INDEPENDENT EVALUATION UNIT
OFFICE OF EVALUATION AND INTERNAL OVERSIGHT

# INDEPENDENT TERMINAL EVALUATION

## Removal of technical and economic barriers to initiating the clean-up activities for α-HCH, β-HCH and Lindane contaminated sites at the Organic Chemical Industry of Skopje (OHIS)

UNIDO Project ID: 100122
GEF ID: 4385

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Distr. GENERAL

EIO/IEU/22/R.18

August 2023

Original: English

This evaluation was managed
by the responsible
UNIDO Evaluation Officer
with quality assurance by the
Independent Evaluation Unit

# Table of Contents

# Acknowledgements

The Evaluation team comprising of Mr. Jan Ingwersen and Ms. Bojana Stanojevska Pecurovska acknowledges the support provided by all the individuals interviewed and officials from the Government of the Republic of North Macedonia, and UNIDO's project stakeholders, including the Project Manager at UNIDO Head Quarters, the project team in the Republic of North Macedonia, and representatives of the private sector, for their time, information, documents, feedback and contributions.

# List of acronyms and abbreviations

| Abbreviation | Definition |
|---|---|
| GEF | Global Environment Facility |
| HCH | Hexachlorocyclohexane |
| HQ | Headquarter |
| IA | Implementing Agency |
| IPA | European Union Instrument for Pre-Accession Assistance |
| LFA | Logical Framework Approach |
| M&E | Monitoring and Evaluation |
| MoEPP | Ministry of Environment and Physical Planning |
| MTE | Mid-term Evaluation |
| NE | National Expert |
| NGO | Non-governmental Organization |
| NIP | National Implementation Plan |
| OHIS | Organic Chemical Industry of Skopje |
| PIF | Project Identification Form |
| PIR | Project Implementation Review |
| PM | Project Manager |
| PMU | Project Management Unit |
| POPs | Persistent Organic Pollutants |
| PSC | Project Steering Committee |
| RFP | Request for Proposal |
| SC | Stockholm Convention |
| TE | Terminal Evaluation |
| TOC | Theory of Change |
| ToR | Terms of Reference |
| UNIDO | United Nations Industrial Development Organization |
| UNOPS | United Nations Office for Project Services |

# Glossary of evaluation-related terms

| Term | Definition |
|---|---|
| Baseline | The situation, prior to an intervention, against which progress can be assessed. |
| Effect | Intended or unintended change due directly or indirectly to an intervention. |
| Effectiveness | The extent to which the development intervention's objectives were achieved or are expected to be achieved. |
| Efficiency | A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results. |
| Impact | Positive and negative, intended and non-intended, directly and indirectly, long term effects produced by a development intervention. |
| Indicator | Quantitative or qualitative factors that provide a means to measure the changes caused by an intervention. |
| Lessons learned | Generalizations based on evaluation experiences that abstract from the specific circumstances to broader situations. |
| Logframe (logical framework approach) | Management tool used to facilitate the planning, implementation and evaluation of an intervention. It involves identifying strategic elements (activities, outputs, outcome, impact) and their causal relationships, indicators, and assumptions that may affect success or failure. Based on RBM (results-based management) principles. |
| Outcome | The likely or achieved (short-term and/or medium-term) effects of an intervention's outputs. |
| Outputs | The products, capital goods and services which result from an intervention; may also include changes resulting from the intervention which are relevant to the achievement of outcomes. |
| Relevance | The extent to which the objectives of an intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donor's policies. |
| Risks | Factors, normally outside the scope of an intervention, which may affect the achievement of an intervention's objectives. |
| Sustainability | The continuation of benefits from an intervention, after the development assistance has been completed. |
| Target groups | The specific individuals or organizations for whose benefit an intervention is undertaken. |

# Executive Summary

## 1.1 Introduction

This report presents an independent terminal evaluation of the North Macedonian project "Removal of Technical and Economic Barriers to Initiating the Clean-up Activities for α-HCH, β-HCH and Lindane Contaminated Sites at OHIS". OHIS is a former organic chemicals factory at the outskirts of Skopje, North Macedonia.

The project objective is to set up a sustainable mechanism to ensure a durable and continued clean-up operation at the selected HCH-contaminated site for future industrial use, and to protect human health and the environment from their adverse effects by reducing and eliminating the releases of and exposure to HCHs (6,000 $m^3$ or 10,700 tons to be disposed within the project period).

The purpose of the evaluation is to independently assess the project to help UNIDO improve performance and results of ongoing and future programmes and projects. The terminal evaluation (TE) covers the whole duration of the project from its starting date in January 2015 to the estimated completion date in March 2023.

The terminal evaluation has two specific objectives:

1. Assess the project performance in terms of relevance, effectiveness, efficiency, sustainability, coherence, and progress to impact; and
2. Develop a series of findings, lessons and recommendations for enhancing the design of new and implementation of ongoing projects by UNIDO.

## 1.2 Assessment of Project Results

### 1.2.1 Assessment summary

The table listed below provides the key evaluation criteria to be assessed by the evaluation. The detailed questions to assess each evaluation criterion are presented in Annex 2 of the UNIDO Evaluation Manual.

The rating has been carried out using a scale from "highly satisfactory" to "highly unsatisfactory".

| # | Evaluation criteria | Mandatory rating | Project Rating |
|---|---|---|---|
| A | Progress to impact | Yes | Moderately unsatisfactory |
| B | Project design | Yes | Moderately unsatisfactory |
| 1 | • Overall design | Yes | Moderately unsatisfactory |
| 2 | • Logical framework | Yes | Satisfactory |
| C | Project performance | | |
| 1 | • Relevance | Yes | Highly Satisfactory |
| 2 | • Effectiveness | Yes | Satisfactory |
| 3 | • Coherence | Yes | Satisfactory |
| 4 | • Efficiency | Yes | Moderately unsatisfactory |
| 5 | • Sustainability of benefits | Yes | Highly satisfactory |

| # | Evaluation criteria | Mandatory rating | Project Rating |
|---|---|---|---|
| D | Cross-cutting performance criteria | | |
| 1 | • Gender mainstreaming | Yes | Moderately unsatisfactory |
| 2 | • M&E:<br>✓ M&E design<br>✓ M&E implementation | <br>Yes<br>Yes | <br>Satisfactory<br>Satisfactory |
| 3 | • Results-based Management (RBM) | Yes | Satisfactory |
| E | Performance of partners | | |
| 1 | • UNIDO | Yes | Satisfactory |
| 2 | • National counterparts | Yes | Moderately satisfactory* |
| 3 | • Donor | Yes | N/A |
| F | Overall assessment | Yes | Satisfactory |

* This rating is based on the original lack of top-level political support and the lack of co-financing. The rating of lower-level counterparts would be satisfactory while the rating of the Project Management Unit (PMU) would be highly satisfactory.

### 1.2.2 Project design

In general, the project design as reflected in the project document is sound but there are some severe shortcomings. The most important are:

- The site investigations performed to identify the extent of the problem were far from sufficient.
- The cost estimates were far below the actual funding required, the numbers seemed to be 2013 numbers with no escalation for the expected 5-year project period and no contingency to cover delays etc.

### 1.2.3 Relevance

The project has been highly relevant to all the targets including Government, Ministry of Environment and Physical Planning (MoEPP), Laboratories, consultants as well as the general public and local community.

The project was consistent with the Country's priorities. It was in line with the National Implementation Plan (NIP) of the Republic of North Macedonia.

The project was consistent with UNIDO's Inclusive and Sustainable Industrial Development (ISID) and also in line with the GEF-5 Strategy for Chemicals – Phase out POPs and reduce POPs releases, focal area CHEM-1.

The project goal will work beyond the project end.

### 1.2.4 Efficiency

The project has been able to successfully fulfil all the outcomes and outputs not involving the actual clean-up; however, the project has experienced significant difficulties, including lacking project steering committee support and delays. In addition,

only 603 tonnes were disposed of while the Project Document indicates that 10,700 tonnes should be treated.

The project appears to have been cost-effective, as no additional direct costs have been incurred due to the delays and other issues. However, the project document severely underestimated the costs of the clean-up. Furthermore, the government has provided virtually none of the cash co-financing agreed upon and as presented in the project document. This issue is further considered in section 6.4.6 Executive SummaryMaterialization of co-financing.

### 1.2.5 Coherence

Internal coherence: There are no immediate synergies with other interventions carried out by UNIDO in North Macedonia. However, as discussed in section *8.3 Relevance* the intervention is consistent with relevant international norms and standards.

External coherence: It appears that at present there are no other actors working with contaminated site clean-up in North Macedonia and, since this intervention is concentrating on one specific site, there is no risk of duplicating efforts.

### 1.2.6 Effectiveness.

Main result of the project is establishing the technical and economic procedures, including the legal basis for cleaning up of contaminated sites. This is the main result which is secured with established procedures via the amendments of the Law on Environment (Official Gazette of the Republic of North Macedonia no. 89/2022) where the identification and management of contaminated sites is defined.

Another important result is the establishment of the multi-partner environmental fund, aiming to mobilize sufficient funds for cleaning up the remaining HCH waste at OHIS and possibly other contaminated sites.

### 1.2.7 Progress to impact

The project has successfully started the process of remediation activities at the OHIS industrial hotspot site. It has created the legal framework that sets precise procedures for enabling relevant authorities to start and complete the cleaning of both dumps as well as other hotspots in the future.

For various reasons, primarily originally underestimating the size of the problem and the costs, and lack of timely funding, only a small part - namely 603 tonnes of the foreseen 10,700 tonnes of contamination - were actually removed and treated.

### 1.2.8 Sustainability

The project results will have a lasting effect beyond the project end. The legal basis and the developed procedures will enable further activities related to remediation of contaminated sites. The establishing of technical know-how, institutional mechanisms and improved capacities of Ministry employees are the main foundations for ensuring the sustainability of the project.

In regard to financial sustainability, it will be crucial to secure additional funds either through the multi-partner environmental fund or through other funding mechanisms.

### 1.2.9 Gender

The project did not develop a gender baseline study or a needs assessment. However, it is evident that women/gender-focused groups have been considered in the project.

## 1.3 Specific GEF assessments

### 1.3.1 Follow up needs

As indicated above the project seems to have capacitated the North Macedonian authorities, institutions and private companies to continue the OHIS clean-up and to manage other similar hotspots. The main issue is the availability of funding.

### 1.3.2 Materialization of co-financing

The co-financing project expenditures are presented in Annex 4. The evaluation team has identified a series of questions that seem to require further explanation. Based on the analysis of the terminal evaluation team, virtually only in-kind support has been provided by the government.

### 1.3.3 GEF Indicators

It is obvious that the original objective "10,700 tonnes to be disposed within the project period" has not been met in that only 603 tonnes have been disposed of. The reasons for this are discussed in *6.4.4 Shortfall* in treated amounts.

The indicators show that 59,335 tonnes have been safeguarded. In this case the "safeguarding" means that the waste that is stored in dump B1, the α, β HCH waste area, is not accessible since it is controlled by security guards.

### 1.3.4 Environmental and Social Safeguards

The project seems to have applied all reasonable environmental and social safeguards. The contractors and government inspectors have ensured that foreseeable adverse effects have been prevented and that the environment or stakeholders have not been harmed as a result of the project.

## 1.4 Lessons learned

The most critical lessons learned are:

- It is imperative that there is high-level political support and ownership before projects are initiated.
- Steering committees need to have the authority to control projects, and mechanisms are required to ensure that SC meetings and decisions are made in a timely fashion.
- A project of this type should not be initiated unless it can safely be assumed that there will be sufficient funding to finalise the project.

## 1.5 Recommendations

Key recommendations:

- UNIDO should ensure that project designs are based on proper site investigations and that inflation and contingencies are considered in budgets.
- The Ministry of Environment and Physical Planning (MoEPP) should set up a steering committee or similar and a PMU with proper authority to supervise and control the continuation of the project, now led by the United Nations Office for Project Services (UNOPS).
- Since the clean-up of the δ dump is far from finalised (being continued by UNOPS) Government should redouble efforts to ensure national and international funding for management of this and other hotspots, not only relying on UNOPS.
- In light of the number of hotspots already identified and in consideration of the huge sums required for a complete clean-up of the sites, the government should prepare a long-term budgeted plan, which should consider simpler and cheaper solutions, such as capping, on-site soil treatment, etc.

# 1. Introduction

This terminal evaluation report represents an independent terminal evaluation of the North Macedonian project "Removal of Technical and Economic Barriers to Initiating the Clean-up Activities for α-HCH, β-HCH and Lindane Contaminated Sites at OHIS". OHIS is former organic chemicals factory at the outskirts of Skopje, North Macedonia.

The purpose of the evaluation is to independently assess the project to help UNIDO improve performance and results of ongoing and future programmes and projects. The terminal evaluation (TE) covers the whole duration of the project from its starting date in January 2015 to the completion date in March 2023.

The terminal evaluation has two specific objectives:

- Assess the project performance in terms of relevance, effectiveness, efficiency, sustainability, coherence, and progress to impact; and
- Develop a series of findings, lessons and recommendations for enhancing the design of new and implementation of ongoing projects by UNIDO.

## 1.1 Project overview

### 1.1.1 Background

The industrial chemical plant OHIS AD is located at the south-eastern edge of the city of Skopje near the Vardar River. The lindane complex in OHIS AD – Skopje had the plants HCH, lindane and TCB, where HCH, lindane, thrichlorobenzene and hydrochloric acid were produced, respectively. The lindane process was gradually developed into full operation since 1964 and was functioning until 1977, when it was abandoned and ceased to function due to ecological reasons and change in market conditions. The total lindane production was around 2,800 tons resulting in a generation of around 25,000 tons of inactive isomers that were improperly dumped, causing secondary contamination of the soil and groundwater, and emissions to air as well. The wastes were dumped in two adjacent locations at the OHIS plant, the so called **δ -HCH dump** and the **α-HCH and β-HCH dump** and they still contain an estimated 50,000 tonnes of hazardous chemicals and highly contaminated soil including HCH, Beta, Gamma and Delta HCH as well as lindane, posing a threat to Skopje and the local population.

The layout of the OHIS plant is illustrated in *Figure 1* below. The project is related to B2 δ-HCH dump.

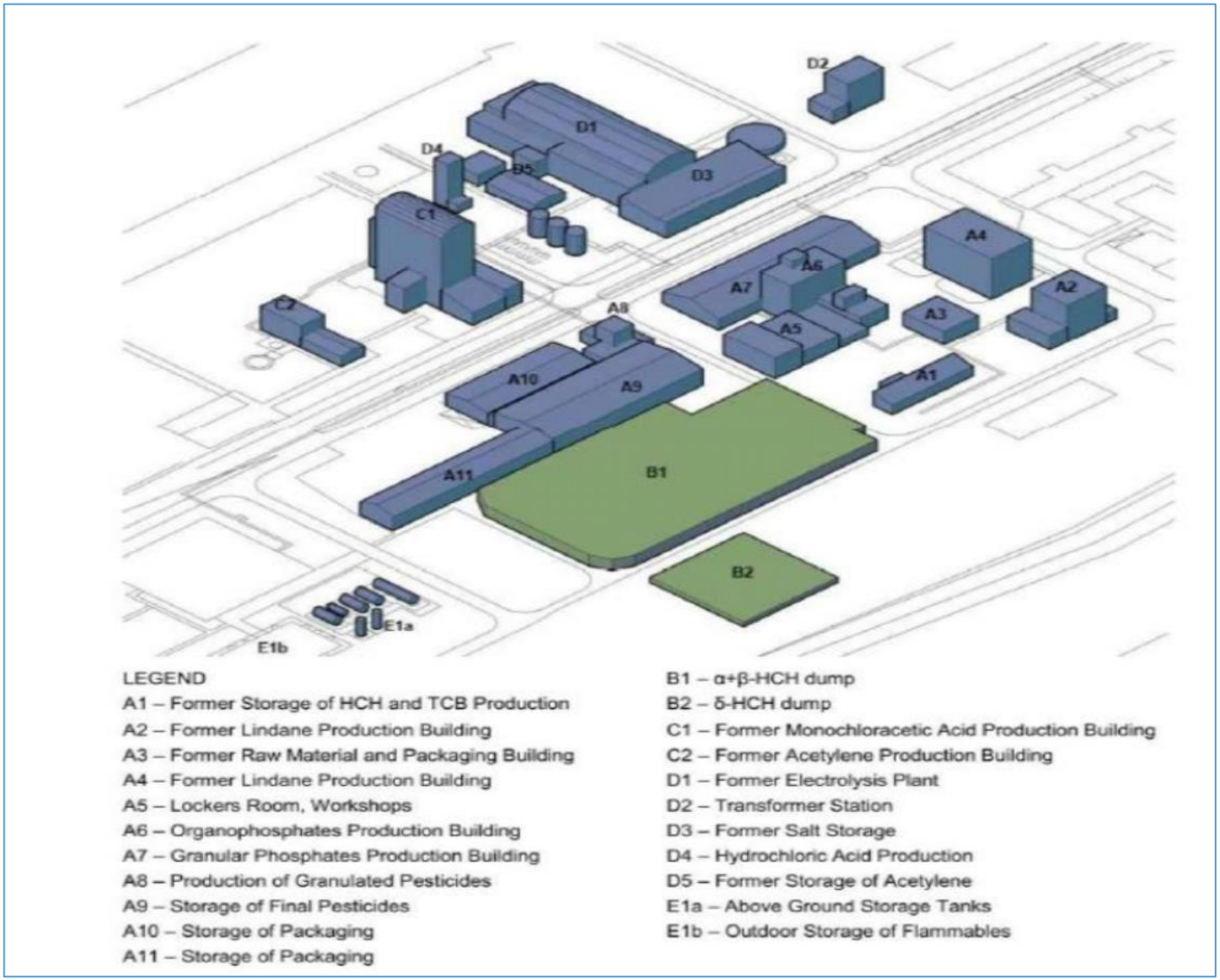



*Figure 1: Illustration of the OHIS plant layout (source Polyeco)*

In the last 14 years before project start several studies were conducted with the purpose to identify the real situation and find the most applicable solution for these dump sites. A number of feasibility studies were developed, separate on-site investigations and laboratory analysis were conducted, most of them with a substantial assistance from the international community - Czech and Italian Governments.

According to the project document[1] it was established that:

- The **δ -HCH dump** consists of 5 concrete basins with a total area of approximately 940 $m^2$. The bottom of the basins is situated at approximately 1.7 m below ground level. The waste was dumped also beyond the perimeter of the basins (total planar area of the dump is 1,240 $m^2$). The average thickness of the δ-HCH waste is 1.65 m. Based on analysis of the δ-HCH waste, it contains 16% of α-HCH, 1% of β-HCH, 44% of γ-HCH and 39% of δ-HCH. The δ-HCH waste is covered by sandy and clay layers with various content of individual HCH isomers. The uppermost layer comprises humus loam 0.4 to 0.6 m thick. The total content of HCH is in the order of tens of thousands of mg/kg. Based on the surveying, a 3D model was developed, planar and surface areas and volume of waste were calculated. The Planar area is 1,240 $m^2$ and the surface area is 1,250 $m^2$.
- Analysis of samples of waste disposed in the **α-HCH and β-HCH dump** found almost pure α-HCH. The waste was disposed in this dump onto the natural ground without any protection. Based on analyses of the α- and β HCH dump, it contains 88% of α-HCH, 11-12% of β-HCH, and 1-2% of γ-HCH. Thickness of waste (of white colour and loose, powdery consistency) varies from 3.2 to 4.6 m. Waste isomers are covered by a layer of humus loam and sandy clay of the thickness of 0.5 up to 1.6 m (1 m in average). The content of HCH in the soil cover of the dump is 897.13 mg/kg. The Planar area is 5,140 $m^2$ and the surface area is 5,270 $m^2$.

The project "Removal of Technical and Economic Barriers to Initiating the Clean-up Activities for α-HCH, β-HCH and Lindane Contaminated Sites at OHIS" was expected to enable the Republic of North Macedonia to handle and remediate contaminated sites. Outside the scope of this project, the OHIS site also contains a former electrolysis area which is highly contaminated with mercury as well as 25 tonnes of hazardous chemicals, which are stored in a warehouse on site. In 2018-2019 90 tonnes of hazardous waste was exported (paid for by the bankruptcy proceeds). Furthermore, a dumpsite located away from the OHIS site has also been used to dispose of residues from the OHIS lindane production. This location is believed to contain approximately 8,000 tonnes of lindane and HCH waste, but due to the indiscriminate dumping with other wastes the total amount of hazardous waste that needs to be contained or treated is estimated to be about 40,000 tonnes.

[1] The Project Document was designed based on the data available at the time of the preparation, e.g. based on the site investigation and characterization performed by Eptisa in 2007 and by Enacon in 2007-2009 and based on the "Technology selection screening matrix" prepared by Enacon in 2014, identifying the possible remediation options/technologies and estimating the costs. Moreover, in 2014 Enacon prepared a "Gap analysis and sampling plan" identifying the gaps from the previous investigations and the need for more detailed site investigation prior remediation technology selection. These were considered sufficient by the project and therefore, the detailed site investigation was included in the Project Document.

### 1.1.2 Project implementation arrangements

UNIDO is the GEF Implementing Agency (IA) for the project. A project focal point was established within UNIDO to assist with project execution. This focal point consisted of dedicated core staff, supplemented by support staff colleagues on a part-time as required basis, supervised by a senior professional staff engaged in the management and coordination of UNIDO's POPs and chemical management program. UNIDO made these services available as part of its in-kind contribution to the project.

Among the main stakeholders involved in the project implementation:

- Ministry of Environment and Physical Planning (MoEPP), lead Agency for the project with the role of coordinating, participating, facilitating and monitoring the execution at national level;
- MoEPP`s POPs unit, responsible for the preparation and implementation of NIPs at national level;
- The State Environment Inspectorate (SEI), responsible for inspecting and supervising the enforcement of laws and regulations in the domain of environment;
- Ministry of Health (MoH), responsible for creating the conditions of development of the industry, regulation of internal market, development of the energy sector and incentives to stimulate businesses;
- Ministry of Finance (MoF), responsible to maintain stable public financing and stable macroeconomic framework.

# 2. Project design and expected results

The project objective is to set up a sustainable mechanism to ensure a durable and continued clean-up operation at the selected HCH-contaminated site for future industrial use, and to protect human health and the environment from their adverse effects by reducing and eliminating the releases of and exposure to HCHs. (6,000 $m^3$ or 10,700 tons to be disposed within the project period).

The achievement of the project objectives was envisaged through the following four technical components and the related outcomes, besides Monitoring and Evaluation (M&E) and project management:

**Component I – Legal framework and institutional capacities**

*Expected Outcome*: Legal framework and institutional capacities to support, justify and evaluate the clean-up of the OHIS site contaminated by α-HCH, β-HCH and lindane established, enhanced and enforced.

**Component II – Characterization of the site and risk assessment**

*Expected Outcome*: Characterization of the HCH contaminated site completed, risk assessed and risk management options defined.

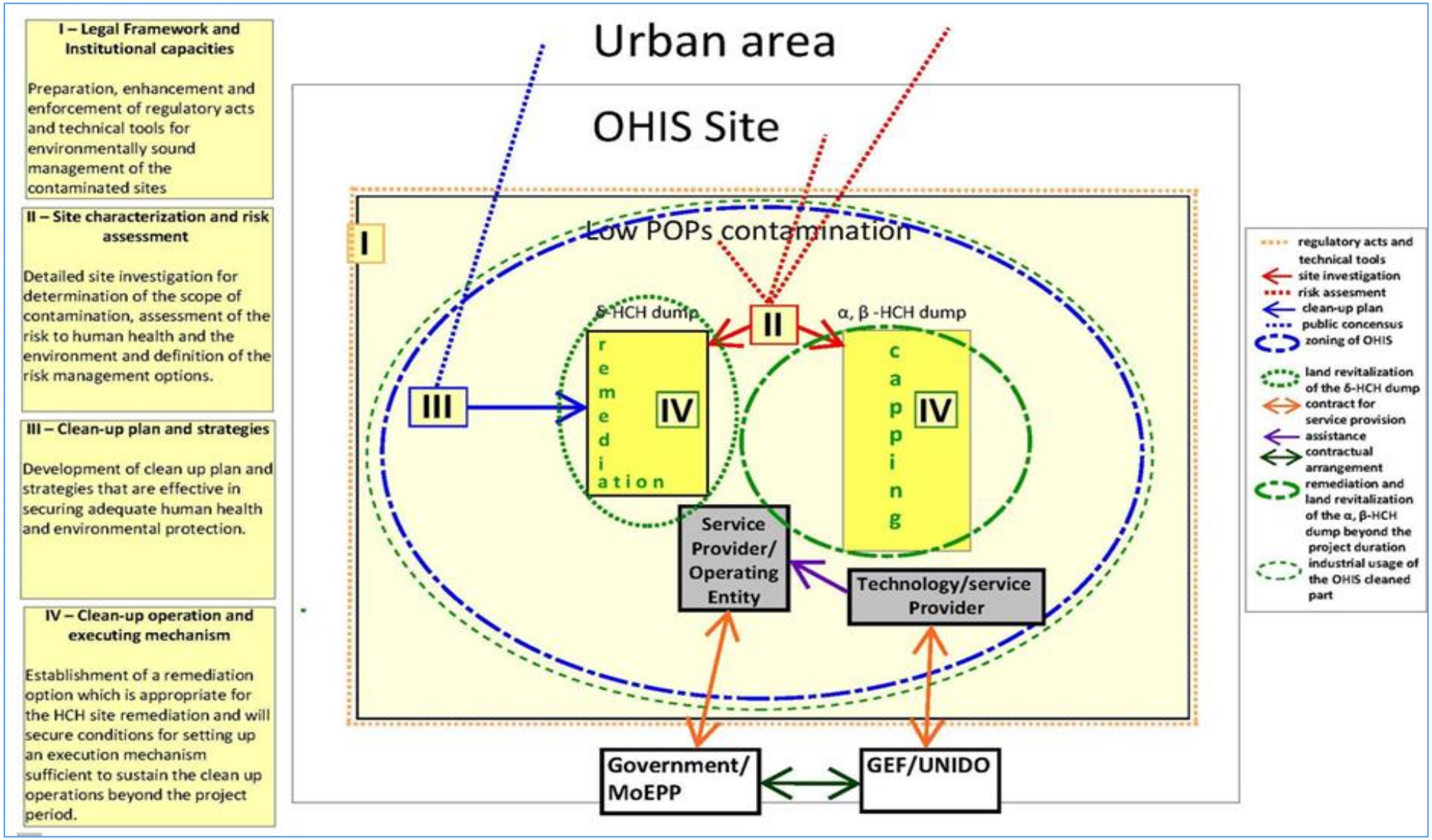
**Component III – Clean up strategies and plan.**

*Expected Outcome*: Contaminated site clean-up plan and strategies established and key stakeholders including local communities ready to cooperate.

**Component IV – Establishment of clean up mechanism and operations.**

*Expected Outcome:* Clean-up operation initiated and the execution mechanism in place to sustain the clean-up operations beyond the project period.

The following illustration as presented in the project document outlines the project logic:


I – Legal Framework and Institutional capacities
Preparation, enhancement and enforcement of regulatory acts and technical tools for environmentally sound management of the contaminated sites
II – Site characterization and risk assessment
Detailed site investigation for determination of the scope of contamination, assessment of the risk to human health and the environment and definition of the risk management options.
III – Clean-up plan and strategies
Development of clean up plan and strategies that are effective in securing adequate human health and environmental protection.
IV – Clean-up operation and executing mechanism
Establishment of a remediation option which is appropriate for the HCH site remediation and will secure conditions for setting up an execution mechanism sufficient to sustain the clean up operations beyond the project period.
Urban area
OHIS Site
Low POPs contamination
I
II
III
IV
IV
δ-HCH dump
α, β -HCH dump
remediation
capping
Service Provider/ Operating Entity
Technology/service Provider
Government/ MoEPP
GEF/UNIDO
regulatory acts and technical tools
site investigation
risk assesment
clean-up plan
public concensus
zoning of OHIS
land revitalization of the δ-HCH dump
contract for service provision
assistance
contractual arrangement
remediation and land revitalization of the α, β-HCH dump beyond the project duration
industrial usage of the OHIS cleaned part

The Project Document provides the budget as presented in the table below.

Financing plan summary - Outcome breakdown

| Project outcomes/components | Donor (GEF)(US$) | Co-Financing (US$) | Total (US$) |
|---|---|---|---|
| Outcome 1 | 123,500 | 24,150 | 147,650 |
| Outcome 2 | 110,300 | 1,761,100 | 1,871,400 |
| Outcome 3 | 73,300 | 1,003,900 | 1,077,200 |
| Outcome 4 | 2,514,800 | 8,956,750 | 11,471,550 |
| M&E | 78,100 | 9,600 | 87,700 |
| Total (US$) | 2,900,000 | 11,755,500 | 14,655,500 |

Source: Project document

The project Fact Sheet which includes the project budget is presented in Annex 1.

# 3. Evaluation purpose and objectives

The purpose of the evaluation is to independently assess the project to help UNIDO improve performance and results of ongoing and future programmes and projects. The terminal evaluation (TE) covers the whole duration of the project from its starting date in January 2015 to the completion date in March 2023.

## 3.1 Evaluation objectives

The terminal evaluation has two specific objectives:

- Assess the project performance in terms of relevance, effectiveness, efficiency, sustainability, coherence, and progress to impact; and
- Develop a series of findings, lessons and recommendations for enhancing the design of new and implementation of ongoing projects by UNIDO.

To achieve its purpose, the evaluation has an accountability objective (assessing project performance and results) and a learning objective (improving actions).

### 3.1.1 Accountability / results objective (first evaluation objective)

The project document established the intervention's logic, its expected results (impacts, outcomes, outputs), and indicators that could be used to measure progress against those results. The terminal evaluation will validate the project's internal monitoring data and assess progress towards the expected results.

### 3.1.2 Learning / improvement objectives (second evaluation objective)

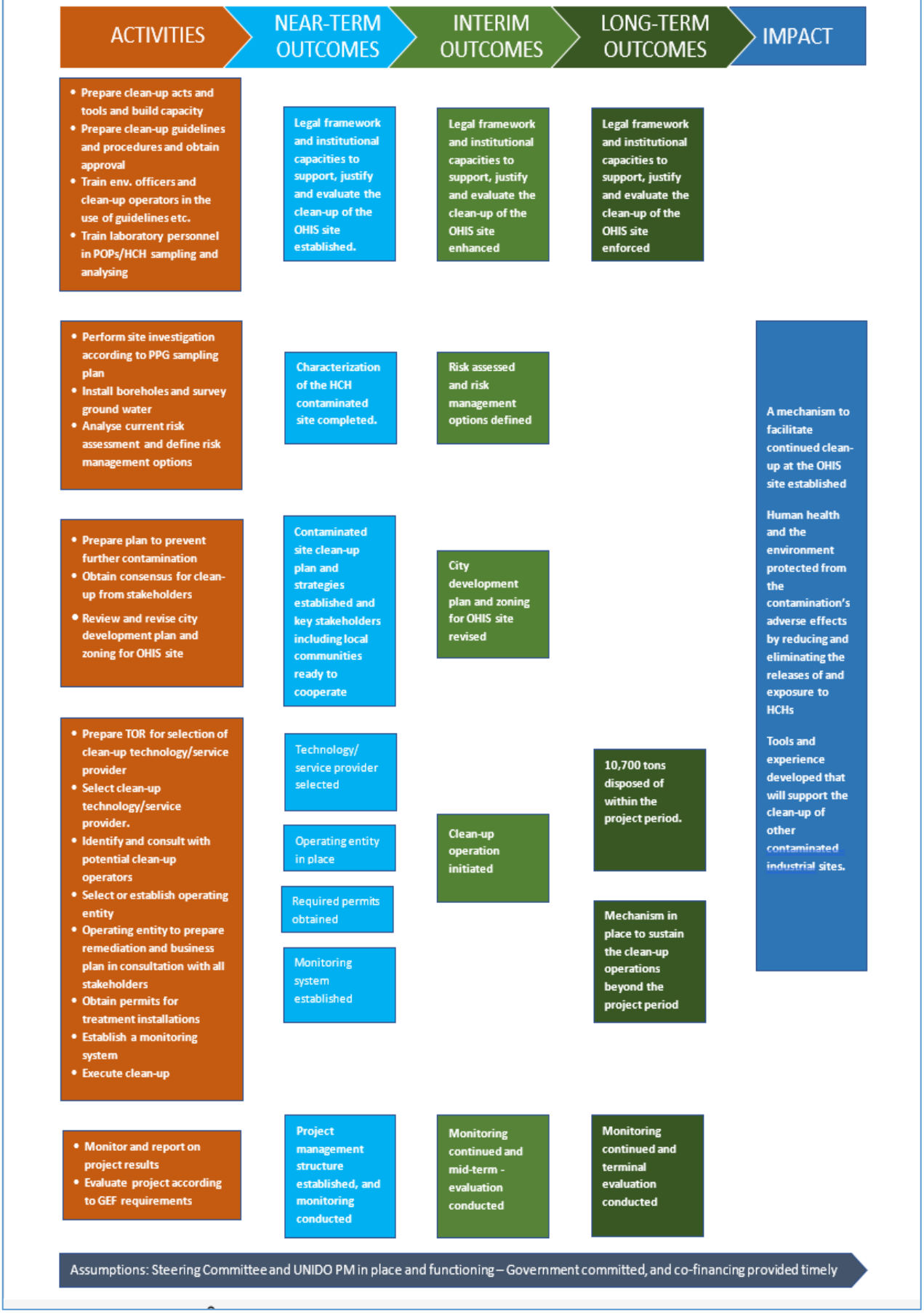
While understanding progress towards results is essential for accountability purposes, it is important that the assessment of progress is then used as a foundation for learning what has worked well (and why) and what hasn't worked so well (and why). To address this objective the evaluation will assess the project's strategy and processes, exploring elements such as project scope, planning and coordination. Such an assessment is essential if the evaluation is to develop an understanding of the project's overall performance.

# 4. Approach

The TE was conducted in accordance with the UNIDO Evaluation Policy, the UNIDO Guidelines for the Technical Cooperation Project and Project Cycle, and UNIDO Evaluation Manual. In addition, the GEF Guidelines for GEF Agencies in Conducting Terminal Evaluations, the GEF Monitoring and Evaluation Policy and the GEF Minimum Fiduciary Standards for GEF Implementing and Executing Agencies have been applied.

## 4.1 Theory of change

Since no TOC was developed during the initial project design the following TOC was developed following a review of the Project Document and other project documentation.


ACTIVITIES
NEAR-TERM OUTCOMES
INTERIM OUTCOMES
LONG-TERM OUTCOMES
IMPACT
• Prepare clean-up acts and tools and build capacity
• Prepare clean-up guidelines and procedures and obtain approval
• Train env. officers and clean-up operators in the use of guidelines etc.
• Train laboratory personnel in POPs/HCH sampling and analysing
Legal framework and institutional capacities to support, justify and evaluate the clean-up of the OHIS site established.
Legal framework and institutional capacities to support, justify and evaluate the clean-up of the OHIS site enhanced
Legal framework and institutional capacities to support, justify and evaluate the clean-up of the OHIS site enforced
• Perform site investigation according to PPG sampling plan
• Install boreholes and survey ground water
• Analyse current risk assessment and define risk management options
Characterization of the HCH contaminated site completed.
Risk assessed and risk management options defined
A mechanism to facilitate continued clean-up at the OHIS site established
Human health and the environment protected from the contamination's adverse effects by reducing and eliminating the releases of and exposure to HCHs
Tools and experience developed that will support the clean-up of other contaminated industrial sites.
• Prepare plan to prevent further contamination
• Obtain consensus for clean-up from stakeholders
• Review and revise city development plan and zoning for OHIS site
Contaminated site clean-up plan and strategies established and key stakeholders including local communities ready to cooperate
City development plan and zoning for OHIS site revised
• Prepare TOR for selection of clean-up technology/service provider
• Select clean-up technology/service provider.
• Identify and consult with potential clean-up operators
• Select or establish operating entity
• Operating entity to prepare remediation and business plan in consultation with all stakeholders
• Obtain permits for treatment installations
• Establish a monitoring system
• Execute clean-up
Technology/ service provider selected
Operating entity in place
Required permits obtained
Monitoring system established
Clean-up operation initiated
10,700 tons disposed of within the project period.
Mechanism in place to sustain the clean-up operations beyond the project period
• Monitor and report on project results
• Evaluate project according to GEF requirements
Project management structure established, and monitoring conducted
Monitoring continued and mid-term - evaluation conducted
Monitoring continued and terminal evaluation conducted
Assumptions: Steering Committee and UNIDO PM in place and functioning – Government committed, and co-financing provided timely

## 4.2 Data collection

Following are the main instruments applied for data collection:

(a) **Desk and literature review** of documents (to the extent available) related to the project, including but not limited to:
- The original project document, monitoring reports (such as progress and financial reports, mid-term review report, technical reports, back-to-office mission report(s), and relevant correspondence).
- Notes from the meetings of committees involved in the project.

(b) **Stakeholder consultations** was conducted through structured and semi-structured interviews. Key stakeholders to be interviewed include:
- UNIDO Management and staff involved in the project; and
- Representatives of donors, counterparts and other stakeholders.

(c) **Field visit** to the project site at OHIS.
- On-site observation of results achieved by the project, including interviews of actual and potential project beneficiaries.
- Interviews with the project's on-site management and the various national authorities dealing with project activities as necessary.

(d) **Online data collection** methods as applicable.

## 4.3 Evaluation framework

The evaluation TOR presents five key evaluation questions as follows.

1) How well has the project performed? Has the project done the right things? Has the project done things right, with good value for money? How well has the project fit?
2) What are the project's key results (outputs, outcome and impact)? To what extent have the expected results been achieved or are likely to be achieved? To what extent are the achieved results to be sustained after the completion of the project?
3) What are the key drivers and barriers to achieve the long-term objectives? To what extent has the project helped put in place the conditions likely to address the drivers, overcome barriers and contribute to the long-term objectives?
4) What are the key risks (e.g. in terms of financial, socio-political, institutional and environmental risks) and how these risks may affect the continuation of results after the project ends?
5) What lessons can be drawn from the successful and unsuccessful practices in designing, implementing and managing the project?

# 5. Project progression since the mid-term evaluation

Despite a number of delays and somewhat limited political support the project initially developed successfully and achieved the planned outcomes and outputs.

At some time in 2018 the government approached UNOPS. It is not known why that happened, but one possibility is that the government at that time had realised that they were not able to provide the promised cash co-financing.

Apparently UNOPS committed to help raising the necessary funding and in June 2019 the multi partner environmental fund was established by UNOPS, with participation from Norway, IPA and the government.

At the same time UNIDO agreed with the government to use the GEF funding for the clean-up before any other contributions were used. This meant that the project had far from enough funding to be able to do the complete clean-up of the δ-dump as foreseen by the project document.

The subsequent tendering for the clean-up showed that there was only sufficient funding for about half of the tendered clean-up. The clean-up was therefore split into lot 1, 2 and 3, where lot 1 and 2 reflected the originally tendered clean-up and where only lot 1 would be part of the UNIDO project due to the limitation of the funding (GEF only).

Lot 1 was awarded to the Greek company Polyeco. Since lot 2 was part of the original tender, UNOPS could award that contract to Polyeco as well, thereby avoiding public tendering. Since lot 2 only contained waste classified as HCH waste there was immediate access to a treatment facility meaning that the lot 2 work finished in August 2022 while Lot 1 work was still ongoing.

Lot 3 was tendered publicly in August 2022 and was also won by Polyeco.

After lot 3 has been finalised, there is likely to be more than half of the clean-up of the δ dump still to be done.

An approximate timeline is shown below.

| Activity | Date |
|---|---|
| UNOPS approached by government | 2018 |
| Final field investigation report for δ-dump | November 2018 |
| UNIDO and the government decided to use GEF funding first | 18.06.2019 |
| Multi-partner environmental fund established with UNOPS | 24.06.2019 |
| Request for Proposal (RFP) published (lot 1, 2 and 3) | 15.10.2019 |
| Deadline for public bidding | 11.11.2019 |
| Deadline extended to | 16.12. 2019 |
| Evaluation of technical offers | 16.12.2019 – 04.03.2013 |
| Financial offers opened (too expensive) | 04.03.2020 |
| Negotiations, Terms of Reference (ToR) adjusted | 04.03 – 01.07.2020 |
| New ToR for lot 1 submitted to Polyeco | 01.07.2020 |
| Polyeco submits adjusted offer for lot 1 | 17.07.2020 |
| Contract signed with Polyeco for lot 1 | Early September 2020 |
| Polyeco submits remediation plan for lot 1 | 09.10.2020 |
| Minister establishes committee to approve remediation plan | 01.04.2021 |
| Remediation plan for lot 1 approved[2] | 21.04.2021 |

[2] The working group has been formally established in 01.04.2021 and the Minister signed this together with the Information that was submitted to the Government for the approval of the Site Remediation Plan. The working group worked informally on the site remediation plan since its submission. By the time for its approval on 14 April 2021 there were 5 revisions.

| Activity | Date |
|---|---|
| Field preparation (tent etc.) | 21.04.2021- 06.09.2021 |
| Clean-up work starts | 06.09.2021 |
| UNOPS submits RFP for lot 2 (not part of UNIDO project) | April 2022 |
| Polyeco submits proposal for lot 2 and is awarded contract | April 2022 |
| Polyeco submits remediation plan for lot 2 | April 2022 |
| Remediation plan for lot 2 approved | April 2022 |
| Lot 2 work commences | May 2022 |
| Lot 2 work finalised | August 2022 |
| Lot 3 RFP published | August 2022 |
| Lot 3 contract awarded to Polyeco | 06.12.2022 |
| Final lot 3 remediation plan submitted by Polyeco | February 2023 |
| Expected finalisation of lot 1 work | March 2023 |

# 6. Assessment of project results

## 6.1 Assessment summary

The table listed below provides the key evaluation criteria to be assessed by the evaluation.

The rating has been carried out using a scale from "highly satisfactory" to "highly unsatisfactory".

| # | Evaluation criteria | Mandatory rating | Project Rating |
|---|---|---|---|
| A | Progress to impact | Yes | Moderately unsatisfactory |
| B | Project design | Yes | Moderately unsatisfactory |
| 1 | • Overall design | Yes | Moderately unsatisfactory |
| 2 | • Logical framework | Yes | Satisfactory |
| C | Project performance | | |
| 1 | • Relevance | Yes | Highly Satisfactory |
| 2 | • Effectiveness | Yes | Satisfactory |
| 3 | • Coherence | Yes | Satisfactory |
| 4 | • Efficiency | Yes | Moderately unsatisfactory |
| 5 | • Sustainability of benefits | Yes | Highly satisfactory |

| # | Evaluation criteria | Mandatory rating | Project Rating |
|---|---|---|---|
| D | Cross-cutting performance criteria | | |
| 1 | • Gender mainstreaming | Yes | Moderately unsatisfactory |
| 2 | • M&E:<br>✓ M&E design<br>✓ M&E implementation | <br>Yes<br>Yes | <br>Satisfactory<br>Satisfactory |
| 3 | • Results-based Management (RBM) | Yes | Satisfactory |
| E | Performance of partners | | |
| 1 | • UNIDO | Yes | Satisfactory |
| 2 | • National counterparts | Yes | Moderately satisfactory* |
| 3 | • Donor | Yes | N/A |
| F | Overall assessment | Yes | Satisfactory |

* This rating is based on the original lack of top-level political support and the lack of co-financing. The rating of lower-level counterparts would be satisfactory while the rating of the PMU would be highly satisfactory.

## 6.2 Project design

### 6.2.1 Overall design

In general, the overall design as reflected in the project document is sound but there are some severe shortcomings and seemly unworkable ideas. These include:

- Although the site investigations performed to identify the amount of waste appears to be confirmed by the site investigation obtained as part of the project by Polyeco in 2017/2018, they were far from sufficient since the type of waste was not adequately identified. In the opinion of the evaluation team reliable site investigations should include the digging of one or more trenches to be able to make a reasonable estimate of the amount and particularly the type of contamination at the site.
- The lack of reliable data also resulted in cost estimates that were far below the actual funding required.
- There is no mechanism that will ensure that the clean-up will actually be finalised once started. A clean-up that is only partly done is worse than no clean-up at all, since the hazardous materials are now exposed to the environment and in this case only covered by a tent, which obviously is only a temporary control of the pollutants. This problem may be alleviated by backfilling the excavated areas with clean soil and cover the whole dump by a properly designed and installed membrane.
- The cost estimates presented in the project document show very little detail and were far lower than the real costs (not only due to the additional highly contaminated waste amounts to be treated). Furthermore, the numbers seem to be 2013 numbers with no escalation for the expected 5-year project period and no contingency to cover delays etc. This was confirmed during the project implementation when the public bidding was organized in 2020 when the proposed costs were much higher. As a result of this and because of the lack of counterpart funding the clean-up was broken into smaller lots so that the work could be started.

### 6.2.2 Logframe

The logframe is basically well developed since the majority of the project design issues are caused by lack of proper background data. One problem issue has been identified:

- The notion to have two independent entities[3], namely a technology provider and an operator, seems to be an unrealistically complicated solution which would require an on-site technology, which would be operated by another company. This would lead to all kinds of contractual complications and would exclude off-site treatment. Consequently, the PMU etc. chose to discard this option.

## 6.3 Relevance

### 6.3.1 Relevance to target groups.

*Government* – Before the project the Government was aware of the need for dealing with this issue, but there were no procedures nor a legal basis for remediation of hotspots. The project mobilized the political commitment resulting in procedures and a legal basis, aware governmental officials, establishing know-how and establishing the multi-partner environmental fund.

*MoEPP* – The initiative to start solving the hotspot problem came from the POPs Unit, which is a project-based unit within MoEPP. The POPs Unit also provided the staff for the PMU. The project provided knowledge and capacity not just to the POPs Unit but also to the waste department, the IPPC Unit, the Chemicals Unit, the Macedonian Environmental Information Centre (MEIC), state councillors on industrial pollution and climate change, etc. In addition, the project developed a legal basis, which was integrated into the Law on Environment that is now adopted and enacted removing barriers for proper handling of POPs and remediation of the hotspots. MEIC had the opportunity to introduce monitoring of lindane at ambient air quality and to participate in the trainings organized within the project for monitoring lindane emissions to the ambient air.

*Laboratories including research institutes and academia* – Before the project, there was no experience with measuring and monitoring HCH in any laboratories within the country. The project capacitated the laboratories (Institute for Chemistry and Institute for Public Health), introduced the practices for measuring lindane in all environmental media and human tissue and secured the equipment and needed reagents for conducting lindane sampling and analysis.

*Consultants* – Prior to the project, there was very little knowledge and expertise regarding hotspot clean-up. The project capacitated consultants introducing appropriate practices for clean ups including establishment of health and safety procedures.

*General public and local community* – Before project start, very limited information about the OHIS site and its negative impact to environment and human health had been communicated publicly. The project provided information and raised awareness within the general public on environmental hotspots including the OHIS site. It also prepared the local community for

[3] The option of involving local company to act as Operating Entity was initially envisaged in order to have local technical capacities built and to secure sustainability of the future remediation activities.

the work related to excavation and packaging to be performed by the project, as well as the risks and the related mitigations.

### 6.3.2 Relevance to national strategies and priorities.

The project is consistent with the Country's priorities. It is in line with the National Implementation Plan (NIP) of the Republic of North Macedonia. One of the priorities set in the first NIP was to address the problem of HCH waste. The Updated NIP included the HCH contamination at the OHIS site as one of the top priorities in POPs management. The OHIS Chemical Industry site was top priority amongst the 16 identified hotspots within the framework of the Community Assistance for Reconstruction, Development and Stabilisation 2001 project. Remediation of hotspots was included in the action plan to accomplish the objectives of the National Waste Management Strategy adopted in 2008. The demonstration of the remediation of the contaminated site contributes to meeting the needs of the national strategies and priorities.

### 6.3.3 Relevance to UNIDO and the GEF

The project is consistent with UNIDO's Inclusive and Sustainable Industrial Development (ISID). One of the pillars of the ISID is "Safeguarding the Environment - environmentally sustainable growth, via ...the promotion, adaptation and transfer of environmentally sound technologies…", under which UNIDO aims to "...assist countries in reaching compliance with the Stockholm Convention and aims at developing capacities in developing countries to protect their populations and their environmental resources from POPs-related pollution". The project was formulated before the 1st ISID Forum (23-24 June 2014) and also before the Lima Declaration (December 2013). However, project objectives are in line with ISID-related issues and priorities.

The project is also in line with the GEF-5 Strategy for Chemicals – Phase out POPs and reduce POPs releases, focal area CHEM-1; specifically, Outcome 1.4 – POPs waste prevented, managed and disposed of and POPs contaminated sites managed in an environmentally sound manner; and Output 1.4.2 – Countries receiving GEF support for environmentally sound management of obsolete pesticides including POPs.

### 6.3.4 Relevance to the development problem.

The project goal was "Removal of Technical and Economic Barriers to Initiating the Clean-up Activities for α-HCH, β-HCH and Lindane Contaminated Sites at OHIS". During the project implementation procedures and legal basis for clean-up activities were established. These will work beyond the project end.

However, during the project only a small portion of the HCH waste, Lindane and contaminated soil was excavated, packed and transported to treatment.

The applied technology for managing the clean-up and the resulting waste seems to be a suitable, although very expensive solution but due to the shortcomings of the project document the problem was far from eliminated.

## 6.4 Efficiency

### 6.4.1 General.

Despite the issues considered below the project has been able to successfully fulfil all the outcomes and outputs which were not involved with the actual clean-up.

### 6.4.2 Lack of steering committee support.

According to the project document a project steering committee meeting should have taken place once every 6 months. In reality only a few meetings were held as follows:

- September 2015
- October 2015
- March 2016
- January 2017
- May 2018
- December 2020

Since the PMU reports to the Steering Committee (and UNIDO) the PMU have lacked proper management support throughout the project and the PMU should be recommended for being able to move the project forward under such circumstances.

As described below this problem has also resulted in significant delays.

### 6.4.3 Delays.

In general, the project has suffered from several delays (a total of 27 months), some of which are not easily explained by the stakeholders. The most important delays are discussed in the following:

- GEF/UNIDO approved the project late 2014 and UNIDO commenced the project in January 2015. The MoEPP signed the project document several months later and it was not possible to set up a steering committee (SC) meeting in a timely fashion resulting in that the first SC meeting was not held until September 2015, probably due to reluctance from the minister of MoEPP to get involved in the project (he was replaced in April 2016). The PMU was established in March 2015 and immediately started preparing ToRs for various activities. Obviously, with no SC, the work could not be approved.
- At a SC meeting in March 2016 the PMU presented several ToR for preparatory work for approval but some of the members were not able/willing to approve/reject the work resulting in a delay.
  To avoid similar problems in the future the Rules of Procedure of the PSC were adapted in January 2017 so that written approval from the SC members was no longer required. After two weeks the approval would be automatic.
- Since the analyses of the samples from the site investigations (October 2017 to April 2018) needed to be re-analysed the final site investigation report was not finalised until November 2018.
- The first request for proposal for the clean-up work was published in October 2019, which is 11 months after the investigation report was issued. The reason given for this is that it took time to update the risk assessment analyses, prepared as part of previously developed feasibility studies, based on the detailed site investigation results.
- Evaluation of the proposals lasted until March 2020 where it was concluded that there was not sufficient funding to perform the defined scope of work. This resulted

in a period of negotiations and eventually a reduced scope and a rebid (for the lowest bidder only). A contract was finally signed in September 2020, i.e. with a delay of 6 to 7 months.
- The winning contractor (Polyeco) submitted a remediation plan November 2020. The plan was not approved until April 2021, partly because there were no procedures for such an approval, but also because it required several revisions.
- The Covid pandemic has also contributed to the delays since it was difficult to organise meetings that required physical presence.

### 6.4.4 Shortfall in treated amounts.

It is stated in the Project Document that the original PIF assumed that 13,000 $m^3$ of soil with low contamination should be treated. It is unclear why the actual HCH hazardous material was not targeted since it would make sense to remove the main source of contamination first.

Presumably, realising this, it was decided to remove all the δ HCH waste and the related contaminated soil (and capping the α, β HCH dump). To ensure there was sufficient funding to treat the δ HCH, the volume was reduced to 6,000 $m^3$ or 10,700 tonnes. This number supposedly includes all the contaminated materials in the δ HCH dump.

However, the Project Implementation Review (PIR) of 30 June 2022 states that: "The foreseen quantities of 477.1 tons of HCH waste and 126.37 tons of HCH contaminated soil excavated, packed and temporarily stored awaiting exportation" and in the document "GEF4385_SCD Indicators – Final" (see below) it shows that "477 tons of HCH waste excavated, packed, exported and destroyed" and that "126 tons of HCH contaminated soil excavated, packed and partly transported (20 tons)".

The reason for this significant reduction is twofold:

- The site investigations, both prior to project start and during the project were not sufficiently thorough to properly define the extent and severity of the contamination. In reality, the HCH and highly contaminated soil amounts were much larger than anticipated.
- The co-financing was not made available for the clean-up in a timely manner, which meant that only the GEF funding of this project was used for the first clean-up operations thereby reducing the amounts possible to clean-up to the numbers given above, significantly lower than planned in the project document.

### 6.4.5 Project expenditure and disbursement

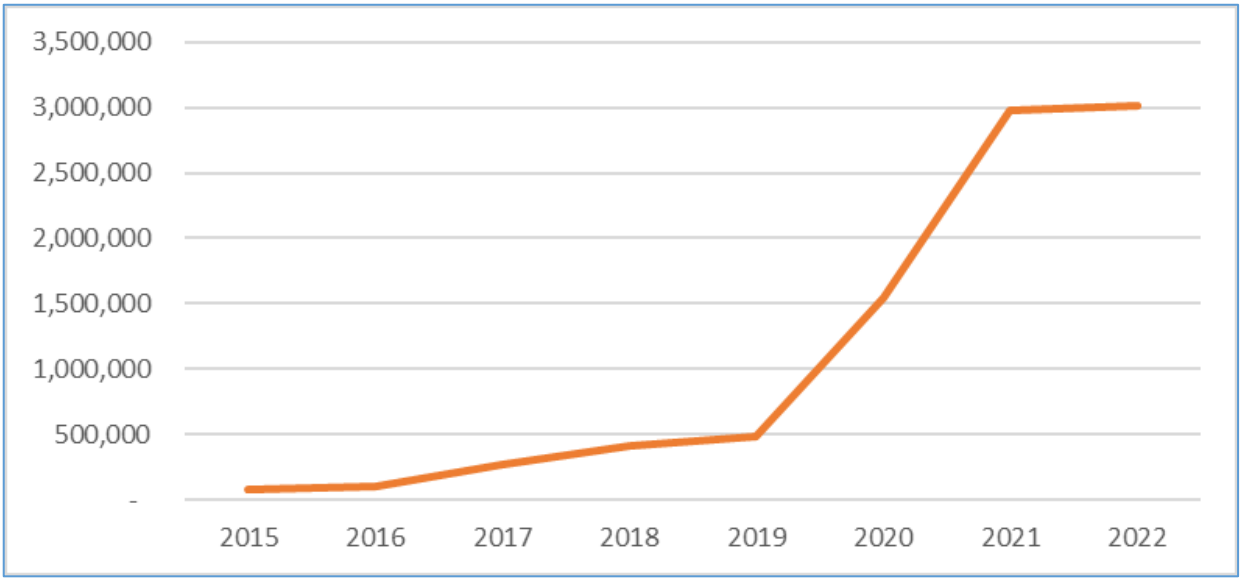
At project design, around 82% of the project budget was dedicated to the clean-up in component 4 (see the table below). During the project implementation, it became clear that the costs of the clean-up were severely underestimated at design, because of the long time lag between the project formulation in 2014 and the actual clean-up between 2020 and 2022, which obviously was exacerbated by the significant delays. Furthermore, as described above, having much larger amounts of highly concentrated wastes increased the treatment costs significantly.

| | | Total allocation (at approval) | |
|---|---|---|---|
| # | Project components | USD | % |
| 1 | Legal framework and institutional capacities to support, justify and evaluate the clean-up of the OHIS site contaminated by alpha-HCH, beta-HCH and lindane established, enhanced and enforced | 125,500 | 4% |
| 2 | Characterization of the HCH contaminated site completed, risk assessed and risk management options defined | 110,300 | 3.3% |
| 3 | Contaminated site clean-up plan and strategies established and key stakeholders including local communities ready to cooperate | 73,300 | 2.1% |
| 4 | Clean-up operation initiated and the execution mechanism in place to sustain the clean-up operations beyond the project period | 2,514,800 | 82% |
| 5 | M&E | 78,100 | 2.3% |
| 6 | Project management | 200,000 | 6.3% |
| | **Total** | **3,100,000** | **100%** |

Source: Project document and UNIDO Project Management ERP database as of 20 September 2022

From the project expenditure it was clear that around 82% of the project budget was spent on the clean-up, as per the original plan, in spite of the project delays and necessary changes that the project management had to make to address the underestimated costs of the treatment. The disbursement figure below also clearly indicates that not much happened in the first five years of the project between 2015 and 2019, and that the clean-up took place mostly in the last three years. All other project results related to legal framework, capacity building and awareness raising among the local communities and the national counterparts were delivered with less than 10% of the project budget, which is efficient.

### Project disbursement by year




Source: UNIDO Project Management ERP database as of 20 September 2022

### 6.4.6 Materialization of co-financing

The evaluation team could not find any evidence that the Government has provided the cash co-financing agreed upon and as presented in the project document. Only payment for auditing appears to have been a cash contribution.

The co-financing project expenditures are presented in Annex 3 showing the comments from the PMU that the evaluation team believes require further explanation. In Annex 4 these questions are presented together with UNIDO's response and the evaluation team's conclusions. Based on these conclusions the actual co-financing provided to the UNIDO project has been calculated and shown in the table below.

| | Projected co-financing (at design) | Actual co-financing (at completion) |
|---|---|---|
| **Cash** | 6,263,000 | 4,400* |
| **In-kind** | 5,492,500 | 2,504,450 |
| **Total** | **11,755,500** | **2,508,850** |

* As a result of the project, UNOPS has established the "Multi Partner Environmental Fund", which initially shall contribute EUR 7,443,500 for the continuation of the project.

## 6.5 Coherence

### 6.5.1 Internal coherence

There are no immediate synergies with other interventions carried out by UNIDO in North Macedonia. However, as discussed in section 6.3 Relevance the intervention is consistent with relevant international norms and standards.

### 6.5.2 External coherence

It appears that at present there are no other actors working with contaminated site clean-up in North Macedonia and since this intervention is concentrating on one specific site there is no risk of duplicating efforts.

## 6.6 Effectiveness.

### 6.6.1 Main results.

Main result of the project is establishing the procedures (technical and economic) including legal basis for cleaning up of contaminated sites. The established procedures shall secure cleaning up and remediation activities beyond the project end. This result is secured with established procedures via the amendments of the Law on Environment (Official Gazette of the Republic of North Macedonia no. 89/2022) where the identification and management of contaminated sites is defined.

Another important result is the establishing of the multi partner environmental fund, aiming

at mobilising sufficient funds for cleaning up the remaining HCH waste at OHIS and possibly other contaminated sites. The Fund is established by the Government, the Norwegian Government and United Nations Office for Project Services (UNOPS). The current plan is that the Government shall provide USD 2.7 mil, European Union Instrument for Pre-Accession Assistance III (IPA III) USD 2.5 mil and the Norwegian Government EUR 1.5 mil while UNOPS is coordinating.

In addition, the project developed capacities among different stakeholders including MoEPP, other ministries, laboratories and relevant agencies. It mobilized political commitment and funds as well as raising awareness of the general public for environmental and health risks.

### 6.6.2 Results according to outcomes and outputs.

**Outcome 1: Legal framework and institutional capacities to support, justify and evaluate the clean-up of the OHIS site contaminated by α-HCH, β-HCH and lindane established, enhanced and enforced.**

*Outputs:*

*1.1: Legal acts and institutional and technical tools prepared to ensure the completion of the OHIS site clean-up operations and building capacities towards contaminated sites management in general*

Prior to project start there was no legislative basis for identification and remediation of contaminated sites. The project developed legal basis as well as supporting bylaws enabling appropriate management of contaminated sites. In addition, the whole project and activities developed expertise and provided know-how to the responsible officers. The legal basis for contaminated areas is integrated at the amendments of the Law on Environment (Official Gazette of the RNM, no. 89/2022)

*1.2: Technical tools (guidelines, procedures, instructions) for contaminated site management prepared and approved*

Technical tools for contaminated site management were prepared by external consultants and have been heavily used during the clean-up activities. Examples of guidelines that were developed by the consultants Tauw and Dekons-Ema are: Practical information on assessment of contaminated site (Part 1), remediation of contaminated site (Part 2) and Standard Operational Procedures (Part 3).

*1.3: Environmental officers, contaminated site owners and the potential contaminated site clean-up operators trained on practical usage of the prepared guidelines, procedures and instructions*

Several trainings were conducted, including a study visit to Czech Republic introducing the best practices for similar clean-up operations. The trainees encompassed a broad range of stakeholders (environmental officers, environmental consultants, environmental inspects, employees responsible for monitoring and conducting measurements, etc.). According to the interviewees, the trainings were conducted with high quality and were used throughout the clean–up activities.

*1.4: Laboratory personnel trained for sampling and analyses standards and protocols for POPs/HCH*

Laboratory personnel (Institute for Public Health, Institute for Chemistry, Macedonian Environmental Information Centre and Central Environmental Laboratory (MoEPP)) were trained and provided with relevant equipment for sampling, analysing and monitoring lindane concentrations in soil, water and air and human blood. Workers possibly exposed to lindane and HCH waste were tested.

**Outcome 1: all outputs under outcome 1 have been delivered. The outcome related to the legal basis for contaminated areas has been achieved as it has been integrated in the amendments of the Law on Environment (Official Gazette of the RNM, no. 89/2022)**

**Outcome: 2. Characterization of the HCH contaminated site completed, risk assessed and risk management options defined**

*Outputs:*

*2.1: Site characterization, i.e. detailed site investigation completed*

Investigations were conducted at the OHIS site even before project start as well as during the project. After project start a detailed site investigation was conducted by Polyeco from Greece (between October 2017 and April 2018, report submitted in October 2018) and the level of contamination for the different environmental media (soil, groundwater and air), as well as the vegetables defined. Forty-eight boreholes were drilled; 146 soil/waste samples were collected, 10 vegetables samples, and 8 ambient air samples and all the samples analysed. Samples were sent to SGS in Germany. However, the concentration of HCH in soil seemed to be very high, as the soil was only from the top cover. Therefore, the samples were recalled and sent to ELS-Czech Republic. The results from this analysis were lower than the initial results. It is assumed that SGS Germany used an improper method for analysis, resulting in the very high concentrations. This caused a delay of around 5-6 months.

The results achieved in the Czech Republic were deemed by all parties namely the PMU, UNIDO, NE and Polyeco to be proper and were accepted as the final analysis results.

*2.2: Survey of groundwater for drinking and irrigation purposes conducted*

The survey of groundwater for drinking and irrigation purposes was conducted as part of Polyeco's efforts. 15 ground water monitoring wells were identified in the premises of OHIS. Collection of groundwater samples was carried out in two different time periods, October 2017 and April 2018. Samples were analysed by SGS Institute Fresenius GmbH. Concentration of 125 parameters was determined for 36 groundwater samples (2 sampling campaigns)[4]. 30 samples were collected from monitoring wells located within OHIS site and from 6 wells located in the surroundings of OHIS.

*2.3: The current risk assessment analyses updated and the risk management options defined*

Based on international bidding EMGRISA from Spain was selected as contractor. The contract time period was from November 2018 – March 2019. A draft Risk Assessment Analysis was presented to stakeholders in January 2019. According to the Risk characterization, the on-site Receptors at risk are the Construction/remediation workers,

[4] http://pops.org.mk/wp-content/uploads/2020/09/UNIDO-Final-Investigation-Report-OHIS-rev2.pdf

shoe-factory workers, the site guards, the agricultural worker and nearby residents. Short-term mitigation measures are proposed as follows:

- Inform stakeholders about the current risks.
- Allocate alternative locations for industrial activities.
- Limit exposure time for some receptors, for e.g., site security guards.

**Outcome 2. All outputs under outcome 2 have been achieved.**

**Outcome 3: Contaminated site clean-up plan and strategies established and key stakeholders including local communities ready to cooperate.**

*Outputs:*

*3.1: Contaminated site clean-up operation/ remediation plan and groundwater management plan prepared for prevention of further contamination and adverse human health impact*

It was decided to include activities related to this output in the responsibilities of the remediation contractor, which seems to be an appropriate decision considering that the contractor is the entity having to apply the remediation plan. This means that the selected remediation contractor "Polyeco" developed the site clean-up operation/ remediation plan.

Polyeco submitted the site remediation plan on 9 October 2020. MoEPP approved the plan on 21 April 2021.

The remediation plan only covers groundwater management directly related to the site clean-up and there is no other specific output related hereto. One reason may be that there does not seem to be any definition anywhere of what a "groundwater management plan" is supposed to contain.

*3.2: Consensus among the general public and major stakeholders built for the establishment/ improvement of the OHIS contaminated site*

The Non-governmental Organisation (NGO), Macedonian Ecological Society, was selected and contracted from November 2018 – November 2019. The contractor conducted a survey amongst the general population to understand their knowledge of the Lindane issue. The survey was conducted in the three municipalities, which were most affected by the OHIS HCH pollution. It was found that people were happy about the planned clean-up of the site after they had received information about the project.

Also, several schools were visited and presentations done on lindane and performance of interactive exercises etc. for students of grade 5. It was considered that the students would pass on received information to their parents. A video with information on Lindane and the site was also developed. Several media events, workshops and visibility events were conducted.

The company, Pointpro Consulting, prepared a draft cost-benefit analysis and presented it in April 2019 to relevant stakeholders, amongst others, State Secretary MoEPP, Head of the Chemicals Department, Representative of UNOPS, Skopje. The cost-benefit analysis was then finalised in accordance with the comments received from the stakeholders.

*3.3: City development plan and zoning of the OHIS site reviewed and revised*

According to the PMU: "written confirmation from the City Council has been obtained, confirming the land usage of the OHIS site for industrial purposes. i.e. for light industry".

This information is likely based on the General Urban Plan for Skopje (2012-2022), which shows that it is planned for the OHIS site to be used for light industry and warehouses.

**Outcome 3. All outputs under outcome 3 have been achieved**.

**Outcome: 4. Clean-up operation initiated and the execution mechanism in place to sustain the clean-up operations beyond the project period**

*Outputs:*

*4.1: ToR for the selection of the technical service providers for the HCH contaminated site remediation prepared*

A Draft ToR for the remediation technology/service provider was prepared and revised based on input from stakeholders.

A study visit to Novartis in Basel, Switzerland, from 27-29 January 2019, took place to obtain an understanding of the methodologies applied for the remediation of an HCH-contaminated site at STEIH. The draft ToR was adjusted based on the learnings of the study visit.

Finally, the ToR was modified in accordance with the requirements from the UNIDO Procurement department.

The ToR for the selection of the technology/service provider was subsequently approved by the Government and the Request for Proposal for the selection of the technology/service provider posted on UNIDO's web site and the link shared on MoEPP's web site on 15 November 2019.

Evaluation of the bidders' technical proposals was finalised, and the technically acceptable bids identified.

*4.2: Technical service providers selected*

On 4 March 2020 the financial offers were opened and Polyeco identified as the lowest bidder. Unfortunately, as indicated earlier, there was not sufficient funding available, and the TOR had to be adjusted. Eventually, in September 2020 a contract could be signed with Polyeco for a reduced scope of work.

*4.3: Parties (private sectors, state owned companies or PPP contractual agreement form) interested as potential operators identified and investors as potential clean up operators consulted*

The PMU reports: "No need for identification of parties as potential operators, since the technology is not going to be purchased, but the turn-key solution is to be required."

This seems to be the right decision. The Project Document has attempted to add an unreasonable complication to an already quite complicated project. Also, the description in the project document is rather vague as to how this approach should work in practice.

*4.4: Operating entity selected and established*

The PMU reports: "No need for selection of the Operating Entity, since the technology is not going to be purchased, but the turn-key solution is to be required."

Same comment as to output 4.3

*4.5: Clean-up operation/remediation and business plan prepared by the selected operating entity in consultation with the technical providers and all stakeholders and approved by the PSC.*

This output is covered by output 3.1

A business plan was not developed. Please see comments to output 4.3 and 4.4.

*4.6: Needed permits for the technology treatment installation (EIA, IPPC) obtained*

The PMU held meetings with the responsible departments within the MoEPP for the definition of the procedure for obtaining the needed permits for the on-site work organized and the procedure defined.

The clean–up activities were conducted based on the developed site remediation plan, reviewed and adopted by the working group established within Ministry of environment based on Governmental Decision for acceptance of the site remediation plan.

*4.7: A monitoring program, system established at the location*

Contracts signed between the Ministry of Environment and the Institute of Chemistry and the Institute of Public Health for the formalization of the cooperation between the institutions regarding the air and soil monitoring at the residential area during the remediation works, as well as the water and workers' blood.

Environmental monitoring programme established prior to and during the site clean-up activities (2 air sampling points at the residential area in the vicinity of OHIS site; 3 air sampling points in the remediation area in OHIS; 1 air sampling point inside the environmental enclosure; 2 soil sampling points at the residential area in the vicinity of OHIS; workers' blood and rainwater collected from working area.

A company was contracted for site supervision and monitoring services. The contractor

- ensured adherence to the approved site remediation plan.
- supervised the excavation and packing of 477 tons of HCH waste and 126 tons of HCH contaminated soil.
- supervised transportation of the packed HCH waste and of the HCH contaminated soil

*4.8: Clean-up operation executed (6,000 m3 or 10,700 tons to be disposed of)*

Preparatory activities for the clean-up operation were initiated in 2020 (export permits, notification documents for transboundary movement of hazardous waste, purchasing of the needed equipment, site set-up, etc.)

Site set-up activities finalized in August 2021 (fencing, zoning, marking of the site; erection of environmental enclosure; installation of compressors for negative pressure and the air purification system; delivery of the needed equipment and tools (UN approved drums and containers; PPE; waste water collection tanks and waste water filtration unit; decontamination units for the workers; air monitoring instruments; handheld instrument for soil analyses (XRF); machinery (conveyor belt with the mounted funnel; trucks, bulldozers, cranes, etc.)

The contracted quantities of 477 tonnes of HCH waste and 126 tonnes of HCH contaminated soil excavated, packed and temporarily stored.

The notification consents for the transboundary shipment of the HCH waste from all concerned countries received and the first 154 tons of HCH waste exported to TREDI (French hazardous waste treatment company) for incineration on 5 July 2022. The exportation of the remaining 323 tons took place in September 2022.

The notification consents for the transboundary shipment of the HCH contaminated soil obtained in September 2022.

The export to AVR (hazardous waste incinerator company) in Germany of the 126 tons of HCH contaminated soil is still ongoing and expected to be finalised in March 2023.

**Outcome 4. Most of the relevant outputs have been delivered while the clean-up is still ongoing (expected to be finalised in March 2023)**

## 6.7 Progress to impact

The project has successfully started the process of remediation activities at the OHIS industrial hotspot site. It has created the legal framework that sets precise procedures for enabling relevant authorities to start and complete the cleaning of both dumps as well as other hotspots in the future.

Capacities built at institutions and relevant authorities also lead towards significant changes that will contribute positively to the completion of the activities. The established environmental and health and safety protocols, developed guidelines and conducted training also contribute to a positive impact of the project.

The table below shows the indicators as reported by the project.

| PROJECT COUNTRY/ SAP ID | | | |
|---|---|---|---|
| **SCU Indicators** | | | |
| **Environmental benefits** | | | |
| 1 | **Quantity of the following eliminated/discontinued:** | **Values** | |
| | · PCB, Pesticides, DDT (tonnes) | 603 | |
| | · uPOPs (mg) | 0 | |
| | · POPs in consumer material, BFR, PFOS, HBCD (tonnes) | 0 | |
| | · Mercury (tonnes) | 0 | |
| | · Other hazardous substances of global concern (tonnes): _____ | 0 | |
| 2 | **Quantity of the following safe -guarded:** | | |
| | · PCB, Pesticides, DDT (tonnes) | 59,335 | |
| | · uPOPs (mg) | | |
| | · POPs in consumer material, BFR, PFOS, HBCD (tonnes) | | |
| | · Mercury (tonnes) | 150 | |
| | · Other hazardous substances of global concern (tonnes): _____ | 0 | |
| 3 | **Equivalent CO2 pollution prevented (tonnes)** | 0 | |
| 4 | **# of countries receiving GEF support for soundly managing POPs and phasing out the use and production of POPs** | 1 | |
| **Policy and capacity building** | | | |
| 5 | **# of environment policies, strategies, laws, regulation approved/enacted** | 5 | |
| 6 | **# of training participants/trainees (male/female)** | male | 59 |
| | | female | 90 |
| 7 | **# of companies adopting best practices** | 0 | |
| **Industrial development** | | | |
| 8 | **# of new businesses** | 0 | |
| 9 | **Amount of incremental investment (USD)** | 7,443,500 | |
| **Gender** | | | |
| 10 | **# of jobs created (male/female)** | male | 0 |
| | | female | 0 |
| 11 | **# of new businesses with (male/female) as top management** | male | 0 |
| | | female | 0 |
| **Co- benefits** | | | |
| 12 | **Materials recycled or reused (tonnes)** | 0 | |
| 13 | **Commercial value of materials recycled or reused (USD)** | 0 | |

**Aleksandar Mickovski:**
477 tons of HCH waste excavated, packed, exported and destroyed
-126 tons of HCH contaminated soil excavated, packed and partly transported (20 tons)

**Aleksandar Mickovski:**
Soil contaminated with mercury identified during the HCH site remediation

**Aleksandar Mickovski:**
Two regulatory acts and 3 technical tools have been prepared and approved.

**Aleksandar Mickovski:**
- Training on technical tools (15 female, 13 male)
- Laboratory training (6 female, 4 male)
- Workshops on awareness raising (48 female, 23 male)
- Training on site remediation supervision (21 female, 19 male)

**Aleksandar Mickovski:**
Mobilized financial sources in the Multi-Partner Environmental Fund

It is obvious that the original objective "10,700 tonnes to be disposed within the project period" has not been met in that only 603 tonnes (477 tonnes of HCH waste and 126 tonnes of HCH contaminated soil) have been disposed of. The reasons for this are discussed in 6.4.4 Shortfall in treated amounts.

The table also indicates that 59,335 tonnes have been safeguarded. In this case the "safeguarding" means that the waste that is stored in dump B1, the α β HCH waste area, is not accessible since it is controlled by security guards. In the project document it is indicated that the B1 dump is planned to be capped, but this has not taken place. One argument for not capping B1 at this point in time is that if the clean-up of B1 will continue after the B2 clean-up has been finalised capping would be a wasted cost.

It was also proposed that the tent presently covering the B2 site could be moved to B1. This would be a short-term solution and should only be considered if there is a reasonable probability of B1 also being cleaned up. Even though this seems feasible it will require that the tent is expanded and, it has to be remembered that the tent is the property of Polyeco.

For various reasons, primarily originally underestimation of the size and of the costs of the problem, and lack of timely funding, meant that only a small part, namely 603 tonnes, of the foreseen 10,700 tonnes of contamination, or 5.6% of the target was actually removed and treated.

## 6.8 Sustainability

The project results will likely have a lasting effect beyond the project end. The legal basis and the developed procedures will enable further activities related to remediation of contaminated sites. The establishing of technical know-how, institutional mechanisms and improved capacities of Ministry employees are main foundations for ensuring sustainability of the project.

The project will play a vital role in completing the remediation of the OHIS site and is also a crucial foundation for initiation and execute clean-up of other hotspots already identified or to be identified in the future.

In regard to financial sustainability, it will be crucial to secure additional funds either through the multi partner environmental fund or through other funding mechanisms, to be able to finalise the clean-up of the small δ dump. So far, there are not enough funds guaranteed to complete the remediation of the δ dump let alone the α β dump. UNOPS confirms that they are committed to mobilization of sufficient funds to complete the δ dump and possibly but also the α β dump. Unfortunately, these two dumps represent only a small part of North Macedonia's hotspot problem and huge investments are required to solve the problem. The reluctance or inability of the government to provide the agreed co-financing underscores the risk of the project not being financially sustainable.

## 6.9 Gender

The project was conceptualized before UNIDO 2015 Gender Strategy was issued and GEF strengthened their policy and ambition on gender equality in 2017. As such, the project did meet the UNIDO's and GEF's (limited) gender mainstreaming requirements as they were in 2015.

However, the project did not develop a gender baseline study or a needs assessment, although the project's gender marker was assigned as 2a, meaning that the project would

pay significant attention to gender and was expected to contribute gender equality[5]. Equally, no gender strategy was formulated to support project implementation. However, it is evident that women/gender-focused groups have been considered in the project and the project's performance indicators did gather sex-disaggregated data. It is not specified what is planned to be done in this context and how gender is going to be mainstreamed. Nevertheless, the PMU, and the interviewed stakeholder institutions were all gender balanced. Gender balance was also apparent at the project workshops. The project interventions project will benefit women and men equally.

## 6.10 Specific GEF assessments

### 6.10.1 Follow up needs.

As indicated above the project seem to have capacitated the North Macedonian authorities, institutions and private companies to continue the OHIS clean-up and to manage other similar hotspots. The main issue is the availability of funding. Short term this seem to have been overcome by the involvement of UNOPS and their active fund raising, which means that the OHIS clean-up is continuing. Longer term fund raising both from the government, responsible industries as well as from donors must be continued and intensified.

### 6.10.2 Environmental and Social Safeguards

The project seems to have applied all reasonable environmental and social safeguards. The contractors and government inspectors have ensured that any foreseeable adverse effects have been prevented and no harm to the environment or to any stakeholders has occurred due to the project.

# 7. Performance of partners

## 7.1 UNIDO

UNIDO has had four different HQ based project managers throughout the project in 8 years.

The first project manager (PM) left the project in December 2015. A new PM took over the project in May 2017. In the period without a PM the Chief of the Stockholm Convention Division looked after the project. A new PM was assigned in January 2022 and replaced in October 2022 with the current PM who is expected to continue until end of the project.

Obviously, it is far from ideal to have so many different PMs on a project but there is no evidence to suggest that this has negatively impacted the project implementation although a more constant presence could have helped in getting the steering committee to work properly.

However, the UNIDO HQ-based management, coordination, monitoring, quality control and technical outputs appears to have been reasonably efficient, timely and effective. Regular and satisfactory communication was reported to take place between the PM and the PMU.

[5] Since 2015 all UNIDO technical assistance projects have been assigned a gender marker and their design are screened based on a gender mainstreaming check-list before approval. UNIDO's gender marker is in line with UN System-wide action plan (SWAP) requirements, with four categories: 0 — no attention to gender, 1 — some/limited attention to gender, 2a — significant attention to gender, 2b — gender is the principal objective (https://www.unido.org/sites/default/files/files/2019-11/UNIDO%20Gender%20Strategy%20ebook.pdf)

## 7.2 North Macedonian counterpart

Especially in the beginning of the project there did not seem to be any political and high-level government support whatsoever.

It took months before the project document was even signed and it was not possible to have a steering committee meeting until September 2015, although the project started in January 2015. This combined with the fact that virtually no cash co-financing was made available to the project shows the unsatisfactory performance of the high-level government.

However, the staff of the Ministry of Environment and Physical Planning and other ministries and organisations seems to have been very supporting and fulfilling their roles as required.

## 7.3 Project Management Unit (PMU)

The PMU consists of two PoPs Unit staff members. It is the opinion of the evaluation team as well as of all interviewees that the PMU have performed an excellent job under very difficult and challenging political and technical circumstances. Especially in the beginning when the lack of political willingness to support the project was a major challenge and the main cause for the significant delays at that time.

# 8. Conclusions and Recommendations

## 8.1 Factors affecting project results.

There are a number of factors affecting the project results. The most important are:

- Significant delays were experienced mostly due to lack of political support, especially in the beginning of the project. This also resulted in a seemingly non-functioning steering committee.
- In spite of the limited political support, it seems that primarily the PMU, but also other MoEPP staff, have successfully ensured that the "soft" project results, i.e., results that require in kind funding or limited cash contribution, have been very successful, which is also underscored by the general appreciation of the project by all the interviewed stakeholders.
- Only a small part of the planned clean-up was achieved, mainly due to the following:
    - The project design severely underestimated the magnitude and type of pollution.
    - The lack of timely cash co-financing significantly reduced the amount of waste that could be cleaned up.
- The project design had two major shortcomings, namely:
    - Not sufficient site investigation performed to properly understand the extent and type of contamination during the formulation phase, making it impossible to finalise the project within the given budget.
    - The clean-up cost estimates were developed in 2014 and were significantly underestimated and do not seem to have any inflationary escalation nor any contingencies.

## 8.2 Lessons learned.

The most critical lessons learned are:

- It is imperative that there is high level political support and ownership before projects are initiated.
- Steering committees need to have the authority to control projects and mechanisms are required to ensure that SC meetings and decisions are made in a timely fashion.
- A project of this type should not be initiated unless it can safely be assumed that there will be sufficient funding to finalise the project.

## 8.3 Recommendations

Key recommendations:

- UNIDO should ensure that project designs are based on proper site investigations and that inflation and contingencies are considered in budgets. Furthermore, the contingencies should reflect the accuracy, or lack of same, of the basis for the budget.
- The Ministry of Environment and Physical Planning (MoEPP) should set up a steering committee or similar and a PMU with proper authority to supervise and control the continuation of the project, now led by United Nations Office for Project Services (UNOPS).
- Since the clean-up of the δ dump is far from finalised (being continued by UNOPS) Government should redouble efforts to ensure national and international funding for management of this and other hotspots, not only relying on UNOPS.
- In light of the number of hotspots already identified and in consideration of the huge sums required for a complete clean-up of the sites, the government should prepare a long-term budgeted plan, which should consider simpler and cheaper solutions, such as capping, on-site soil treatment etc.

# ANNEXES

## Annex 1: Project factsheet

| | |
|---|---|
| Project title | Removal of Technical and Economic Barriers to Initiating the Clean-up Activities for α-HCH, β-HCH and Lindane Contaminated Sites at OHIS |
| UNIDO ID | 100122 |
| GEF Project ID | 4385 |
| Country(ies) | Republic of North Macedonia |
| Project donor(s) | GEF |
| Project approval date/GEF CEO endorsement date | 12 August 2014 |
| Planned project start date (as indicated in project document/or GEF CEO endorsement document) | 1 January 2015 |
| Actual project start date (First PAD issuance date) | 1 January 2015 |
| Planned project completion date (as indicated in project document/or GEF CEO endorsement document) | February 2020 |
| Actual project completion date (as indicated in UNIDO ERP system) | 31 March 2023 |
| Project duration (year):<br>Planned:<br>Actual: | <br>5 yrs.<br>8 yrs. |
| GEF Focal Areas and Operational Programme | POPs |
| Implementing agency(ies) | UNIDO |
| Executing Partners | Ministry of Environment and Physical Planning |
| Donor funding | USD 3,100,000 |
| UNIDO input (in kind, USD) | USD 50,000 |
| Co-financing at CEO Endorsement, as applicable | USD 12,450,000 |
| Total project cost (USD), excluding support costs | USD 15,650,000 |
| Mid-term review date | April-June 2019 |
| Planned terminal evaluation date | October 2022 – March 2023 |

# Annex 2: Persons interviewed.

Ms. Suzana Andonova (Project coordinator), PMU, POP Unit – Ministry of Environment and Physical Planning

Mr. Aleksandar Mickovski (Project manager), PMU, POP Unit – Ministry of Environment and Physical Planning

Ms. Emilija Kupeva Nedelkova, (PSC member, Head of the Unit of Chemicals), Ministry of Environment and Physical Planning

Ms. Ana Karanfilova-Maznevska, (PSC member, Head of the Unity of Waste Management), Ministry of Environment and Physical Planning

Mr. Ljupcho Grozdanovski, Responsible for maintenance of the air quality monitoring stations - Ministry of Environment and Physical Planning

Ms. Lendita Dika, State Adviser for Industrial pollution and risk management, Ministry of Environment and Physical Planning

Ms. Vesna Indova Tochko, GEF Focal Point, Head of European Union Department, Ministry of Environment and Physical Planning

Mr. Zoran Ristic, Polyeco

Mr. George Tsaimos, Polyeco

Ms. Sandra Kiselicka, OHIS Company

Mr. Venelin Rangelov, UNOPS Representative

Prof. Dr. Svetomir Hadzi Jordanov, (National Consultant on site investigation supervision), Faculty of Technology and Metallurgy - Skopje

Ms. Slavjanka Pejcinovska- Andonova, (National Consultant on risk assessment analysis), Eko Mozaik – Consultancy Company

Ms. Menka Spirovska, (National subcontractor on technical tools development), Dekons-EMA, Consultancy company

Mr. Sreten Stojkovski (Project implementation support), State Environmental Inspectorate

Ms. Zorica Arsova-Sarafinovska (Project implementation support) - laboratory for environmental and human bio-monitoring, Institute for Public Health

Ms. Svetlana Pejovikj (National contractor on public awareness campaign) – Macedonian Ecologic Society

Prof. Dr. Marina Stefova (Project implementation support) - laboratory for environmental monitoring – Institute for Chemistry

Prof. Dr. Trajce Stafilov, (PSC member) – Institute for Chemistry

# Annex 3: Co-financing project expenditures

| | Interventions | Budget lines | Description | In-kind | w/m | Cash | w/m | Co-financing Total |
|---|---|---|---|---|---|---|---|---|
| 4 | **Outcome 1: Legal framework and institutional capacities to support, justify and evaluate the clean-up of the OHIS site contaminated by alpha-HCH, beta-HCH and lindane established, enhanced and enforced** | 11 | International Consultant | 0 | 0 | 0 | 0 | 0 |
| 5 | | 15 | National travel | 0 | 0 | 0 | 0 | 0 |
| 6 | | 17 | National consultant | 2,600 | 4 | 20,800 | 32 | 23,400 |
| 7 | | 21 | Subcontracts | 0 | 0 | 0 | 0 | 0 |
| 8 | | 33 | National meeting | 1,500 | 0 | 0 | 0 | 1,500 |
| 9 | | 35 | International Workshops | 0 | 0 | 0 | 0 | 0 |
| 10 | | 45 | Equipment | 0 | 0 | 0 | 0 | 0 |
| 11 | | 51 | Miscellaneous | 0 | 0 | 0 | 0 | 0 |
| 12 | | | ***Sub-total*** | ***4,100*** | ***4*** | ***20,800*** | ***32*** | ***24,900*** |
| 13 | **Output 1.1:** Legal acts and institutional and technical tools prepared to ensure the completion of the OHIS site clean up operations and building capacities towards contaminated sites management in general | 11 | International Consultant | | | | | 0 |
| 14 | | 15 | National travel | | | | | 0 |
| 15 | | 17 | National consultant | 2,600 | 4 | | | 2,600 |
| 16 | | 21 | Subcontracts | | | | | 0 |
| 17 | | 33 | National meeting | 1,500 | | | | 1,500 |
| 18 | | 35 | International Workshops | | | | | 0 |
| 19 | | 45 | Equipment | | | | | 0 |
| 20 | | 51 | Miscellaneous | | | | | 0 |
| 21 | **Output 1.2:** Technical tools (guidelines, procedures, instructions) for contaminated site management prepared and approved | 11 | International Consultant | | | | | 0 |
| 22 | | 15 | National travel | | | | | 0 |
| 23 | | 17 | National consultant | | | 7,800 | 12 | 7,800 |
| 24 | | 21 | Subcontracts | | | | | 0 |
| 25 | | 33 | National meeting | | | | | 0 |
| 26 | | 35 | International Workshops | | | | | 0 |
| 27 | | 45 | Equipment | | | | | 0 |
| 28 | | 51 | Miscellaneous | | | | | 0 |
| 29 | **Output 1.3:** Environmental officers, contaminated site owners and the potential contaminated site clean up operators trained on practical usage of the prepared guidelines, procedures and instructions | 11 | International Consultant | | | | | 0 |
| 30 | | 15 | National travel | | | | | 0 |
| 31 | | 17 | National consultant | | | 6,500 | 10 | 6,500 |
| 32 | | 21 | Subcontracts | | | | | 0 |
| 33 | | 33 | National meeting | | | | | 0 |
| 34 | | 35 | International Workshops | | | | | 0 |
| 35 | | 45 | Equipment | | | | | 0 |
| 36 | | 51 | Miscellaneous | | | | | 0 |
| 37 | **Output 1.4:**Laboratory personnel trained for POPs/HCH sampling and analyses standards and protocols | 11 | International Consultant | | | | | 0 |
| 38 | | 15 | National travel | | | | | 0 |
| 39 | | 17 | National consultant | | | 6,500 | 10 | 6,500 |
| 40 | | 21 | Subcontracts | | | | | 0 |
| 41 | | 33 | National meeting | | | | | 0 |
| 42 | | 35 | International Workshops | | | | | 0 |
| 43 | | 45 | Equipment | | | | | 0 |
| 44 | | 51 | Miscellaneous | | | | | 0 |

**Aleksandar Mickovski:**
2 staff will be assigned to participate in the development and the adoption of the technical guidelines and protocols (6 months assingment)

**Aleksandar Mickovski:**
10 persons from MoEPP will participate on the inventory and supervision training. Their average monthly salary is used to calculate for the total 1 work month for the entire project duration.

**Aleksandar Mickovski:**
10 persons to participate at the training. Their average monthly salary is used to calculate for the total 1 work month for the entire project duration.

| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | |
| 2 | **Interventions** | **Budget lines** | **Description** | | **In-kind** | **w/m** | **Cash** | **w/m** | **Co-financing Total** | | | | |
| 3 | | | | | | | | | | | | | |
| 45 | **Outcome 2: Characterization of the HCH contaminated site completed, risk assesedassessed and risk management options defined;** | 11 | International Consultant | | 0 | 0 | 0 | 0 | 0 | | | | |
| 46 | | 15 | National travel | | 0 | 0 | 0 | 0 | 0 | | | | |
| 47 | | 17 | National consultant | | 0 | 0 | 0 | 0 | 0 | | | | |
| 48 | | 21 | Subcontracts | | 1,100,000 | 0 | 1,245,000 | 0 | 2,345,000 | | | | |
| 49 | | 33 | National meeting | | 500 | 0 | 5,200 | 8 | 5,700 | | | | |
| 50 | | 35 | International Workshops | | 0 | 0 | 0 | 0 | 0 | | | | |
| 51 | | 45 | Equipment | | 0 | 0 | 0 | 0 | 0 | | | | |
| 52 | | 51 | Miscellaneous | | 0 | 0 | 0 | 0 | 0 | | | | |
| 53 | | | ***Sub-total*** | | ***1,100,500*** | ***0*** | ***1,250,200*** | ***8*** | ***2,350,700*** | | | | |
| 54 | **Output 2.1:** Site characterization, i.e. detailed site investigation completed by sampling and analyses based on the sampling plan developed during PPG | 11 | International Consultant | | | | | | 0 | | | | |
| 55 | | 15 | National travel | | | | | | 0 | | | | |
| 56 | | 17 | National consultant | | | | | | 0 | | | | |
| 57 | | 21 | Subcontracts | | | | | | 0 | | | | |
| 58 | | 33 | National meeting | | | | 1,300 | 2 | 1,300 | | | | |
| 59 | | 35 | International Workshops | | | | | | 0 | | | | |
| 60 | | 45 | Equipment | | | | | | 0 | | | | |
| 61 | | 51 | Miscellaneous | | | | | | 0 | | | | |
| 62 | **Output 2.2:** Survey of underground water for drinking and irrigation purposes conducted including installation of boreholes where needed | 11 | International Consultant | | | | | | 0 | | | | |
| 63 | | 15 | National travel | | | | | | 0 | | | | |
| 64 | | 17 | National consultant | | | | | | 0 | | | | |
| 65 | | 21 | Subcontracts | | | | | | 0 | | | | |
| 66 | | 33 | National meeting | | | | | | 0 | | | | |
| 67 | | 35 | International Workshops | | | | | | 0 | | | | |
| 68 | | 45 | Equipment | | | | | | 0 | | | | |
| 69 | | 51 | Miscellaneous | | | | | | 0 | | | | |
| 70 | **Output 2.3:** Current risk assessment analyses updated and the risk management options defined | 11 | International Consultant | | | | | | 0 | | | | |
| 71 | | 15 | National travel | | | | | | 0 | | | | |
| 72 | | 17 | National consultant | | | | | | 0 | | | | |
| 73 | | 21 | Subcontracts | | 1,100,000 | | 1,245,000 | | 2,345,000 | | | | |
| 74 | | 33 | National meeting | | 500 | | 3,900 | 6 | 4,400 | | | | |
| 75 | | 35 | International Workshops | | | | | | 0 | | | | |
| 76 | | 45 | Equipment | | | | | | 0 | | | | |
| 77 | | 51 | Miscellaneous | | | | | | 0 | | | | |
| 78 | **Outcome 3: Contaminated site clean up plan and strategies established and key stakeholders including local communities ready to cooperate** | 11 | International Consultant | | 0 | 0 | 0 | 0 | 0 | | | | |
| 79 | | 15 | National travel | | 0 | 0 | 0 | 0 | 0 | | | | |
| 80 | | 17 | National consultant | | 0 | 0 | 0 | 0 | 0 | | | | |
| 81 | | 21 | Subcontracts | | 0 | 0 | 0 | 0 | 0 | | | | |
| 82 | | 33 | National meeting | | 3,900 | 6 | 0 | 0 | 3,900 | | | | |
| 83 | | 35 | International Workshops | | 0 | 0 | 0 | 0 | 0 | | | | |
| 84 | | 45 | Equipment | | 1,000,000 | 0 | 0 | 0 | 1,000,000 | | | | |
| 85 | | 51 | Miscellaneous | | 0 | 0 | 0 | 0 | 0 | | | | |
| 86 | | | ***Sub-total*** | | ***1,003,900*** | ***6*** | ***0*** | ***0*** | ***1,003,900*** | | | | |
| 87 | **Output 3.1:** Contaminated site and underground water management plan prepared for prevention of further contamination and adverse human health impact | 11 | International Consultant | | | | | | 0 | | | | |
| 88 | | 15 | National travel | | | | | | 0 | | | | |
| 89 | | 17 | National consultant | | | | | | 0 | | | | |
| 90 | | 21 | Subcontracts | | | | | | 0 | | | | |
| 91 | | 33 | National meeting | | | | | | 0 | | | | |
| 92 | | 35 | International Workshops | | | | | | 0 | | | | |
| 93 | | 45 | Equipment | | | | | | 0 | | | | |
| 94 | | 51 | Miscellaneous | | | | | | 0 | | | | |
| 95 | **Output 3.2:** Consensus among the general public and major stakeholders built for the establishment/improvement of OHIS contaminated site | 11 | International Consultant | | | | | | 0 | | | | |
| 96 | | 15 | National travel | | | | | | 0 | | | | |
| 97 | | 17 | National consultant | | | | | | 0 | | | | |
| 98 | | 21 | Subcontracts | | | | | | 0 | | | | |
| 99 | | 33 | National meeting | | 3,900 | 6 | | | 3,900 | | | | |
| 100 | | 35 | International Workshops | | | | | | 0 | | | | |
| 101 | | 45 | Equipment | | | | | | 0 | | | | |
| 102 | | 51 | Miscellaneous | | | | | | 0 | | | | |
| 103 | **Output 3.3** City development plan and zoning of OHIS site reviewed and revised | 11 | International Consultant | | | | | | 0 | | | | |
| 104 | | 15 | National travel | | | | | | 0 | | | | |
| 105 | | 17 | National consultant | | | | | | 0 | | | | |
| 106 | | 21 | Subcontracts | | | | | | 0 | | | | |
| 107 | | 33 | National meeting | | | | | | 0 | | | | |
| 108 | | 35 | International Workshops | | | | | | 0 | | | | |
| 109 | | 45 | Equipment | | 1,000,000 | | | | 1,000,000 | | | | |
| 110 | | 51 | Miscellaneous | | | | | | 0 | | | | |

**Aleksandar Mickovski:**
2 inspectors participated at the monitoring and inspections of the proces of site characterisation for 1 month

**Aleksandar Mickovski:**
Costs for planning of the decontamination

**Aleksandar Mickovski:**
Amount of the feasibility studies (Eptisa, Enacon, D'appolonia

**Aleksandar Mickovski:**
4 administratve staff and 2 inspectors participated in the preparation of risk assessment analyses.

**Aleksandar Mickovski:**
Contaminated lands of OHIS site in Skopje (Area)(100.000 m2 x 10$)

| | Interventions | Budget lines | Description | In-kind | w/m | Cash | w/m | Co-financing Total |
|---|---|---|---|---|---|---|---|---|
| 111 | **Outcome 4: Clean up operation initiated and the execution mechanism in place to sustain the clean up operations beyond the project period** | 11 | International Consultant | 0 | 0 | 0 | 0 | 0 |
| 112 | | 15 | National travel | 0 | 0 | 0 | 0 | 0 |
| 113 | | 17 | National consultant | 14,300 | 22 | 2,600 | 4 | 16,900 |
| 114 | | 21 | Subcontracts | 25,000 | 0 | 65,000 | 0 | 90,000 |
| 115 | | 33 | National meeting | 750 | 0 | 10,400 | 16 | 11,150 |
| 116 | | 35 | International Workshops | 0 | 0 | 0 | 0 | 0 |
| 117 | | 45 | Equipment | 0 | 0 | 7,443,500 | 0 | 7,443,500 |
| 118 | | 51 | Miscellaneous | 0 | 0 | 0 | 0 | 0 |
| 119 | | | ***Sub-total*** | ***40,050*** | ***22*** | ***7,521,500*** | ***20*** | ***7,561,550*** |
| 120 | **Output 4.1:ToR for the selection of the technology/ical service providers for the HCH contaminated site remediation prepared** | 11 | International Consultant | | | | | 0 |
| 121 | | 15 | National travel | | | | | 0 |
| 122 | | 17 | National consultant | | | | | 0 |
| 123 | | 21 | Subcontracts | | | | | 0 |
| 124 | | 33 | National meeting | | | 2,600 | 4 | 2,600 |
| 125 | | 35 | International Workshops | | | | | 0 |
| 126 | | 45 | Equipment | | | | | 0 |
| 127 | | 51 | Miscellaneous | | | | | 0 |
| 128 | **Output 4.2: Technology/ical service providers selected** | 11 | International Consultant | | | | | 0 |
| 129 | | 15 | National travel | | | | | 0 |
| 130 | | 17 | National consultant | | | 2,600 | 4 | 2,600 |
| 131 | | 21 | Subcontracts | 25,000 | | 65,000 | | 90,000 |
| 132 | | 33 | National meeting | | | | | 0 |
| 133 | | 35 | International Workshops | | | | | 0 |
| 134 | | 45 | Equipment | | | | | 0 |
| 135 | | 51 | Miscellaneous | | | | | 0 |
| 136 | **Output 4.3:** Parties (private sectors, state owned companies or PPP contractual agreement form) interested as potential operators identified and investors, as potential clean up operators consulted | 11 | International Consultant | | | | | 0 |
| 137 | | 15 | National travel | | | | | 0 |
| 138 | | 17 | National consultant | | | | | 0 |
| 139 | | 21 | Subcontracts | | | | | 0 |
| 140 | | 33 | National meeting | | | | | 0 |
| 141 | | 35 | International Workshops | | | | | 0 |
| 142 | | 45 | Equipment | | | | | 0 |
| 143 | | 51 | Miscellaneous | | | | | 0 |
| 144 | **Output 4.4:** Operating entiry selected and established | 11 | International Consultant | | | | | 0 |
| 145 | | 15 | National travel | | | | | 0 |
| 146 | | 17 | National consultant | | | | | 0 |
| 147 | | 21 | Subcontracts | | | | | 0 |
| 148 | | 33 | National meeting | | | | | 0 |
| 149 | | 35 | International Workshops | | | | | 0 |
| 150 | | 45 | Equipment | | | | | 0 |
| 151 | | 51 | Miscellaneous | | | | | 0 |
| 152 | **Output 4.5:** Clean up operation/remediation and business plan prepared by the selected operating entity in consultation with thetechnical providers and all stakeholders and its approval by the operating entity | 11 | International Consultant | | | | | 0 |
| 153 | | 15 | National travel | | | | | 0 |
| 154 | | 17 | National consultant | | | | | 0 |
| 155 | | 21 | Subcontracts | | | | | 0 |
| 156 | | 33 | National meeting | 750 | | | | 750 |
| 157 | | 35 | International Workshops | | | | | 0 |
| 158 | | 45 | Equipment | | | | | 0 |
| 159 | | 51 | Miscellaneous | | | | | 0 |
| 160 | **Output 4.6:** Needed permits for the technology treatment installation (EIA, IPPC) obtained | 11 | International Consultant | | | | | 0 |
| 161 | | 15 | National travel | | | | | 0 |
| 162 | | 17 | National consultant | 2,600 | 4 | | | 2,600 |
| 163 | | 21 | Subcontracts | | | | | 0 |
| 164 | | 33 | National meeting | | | | | 0 |
| 165 | | 35 | International Workshops | | | | | 0 |
| 166 | | 45 | Equipment | | | | | 0 |
| 167 | | 51 | Miscellaneous | | | | | 0 |
| 168 | **Output 4.7:** A monitoring program,system established in the location | 11 | International Consultant | | | | | 0 |
| 169 | | 15 | National travel | | | | | 0 |
| 170 | | 17 | National consultant | | | | | 0 |
| 171 | | 21 | Subcontracts | | | | | 0 |
| 172 | | 33 | National meeting | | | 7,800 | 12 | 7,800 |
| 173 | | 35 | International Workshops | | | | | 0 |
| 174 | | 45 | Equipment | | | | | 0 |
| 175 | | 51 | Miscellaneous | | | | | 0 |
| 176 | **Output 4.8:** Clean up operation executed | 11 | International Consultant | | | | | 0 |
| 177 | | 15 | National travel | | | | | 0 |
| 178 | | 17 | National consultant | 11,700 | 18 | | | 11,700 |
| 179 | | 21 | Subcontracts | | | | | 0 |
| 180 | | 33 | National meeting | | | | | 0 |
| 181 | | 35 | International Workshops | | | | | 0 |
| 182 | | 45 | Equipment | | | 7,443,500 | | 7,443,500 |
| 183 | | 51 | Miscellaneous | | | | | 0 |

**Aleksandar Mickovski:**
2 persons from MoEPP participated in the drafting and revision of the ToR

**Aleksandar Mickovski:**
2 staff are expected to be involved for the total 2 work months for the entire project duration.

**Aleksandar Mickovski:**
Costs for the pilot treatment of Setcar and K+S

**Aleksandar Mickovski:**
Costs of the pilot treatment provided by OHIS

**Aleksandar Mickovski:**
2 inspectors participated at the monitoring of the successfulness of the site remediation, including the site preparatory activities (6 months assingment)

**Aleksandar Mickovski:**
Cash contribution from the Government and other donors (Norway Embassy and the IPA programme)

| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | |
| 2 | Interventions | Budget lines | Description | | In-kind | w/m | Cash | w/m | Co-financing Total | | | | |
| 3 | | | | | | | | | | | | | |
| 184 | **Outcome 5: Project management structure** | 11 | International Consultant | | 0 | 0 | 0 | 0 | 0 | | | | |
| 185 | **established, and monitoring and evaluation** | 15 | National travel | | 0 | 0 | 0 | 0 | 0 | | | | |
| 186 | **conducted** | 17 | National consultant | | 0 | 0 | 5,700 | 4 | 5,700 | | | | |
| 187 | | 21 | Subcontracts | | 0 | 0 | 0 | 0 | 0 | | | | |
| 188 | | 33 | National meeting | | 0 | 0 | 3,900 | 6 | 3,900 | | | | |
| 189 | | 35 | International Workshops | | 0 | 0 | 0 | 0 | 0 | | | | |
| 190 | | 45 | Equipment | | 0 | 0 | 0 | 0 | 0 | | | | |
| 191 | | 51 | Miscellaneous | | 0 | 0 | 0 | 0 | 0 | | | | |
| 192 | | | ***Sub-total*** | | ***0*** | ***0*** | ***9,600*** | ***10*** | ***9,600*** | | | | |
| 193 | **Output 5.1:** Project results monitored | 11 | International Consultant | | | | | | 0 | | | | |
| 194 | and reported | 15 | National travel | | | | | | 0 | | | | |
| 195 | | 17 | National consultant | | | | 1,300 | 2 | 1,300 | | | | |
| 196 | | 21 | Subcontracts | | | | | | 0 | | | | |
| 197 | | 33 | National meeting | | | | 3,900 | 6 | 3,900 | | | | |
| 198 | | 35 | International Workshops | | | | | | 0 | | | | |
| 199 | | 45 | Equipment | | | | | | 0 | | | | |
| 200 | | 51 | Miscellaneous | | | | | | 0 | | | | |
| 201 | **Output 5.2:** Project evaluated meeting | 11 | International Consultant | | | | | | 0 | | | | |
| 202 | the GEF's evaluation criteria | 15 | National travel | | | | | | 0 | | | | |
| 203 | | 17 | National consultant | | | | 4,400 | 2 | 4,400 | | | | |
| 204 | | 21 | Subcontracts | | | | | | 0 | | | | |
| 205 | | 33 | National meeting | | | | | | 0 | | | | |
| 206 | | 35 | International Workshops | | | | | | 0 | | | | |
| 207 | | 45 | Equipment | | | | | | 0 | | | | |
| 208 | | 51 | Miscellaneous | | | | | | 0 | | | | |
| 209 | **Project Management Costs** | 11 | International Consultant | | | | | | 0 | | | | |
| 210 | | 15 | National travel | | | | | | 0 | | | | |
| 211 | | 17 | National consultant | | | | | | 0 | | | | |
| 212 | | 21 | Subcontracts | | | | | | 0 | | | | |
| 213 | | 33 | National meeting | | 3,000 | | | | 3,000 | | | | |
| 214 | | 35 | International Workshops | | | | | | 0 | | | | |
| 215 | | 45 | Equipment | | | | | | 0 | | | | |
| 216 | | 51 | Miscellaneous | | 36,000 | | 14,400 | | 50,400 | | | | |
| 217 | | | ***Sub-total*** | | ***39,000*** | ***0*** | ***14,400*** | ***0*** | ***53,400*** | | | | |
| 218 | **Total:** | | | | 2,187,550 | | 8,816,500 | | 11,004,050 | | | | |

**Aleksandar Mickovski:**
2 senior officers from MoEPP to be part of steering committee for total 1 month engagement

**Aleksandar Mickovski:**
It is expected that 3 persons from MoEPP to be part of steering committee for total 2 months engagement

# Annex 4: Comments to co-financing project expenditures

| Excel line | The evaluation team's questions to co-financing in-kind and cash contributions | UNIDO' response | Evaluation team's comment |
|---|---|---|---|
| 23 | How can staff assigned to work on the project be cash contribution? | This was agreed during the project preparation in 2014, in consultation with UNIDO and the Macedonian Government. It refers to the salary value that the Government pays its employees while they work on the project activities.<br>The total value throughout the project is relatively minor, and can be transferred to the in-kind category, if needed. | In the opinion of the evaluation team staff salary cannot be regarded as cash contribution and should be included in the in-kind contribution unless additional staff is employed specifically for the project (e.g. PMU staff), which does not seem to be the case |
| 31 | How can participation in training be cash contribution? | The same principle as above applies (line 23). | See line 23 |
| 39 | How can participation in training be cash contribution? | The same principle as above applies (line 23). | See line 23 |
| 58 | How can monitoring and inspection be cash contribution? | The same principle as above applies (line 23). | See line 23 |
| 73 | Cell E73: This in-kind contribution is supposedly connected to Cell G73 (see below) – how can contributions before project start be included? | The feasibility studies are necessary part of the project. Rather than repeating it under this project, the previous studies were used and the cost for them accepted as co-financing.<br>The Government owns the studies, they have a certain value and the Government transferred that value to the project. | The evaluation team has not adjusted the cell in Annex 3 for this cost although the cost was materialised before project start |
| 73 | Cell G73: How can costs for feasibility studies performed before project start be part of cash contribution (the studies were paid for by EAR, the Czech government | The same principle as above applies (line 73).<br>The Government owns the studies, they have a certain value and the Government transferred that value to the project. | This should not be regarded as cash contribution from the government since the studies were paid for by donors. |

| Excel line | The evaluation team's questions to co-financing in-kind and cash contributions | UNIDO' response | Evaluation team's comment |
|---|---|---|---|
| | and the Italian government)? – presumably approved by UNIDO although no documentation has been identified | | At best the inclusion could be regarded as in-kind contribution and has as such been included in the adjusted Annex 3 |
| 74 | How can staff assigned to work on the project be cash contribution? | The same principle as above applies (line 23). | See line 23 |
| 109 | It seems that the value of the contaminated site is included as in-kind contribution. Is that appropriate? | Yes. The site was hosting various economic activities for over 40 years; these were stopped due to the clean-up, representing a direct loss of revenue, estimated at 10US$/$m^2$ during the project duration. | OHIS went bankrupt and was sold to a private investor. There is no indication of any economic activities being stopped due to the project |
| 124 | How can staff assigned to work on the project be cash contribution? | The same principle as above applies (line 23). | See line 23 |
| 130 | How can staff assigned to work on the project be cash contribution? | The same principle as above applies (line 23). | See line 23 |
| 131 | Cell E131: If OHIS performed some of the pilot treatment and if OHIS was owned by the government at the time this cost could be regarded as in-kind contribution. | | |
| 131 | Cell G131: The understanding is that these costs are covered by the contractors so how can they be part of co-financing? | The contractors were paid for the pilot treatment. | It has been confirmed to the evaluation team that the contractors were not paid, and the cost should therefore not be included as co-financing |
| 172 | How can monitoring and inspection be cash contribution? | The same principle as above applies (line 23). | See line 23 |

| Excel line | The evaluation team's questions to co-financing in-kind and cash contributions | UNIDO' response | Evaluation team's comment |
|---|---|---|---|
| 182 | This amount has been made available to the UNOPS continuation of the project, not the UNIDO project. Also, it includes contributions from Norway and IPA (approximately USD 2 mill. and 2.8 mill. respectably). Is that acceptable as co-financing? | Yes. The project aimed at raising this amount for the clean-up of the smaller site. The funds were unfortunately too late in arriving, so they could not be merged with the GEF funds in time: after two extensions, the project was to be closed. However, the funds are a direct result of the project and the completion of this work with the current set up was just assigned to UNOPS. | If the co-financing had been made available in a timely fashion this would not have been an issue.<br>At the time of writing this, the UNIDO project is still ongoing and the first part of the UNOPS project has been finished and the second part has been tendered and awarded. |
| 195 | How can staff assigned to work on the project be cash contribution? | The same principle as above applies (line 23). | See line 23 |
| 197 | How can staff assigned to work on the project be cash contribution? | The same principle as above applies (line 23). | See line 23 |

# Annex 5: List of reviewed documents

1. Assessment of the sampling activities, preliminary test results and their potential implications
2. Chemical analysis of OHIS' related samples
3. Chemical analysis of water samples
4. Evaluation of the Report on Collected, prepared for transport and delivered samples submitted by Polyeco to UNIDO
5. Cost-Benefit Analysis for Remediation of the OHIS Industrial Site
6. Risk assessment analysis update developed by Emgrisa
7. Review of POLYECO Work Plan
8. CEO Endorsement Document for the project
9. Minutes of meeting from the SCM held on 04.09.2015, 08.10.2015, 02.03.2016, 23.01.2017, 31.05.2018, 25.12.2020, and MoM from the meeting with UNOPS representative Venelin Rangelov on 18.06.2019
10. Rules and procedures of the Project Steering Committee
11. List of indicators (GEF tracking tools, SCD Indicators)
12. Monthly progress reports, Suzana Andonova and Aleksandar Mickovski
13. Annual PIR reports
14. Part 3, Standard Operating Procedures, Developed by TAUW
15. Part 1, Assessing contaminated sites, Developed by TAUW
16. Part 2, Remediation of contaminated sites, Developed by Tauw
17. Mid-term evaluation report for the project
18. Co-financing sheets including Co-financing TE Final
19. OHIS Feasibility Study – ENACON
20. OHIS Site remediation Project – Conceptual Design – D'Appolonia
21. Draft legal documents regarding legal base for contaminated site including Amended Law on Environment in 2021
22. Schemes presenting the management of contaminated sites, developed by Ekomozaik
23. Assessment report on contamination site management
24. Public Call and ToR for selection of contractor for site remediation