW of the type the project aims at.  Not applicable.

			performance including potential application to chlorinated waste streams.	
<b>Outcome 8 /Outcome 3.3/</b>				
<b>Basic national capacity for effective hazardous chemicals sampling and analysis for multi-environmental media and contaminated sites in place, operational and certified to international standards</b>				
Indicator	Baseline	Targets		Status of Achievement
		Mid-term	End of project	
Availability of adopted national strategy for rationalization and upgraded national laboratory capability to serve a sound chemicals management framework focusing for POPs analysis and management	Highly fragmented under-equipped and resourced laboratory infrastructure distributed across the regulatory, academic and private sector  Lack of fully creditable capability to service the needs of regulators and the industrial/private sector	National laboratory enhancement strategy developed, endorsed by major institutional and public stakeholders and endorsed for implementation by the government	National laboratory enhancement strategy supporting the availability of capability for effective hazardous chemicals sampling and analysis for sound POPs chemicals management implemented	Per the assessed needs, recorded in the project's developed "Strategy for operational optimization and upgrading of the national laboratory analytical capacity on POP and hazardous chemical waste in Armenia", the Strategy was shared with and reviewed by the MNP Environmental Monitoring and Information Center (EMIC).  The recommendations of the Strategy were taken into consideration in devising 2018-2020 bound institutional development plans of Environmental Monitoring and Information Center (EMIC) of the MNP. Moreover, based on one of the proposed recommendations (options), the Government Session of December 7, 2017, adopted a decision on providing a space for the merged laboratory of EMIC, within the premises (1st floor) of NAS Institute of Chemical Physics, with adequate infrastructure for full-scale operation of analytical laboratory on POPs. The laboratory currently operates in this new premises.  The progress is estimated at 100%.
Number of designated national laboratories, including state/regulatory,	Reasonably good but somewhat outdated capability in MNP	Selection of 2 designated laboratories from	2 designated laboratories upgraded and operational	Two (2) pieces of lab/field equipment were procured:

<p>academic and private sector institutions upgraded with suitable capability for POPs hazardous chemical waste sampling/analysis and number of laboratory personnel completed training program</p>	<p>regulatory laboratory and one modern academic laboratory</p> <p>Growing number of private sector laboratories</p> <p>Variable levels of training and qualifications in existing laboratory personnel</p>	<p>regulatory and academic/private sector for upgrading</p> <p>Approved specifications and plans for upgrading of designated laboratories</p> <p>10 technical personnel from designated laboratories and regulatory institutions trained</p>	<p>Long term national budget commitments and/or business plans in place ensuring sustainable operation of upgraded laboratories</p> <p>15 technical laboratory personnel from designated laboratories and regulatory institutions completed training program</p>	<p>i) Portable X-ray fluorescence spectrometer (XRF field analyzer /spectrometer),</p> <p>ii) auxiliary laboratory equipment for POP analysis and sample preparation (evaporator-concentration) intended for enhancement of the national laboratory analytical capacity on POPs and hazardous chemical waste in Armenia.</p> <p>An environmental monitoring exercise with the application of the X-ray Fluorescence (XRF) Field Analyzer/Spectrometer, performed by the national laboratory, of on-site/in-lab measurements of contaminated soils and bottom sediments took place in March-April 2019.</p> <p>The progress is estimated at 85%.</p>
<p>Training program for laboratory and associated personal delivered.</p>	<p>Variable levels of training and qualifications in existing laboratory personnel</p>	<p><i>(not set or not applicable)</i></p>	<p>15 additional key laboratory personal from designated laboratories trained</p>	<p>“Soil Sampling and Lab QA/QC Training” was delivered on 23-25 August 2017 by trainers from the Czech Republic, both in classroom and on-site, to 29 participants (15 women, 14 men), representing 5 national laboratories and relevant institutional units - MNP EIMC 2 merged laboratories, NAS Institute of Chemical Physics, "STANDARD DIALOG" LLC private laboratory, Ministry of Health “Reference Lab Center” SNCO, MNP, MES, ENGOs. The training agenda consisted of a 2-day theoretical training and 1-day practical training on-site (at Nubarashen POPs/OPs pesticides burial site).</p> <p>The capacity developed through “Soil Sampling and Lab QA/QC Training” and followed by two (2) hands-on training sessions on use of project's purchased portable X-ray fluorescence XRF field analyzer. It was used for an environmental monitoring exercise, performed by the national</p>

				<p>laboratory, of on-site/in-lab measurements of contaminated soils and bottom sediments, which was followed by a half-day hands-on training on XRF Field Analyzer conducted on 7 May 2019, for the staff of 3 national laboratories and NGOs involved in environmental monitoring/soil sampling activities (6 men, 4 women).</p> <p>The progress is estimated at 85%.</p>
Number of designated national laboratories initiated introduction of international certification methods and practices	Only one laboratory operating with partial internationally certified methods	1 designated laboratory initiated introduction of international certification methods and practices for POPs analysis	2 designated laboratories initiated introduction of international certification methods and practices for POPs analysis	<p>Recommendations for international certification of the methods (e.g. ISO 17025) for POP analysis of the national two merged laboratories of the state Environmental Monitoring and Information Center (under the administration of MNP) were included in the project developed Strategy.</p> <p>The inter-calibration exercise was performed between the 4 national laboratories that are involved in analysis of POPs contaminated soil, samples from Nubarashen site (prepared by GeoTest a.s. company from the Czech Republic) were provided to these four labs. Presentation of the inter-calibration exercise results, as well as analysis data comparison/sharing of the soil samples from Nubarashen POPs/OPs burial site, was held at MNP EMIC Lab in March 2018.</p> <p>The results and conclusions were documented and presented at the meeting conducted in May 2018 in the Institute of Chemical-Physics of the National Academy of Sciences (develops/reviews national standards for the national certification body).</p> <p>The progress is estimated at 10%.</p>
<b>Outcome 9 /Outcome 4/</b>				
<b>Monitoring, learning, adaptive feedback, outreach, and evaluation</b>				
Indicator	Baseline	Targets		Status of Achievement
		Mid-term	End of project	

<p>M&amp;E and adaptive management applied to project in response to needs, mid-term evaluation findings with lessons learned extracted</p>	<p>No Monitoring and Evaluation system</p> <p>No evaluation of project output and outcomes</p>	<p>Monitoring and Evaluation system developed</p> <p>Mid-term evaluation of project output and outcomes conducted with lessons learned</p>	<p>Final evaluation report developed in the end of the project</p>	<p>The project’s monitoring and evaluation process was conducted in accordance with the project document framework, updated with UNDP new reporting formats (as of end-year 2018) through the following activities/procedures:</p> <ul style="list-style-type: none"> <li>- Annual Project Board review of the project milestones, based on the 2019 end-year UNDP Standard Progress Report (uploaded to the PIR’s PIMS+ File Library);</li> <li>- The Project Management Board e-communication on the project status updating and for decision-making, through shared e-mail messages and respective documents attached, dated and with subject on: <ul style="list-style-type: none"> <li>7/31/2019 – provision of the portable XRF field analyzer / spectrometer to the beneficiary institution.</li> <li>12/08/2019 – final Scope of Works for the RFP phase tender ITB 003/29</li> <li>9/21/2019 – nomination of two new PMB members, status update</li> <li>10/8/2019 – approval of the bid submission deadline extension, under the ITB 003/19</li> <li>10/16/2019 – approval of the changed Project Final Evaluation/PFE schedule to March-September 2021 period, as a result of the project extension till 31 December 2021.</li> </ul> </li> <li>- Quarterly UNDP Standard Progress Reports;</li> <li>- GEF Quarterly Progress Reports (QIII and QIV 2019, QI and QII 2020 uploaded to the PIR’s PIMS+ File Library);</li> <li>- The Project Risk Log has been updated regularly, two new political risks “Delay of international contracting for project core activities” and “Escalation of the Nagorno Karabakh</li> </ul>
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				<p>conflict” were added under the “Emergency measures induced to combat COVID-19 / Population health” and Worsened situation related to ceasefire, resumption of hostilities and other political developments in the conflict zone” categories.</p> <p>The Mid-term Review (MTR/MTE) was conducted during the March – May 2018 period, with the MTR Report submitted together with Conclusions and Recommendations which were shared with the Project Management Board members for review and feedback. The Management Response (updated as June 2019) was prepared and documented (uploaded to the PIR’s PIMS+ File Library). Its implementation was tracked for the assigned set of recommended actions.</p> <p>Per the MTE recommendation the Project Results Framework (PRF) was revised, mainly to optimize the number of indicators. The new estimated amounts of the waste to be disposed were reflected as new targets: Category 1 waste now is 1,032t vs. 900t; Category 2 soil now is 4,123t vs. 7,100 t; Category 3 soil now is 8,500 t vs. 12,700t. A new indicator on co-financing was added. These changes were agreed with the Project Management Board during the 19 January 2018 meeting and were fixed in the PMB protocol.</p>
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## **ANNEX VIII: CO-FINANCING TEMPLATE**

*The Terminal Evaluation Co-financing template is annexed in a separate file*

## **ANNEX IX: UNDP-GEF TE AUDIT TRAIL**

*The Terminal Evaluation Audit trail is annexed in a separate file.*

## **ANNEX X: MANAGEMENT RESPONSE**

*The Terminal Evaluation Management Response is annexed in a separate file*

## **ANNEX XI: EVALUATION CONSULTANT CODE OF CONDUCT AND AGREEMENT FORM**

### **Evaluators:**

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

### **Evaluation Consultant Agreement Form<sup>7</sup>**

#### **Agreement to abide by the Code of Conduct for Evaluation in the UN System**

**Name of Consultant:** Elinor Bajraktari

*Elinor Bajraktari*

**Name of Consultancy Organization (where relevant):**

**I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.**

## ANNEX XII: TE REPORT CLEARANCE FORM

**Terminal Evaluation Report for "Elimination of obsolete pesticide stockpiles and addressing POPs contaminated sites within a sound chemicals management framework" full sized project (UNDP PIMS ID #4905) Reviewed and Cleared By:**

**Commissioning Unit (M&E Focal Point)**

Name: **Armine HOVHANNISYAN**

Signature:



Date: **30 November 2021**

**Regional Technical Advisor (Nature, Climate and Energy)**

Name: **Maksim SURKOV**

Signature: \_\_\_\_\_

DocuSigned by:  
*Maksim Surkov*  
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Date: **30 November 2021**