REPUBLIC OF TÜRKİYE
MINISTRY OF ENVIRONMENT,
URBANIZATION AND CLIMATE CHANGE

Enhancing Environmental Performance in the Expanded and Extruded Polystyrene Foam Industries in Türkiye

"HBCD Project"

GEF ID: 10082

Mid Term Review Report

Prepared by
Dr. Tülay Çağlayan ÖZLÜ

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Acronyms and Abbreviations

EPS	Expanded Polystyrene Foam
GEF	Global Environment Facility
EPSDER	National EPS Foundation
HBCD/HBCDD	Hexabromocyclododecane
IA	Implementing Agency
IAC	International Advisory Consultant
M&E	Monitoring and Evaluation
MoEUCC	Ministry of Environment, Urbanization and Climate Change
MoIT	Ministry of Industry and Technology
MoT	Ministry of Trade
MTR	Mid Term Review
NC	National Consultant
PC	Project Coordinator
PEE	Project Executing Entity
PIR	Project Implementation Review
POP	Persistent Organic Pollutant
PRODOC	Project Document
PSC	Project Steering Committee
SC	Stockholm Convention
SMART	Specific, Measurable, Achievable, Relevant and Time-bound
TSE	Turkish Standards Institute
TVR	Technical Verification Report
UNIDO	United Nations Industrial Development Organization
XPS	Extruded Polystyrene Foam

Executive Summary

The Global Environmental Facility (GEF) is providing support for the execution of a project titled "Enhancing Environmental Performance in the Expanded and Extruded Polystyrene Foam Industries in Türkiye" (the Project). The primary objective of the Project is to eliminate the use of a flame retardant (FR) known as Hexabromocyclododecane (HBCD or HBCDD) in the production of expanded polystyrene (EPS) and extruded polystyrene (XPS) foam, replacing it with environmentally sustainable alternatives.

The Republic of Türkiye Ministry of Environment, Urbanization and Climate Change (MoEUCC) is responsible for implementing the Project in the capacity of the Project Executing Entity (PEE) under a procurement contract effective as of December 22nd, 2021. UNIDO serves as the Project Implementing Agency (IA), overseeing the disbursement of the approved GEF grant to the MoEUCC.

The project implementation has exceeded half of the 36-month project duration. In accordance with the Monitoring and Evaluation Policy mandated by the Global Environmental Facility (GEF), MoEUCC has engaged in the procurement of an independent Midterm Review (MTR) for the project in December 2023. This review has been undertaken by Dr. Tülay Çağlayan ÖZLÜ, utilizing a comprehensive methodology involving extensive document analysis, stakeholder surveys, and interviews.

The fundamental objective of the Midterm Review (MTR) is to ensure that the project is progressing satisfactorily and is poised to achieve its intended outcomes to the fullest extent by the project's conclusion. The evaluation process, as outlined in the guidance document for conducting Midterm Reviews of UNDP-supported, GEF-funded projects[1], focuses on four key assessment domains: 1) project strategy; 2) progress towards outcomes; 3) project implementation and adaptive management; and 4) sustainability. The MTR furnishes ratings and assessments within these domains, as succinctly outlined in the table below. All evaluations are determined based on comprehensive research findings, carefully considered within the specific criteria stipulated in the MTR guidance document.

[1] http://web.undp.org/evaluation/documents/guidance/GEF/mid-term/Guidance_Midterm%20Review%20_EN_2014.pdf

MTR Ratings & Achievement Summary Table

for the full-sized project Enhancing Environmental Performance in the Expanded and Extruded Polystyrene Foam Industries in Türkiye

Measure		MTR Rating	Achievement Description *(italicized text below shows relevant wording from the rating rubrics in the MTR guidance document)*
Project Strategy		N/A	The project strategy is well designed in accordance with the GEF-7 Chemicals and Wastes focal area and associated strategy and within that under Chemicals and Wastes Industrial Chemicals Program (CW 1-1) which aims at strengthening sound management of industrial chemicals, and their wastes through better control and reduction and/or elimination. It allows Türkiye to eliminate the use of a POPs listed in Annex A of the Stockholm Convention thus supporting the country's compliance with its obligations under this international agreement. This is aimed to be be accomplished by introducing the application of internationally competitive technologies, techniques and approaches for eliminating HBCD in processes and products, namely EPS and XPS foam insulation. These sectors are important to the country in ensuring public safety through using fire resistant building materials and achieving increased energy efficiency in buildings and infrastructure generally.
Progress Toward Results	**Project Objective:** To promote the replacement of persistent organic pollutants with environmentally sound alternatives in the EPS and XPS foam industries in Türkiye.	**Highly Satisfactory**	*The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as "good practice".* The project is on track to fulfill or overfulfill its most important target (elimination of the use of HBCD in EPS and XPS sectors). According to TVRs, necessary investments have been made by the producers and use of HBCD was terminated in EPS sector (four producers) in 2019 and in XPS sector (six producers) in 2020.
	Outcome 1.1: Up to date non-proprietary information respecting HBCD alternatives and facilitated access to them provided and broad stakeholder awareness on the issue communicated.	**Satisfactory**	*The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.* Satisfactory (S) The achieved result indicates significant progress, with updated information on alternatives being communicated to enterprises during the technical verification process by the National Consultant (NC). This dissemination of information is not only a continuation of activities initiated during the Pre-Project Phase (PPG) but also extends into activities conducted by the Project Management Unit (PMU) as part of Environmental Assessment (EA) endeavors. Notably, the NC has diligently prepared a working document encompassing an international literature review and references. This document is scheduled to be addressed comprehensively during the planned dissemination workshop.

		The achieved result demonstrates a commendable alignment with the targeted objective. The comprehensive documentation of international references, coupled with the proactive dissemination of alternative information to stakeholders during both technical verification and EA activities, underscores a thorough and collaborative approach. The forthcoming dissemination workshop is poised to further enhance the outreach and impact of the information gathered, contributing significantly to the project's overarching goals.
Outcome 1.2: Regulatory capacity support for control and enforcement to sustained HBCD phase out delivered.	**Satisfactory**	*The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.* The achieved result indicates active efforts in addressing these issues, with discussions yielding outcomes that are currently under consideration for the enhancement of the existing POPs chemicals management framework. This process is being meticulously executed through the MoEUCC, specifically by the Department of Priority Chemicals. Notably, a comprehensive list delineating specific areas of improvement within the POPs chemicals management framework has been delineated. The achieved result aligns effectively with the targeted objective, as evidenced by the ongoing actions undertaken by MOEUCC in collaboration with relevant agencies. The delineation of specific areas for strengthening the regulatory framework demonstrates a conscientious approach to address identified gaps comprehensively. This outcome signifies a proactive and strategic effort toward improving regulatory control measures within the chemicals management framework, particularly in the context of POPs and HBCD.
Outcome 1.3: Measures for the control and environmentally sound management of HBCD containing waste implemented.	**Satisfactory**	*The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.* The target aimed at initiating the development of a national strategy for the management of waste containing Persistent Organic Pollutants (POPs), including Hexabromocyclododecane (HBCD). The achieved result indicates substantive progress, as the initiation of the national strategy development has commenced. Furthermore, the scope of the strategy study, specifically tailored for the management of POPs waste, including HBCD, has been delineated. Notably, a Terms of Reference (ToR) has been meticulously prepared to engage international experts integral to this study, and the procurement process for their employment has been set into motion. This outcome reflects a robust and systematic approach toward achieving the target, underscoring a comprehensive strategy formulation encompassing both national and international expertise.

Outcome 2.1: Preblended polystyrene (PS) producers have required technical information and capability to complete selection and production of alternative flame retardant production.	**Satisfactory**	*The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.* The target aimed at ensuring that all four pre-blended Polystyrene (PS) producers utilize international and national expertise, technical information, and commercial contacts to successfully phase out HBCD. The achieved result signifies notable progress, as all four pre-blended PS producers have not only demonstrated their capacity and knowledge but have also operated competitively with environmentally sound alternatives. The engagement of these producers extends beyond the initial replacement of HBCD, focusing on the potential evolution of new and even more environmentally sound alternatives. It is noteworthy that, at the enterprise level, the final end-of-project target is effectively complete, showcasing a successful transition toward sustainable alternatives and the continued commitment to environmentally responsible practices within the PS production sector.
Outcome 2.2: National EPS association (EPSDER) is technically supported in its programming to provide collective information and supporting laboratory capability for members on the use of alternative flame retardant in all stages of EPS production.	**Satisfactory**	*The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.* EPSDER provides the EPS sector with access to common and current technical and operational information on HBCD alternative information to eliminate HBCD usage and maintain the domestic EPS sectors competitive position after completing elimination inclusive of supporting laboratory capability available to members.
Outcome 2.3: Complete phase out of HBCD use in domestic production of pre-blended polystyrene production (975 t HBCD/year) used in the EPS sector directed to national markets is achieved.	**Highly Satisfactory**	*The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as "good practice".* All mid-term targets and even the end-of-project targets have already been achieved in terms of elimination of HBCD use in EPS sector.

Outcome 3.1: XPS producers have required technical information and capability to complete selection and production of alternative flame retardant containing production.	**Satisfactory**	*The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.* Based on the information from the verification sources, all six (6) participating XPS producers have been offered and as required are utilizing international/ national expertise, technical information and commercial contacts to complete elimination of HBCD.
Outcome 3.2: National XPS association (IZODER) is technically supported in its programming to provide collective information for members on the use of alternative flame retardant in all stages of XPS.	**Satisfactory**	*The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.* *Based on the information from sources of verification, mid-term targets seem to be achieved.*
Outcome 3.3: Complete phase out of HBCD use in domestic production of XPS production (705 t HBCD/year) used in the XPS sector is achieved.	**Highly Satisfactory**	*The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as "good practice".* All mid-term targets and even the end-of-project targets have already been achieved in terms of elimination of HBCD use in XPS sector.
Outcome 4.1: Outcomes from project activities assessed and lessons learnt disseminated for sustainable replication.	**Satisfactory**	*The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.* Various project management and monitoring techniques and reporting mechanisms have been implemented and are being actively used. Some recommendations to further improve those are given in the Recommendations Table below.

Project Implementation & Adaptive Management	**Satisfactory**	*Implementation of most of the seven components is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action.* The project team is well constituted and managed, with a strong core of skills and excellent working relations with all partners. The project has been effectively administered, demonstrating improved performance over the past ten months, successfully attaining the majority of its objectives within the designated time frame and budget constraints. Notably, despite significant turnover within the project team, including changes in the project coordinator, project assistant, and procurement expert roles, the project has maintained its momentum. Areas for refinement exist, particularly in optimizing the utilization of project management software tools, elevating the quality of reporting, and implementing more meticulous monitoring of project activities, aligning with widely accepted good practices and conventions.
Sustainability	**Likely**	*Negligible risks to sustainability, with key outcomes on track to be achieved by the project's closure and expected to continue into the foreseeable future* The project has already achieved high-impact outcomes, and the outstanding tasks within the remaining areas of work can be successfully concluded by the project's conclusion.

Based on its assessment in each of these four areas, the MTR report concludes with a set of recommendations, as summarized in the table below.

Summary of MTR Recommendations

	Recommendation	Entity Responsible
A	*Project Management*	
A1	**Enhance the Work Plan by providing a more detailed account of the remaining activities within the project. The existing Work Plan in Excel is characterized by a lack of specificity, as it primarily offers a generalized overview with detailed information limited solely to the output level. It is imperative that the work packages, tasks, and subtasks essential for**	PMU

	generating these outputs be delineated in a hierarchical structure, incorporating pertinent details such as duration, deadlines, budgetary considerations, and the respective individuals responsible for their execution.	
A2	**It is advisable to explore the utilization of project management software tools such as Jira, Microsoft Project, or Basecamp. These platforms offer interactive dashboards for swift monitoring of overall project and individual progress statuses. Additionally, they provide Gantt timeline views facilitating the identification of impending due dates, potential roadblocks, or project progression. Furthermore, these tools enable effective budget tracking, ensuring expenditure control and adherence to project timelines. Presently, project-related information, including the Work Plan, is housed in Excel, a platform not specifically designed for comprehensive project management purposes.**	PMU
A3	**In monthly progress reports, create a dashboard to closely monitor the progress in the fulfillment of incomplete indicators as identified in the MTR report.**	PMU
A4	**In monthly progress reports, use widely accepted color codes to identify planned, on-going and completed tasks. Current color code used in the monthly progress reports does not comply with widely accepted project management conventions.**	PMU
A5	**Identify the root causes of occasional slow decision making challenges and approval procedures which caused delays in engagement of experts, recruitment of project staff and preparation and finalization of contracts and implement a targeted strategy aimed at expediting the decision-making and approval process.**	PMU, MoEUCC
B	*Component 1*	
B1	**Facilitate the expeditious advancement of training of 450 MoEUCC / customs inspection staff and 320 product standards inspectors on HBCD detection and addition of analytical capacity in TSE in place and 300 product analysis undertaken, which currently lag behind the mid-term and end-of-project targets, over the remaining six months of the project's duration. Employ meticulous planning, prompt execution, and rigorous monitoring to ensure the attainment of the specified targets by the conclusion of the project.**	PMU, MoEUCC, TSE, Customs Administration
B2	**To enhance the effectiveness and broader reach of information dissemination pertaining to the project, it is recommended to implement the following measures: Firstly, update the project webpage regularly at https://kalicikirleticiler.com, incorporating recent developments and news related to the project. Additionally, ensure the inclusion of the HBCD project among the ongoing projects in the English version of the webpage. Secondly, augment awareness by expanding the project's presence on social media platforms, including but not limited to Youtube, Linkedin, Facebook, Twitter, and Instagram. Presently, there are only two subscribers to the @kalicikirleticiler Youtube channel, suggesting the potential for growth and increased visibility across diverse social media channels.**	PMU and MoEUCC
B3	**Facilitate the expeditious advancement of dissemination and training activities (workshops) for the EPS and XPS sectors, which currently lag behind the mid-term and end-of-project targets, over the remaining six months of the project's duration. Employ meticulous planning, prompt execution, and rigorous monitoring to ensure the attainment of the**	PMU, MoEUCC

	specified targets by the conclusion of the project.	
C	*Component 2*	
C1	**Make sure that at least three training events and information dissemination activities have been completed by the end of the project.**	PMU
D	*Component 3*	
D1	**Ensure the timely execution of the second and third technical workshops in February, as well as the fourth technical workshop in March, with the participation of all İZODER members.**	PMU, İZODER
E	*Component 4*	
E1	**Facilitate the prompt recruitment of the International POPs/Hazardous Waste Consultant to ensure sufficient time for the development of the environmentally sound management roadmap of wastes containing or contaminated with persistent organic pollutants including HBCD finalized within the constrained timeframe leading to the conclusion of the project.**	PMU, MoEUCC
E2	**Conduct a risk analysis with regard to the possibility of not being able to reach the Gender Mainstreaming targets set forth for the end of the project and develop a mitigation plan.**	PMU, Gender Mainstreaming Expert

I. Introduction: Purpose, Scope, and Methodology

The Global Environmental Facility (GEF) is providing support for the execution of a project titled "Enhancing Environmental Performance in the Expanded and Extruded Polystyrene Foam Industries in Türkiye" (the Project). The primary objective of the Project is to eliminate the use of a flame retardant (FR) known as Hexabromocyclododecane (HBCD or HBCDD) in the production of expanded polystyrene (EPS) and extruded polystyrene (XPS) foam, replacing it with environmentally sustainable alternatives.

The Republic of Türkiye Ministry of Environment, Urbanization and Climate Change (MoEUCC) is responsible for implementing the Project in the capacity of the Project Executing Entity (PEE) under a procurement contract effective as of December 22nd, 2021. UNIDO serves as the Project Implementing Agency (IA), overseeing the disbursement of the approved GEF grant to the MoEUCC.

Purpose and Scope of the Midterm Review

The project started on July 8th, 2021 and now getting closer to the end of its 36-month implementation period due June 30th, 2024. . As required by the GEF's Monitoring and Evaluation Policy, MoEUCC has commissioned an independent Midterm Review (MTR) of the project.

As noted in the guidance document on conducting Midterm Reviews of UNIDO-supported, GEF-funded projects[2] (hereinafter referred to as "the MTR guidance document"), the primary purpose of the MTR is to help ensure that the project is on track to achieve maximum results by its completion. The MTR has several focus areas.

- Review of project strategy as defined in the Project Document
- Assessment of progress towards targeted results
- Monitoring of implementation and adaptive management to improve outcomes
- Early identification of challenges and risks to sustainability
- Emphasis on supportive recommendations, including corrective actions as needed.

The Midterm Review (MTR) process underscores a participatory and collaborative methodology, wherein the MTR consultant closely collaborates with the project team, incorporating significant input from national partners and UNIDO. The MTR represents a pivotal mechanism and, indeed, the final substantial opportunity within the project duration to identify and justify necessary adjustments to planned activities and management structures. This is done to ensure the optimal realization of targeted outcomes and objectives. Subsequently, the project team is tasked with formulating a management response to address the recommendations put forth by the MTR.

The MTR encompasses assessments of the project's progress concerning results (as outlined in the Project Results Framework and the GEF Tracking Tool), project implementation and management, as well as sustainability. Annex B comprises an evaluative matrix, established at the commencement of the research phase of the MTR process, providing a concise summary of all review criteria, indicators, sources, and methodologies employed in determining the ratings.

[2] *Guidance for Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects.* UNDP-GEF Directorate, 2014.

It is essential to underscore that the Mid-Term Review (MTR) should not be perceived merely as a evaluative process; instead, it is a constructive initiative aimed at providing the project with valuable insights from its prior activities. The objective is to enable the project to chart an optimal course forward, drawing from substantiated source material and benefiting from an impartial, independent perspective..

Information Sources and Collection Methods

This MTR is based on a comprehensive review of project documentation, as well as input collected from the project team, MoEUCC (National Implementing Partner), all key partners, and beneficiaries.

Document review

The MTR expert received and reviewed a wide array of relevant documents from the project team.

- Project Document. This is the key document defining and justifying project activity. It is the central tool for project management to understand, plan, and track its work and for both the project team and the MTR team to assess progress toward outcomes. The Project Document includes but is not limited to the following.
    - Narrative sections on strategy, activities and intended results, partnerships, monitoring and evaluation, management and governance, and so on.
    - Project Results Framework, including all official indicators, baseline levels, midterm targets, and end-of-project targets
    - Project budget and projected co-financing
    - Annexes (including gender analysis and Gender Action Plan, Social and Environmental Screening, the Environmental and Social Management Plan, Risk Log)
- Documents from PPG Phase
- PIF
- CEO endorsement Letter, GEF Focal Area Tracking Tool and Indicators
- Project Results Framework
- Project Inception Report
- Project Inception Workshop Report
- Environmental and social Management Plan Report
- Monthly Progress Reports (From June 2022 to December 2023, total 16 reports)
- Project Implementation Review (PIR) – There is one available PIR reviewing the period between July 2022 and June 2023.
- Back to Office Reports after field visits
- Financial and administrative guidelines used by the Project Team.
- Project Budget and Procurement Plan
- Quarterly Activity Reports prepared by the National Technical Advisor(5 reports are available covering the period between 23 June 2022 and 23 September 2023)
- Quarterly Activity Reports prepared by the International Technical Advisor (3 reports are available covering the period between 8 September 2022 and 8 June 2023)
- Minutes of the Project Steering Committee (PSC) meetings
- UNIDO Gender Compliance and Marker Form
- Verification Reports

- 1st and 2nd Joint Progress Report (April 2023)
- 3rd and 4th Joint Progress Report (October 2023)
- Minutes of project meetings
- Monthly Expenditure Table (last updated in September 2023)
- Payment Tracking Tool
- Protocols with EPSDER, IZODER and TSE
- Compensation agreements with EPS/XPS producers (10 files)
- UNIDO/GEF Project Operating Manual
- Stakeholders List and Contact Information
- UNIDO-MoEUCC agreement of 22 December 2021

Direct contacts with the project team and key stakeholders

Beyond document review, the second key method for collecting needed information was direct contact with the project team and key stakeholders, including both partners and beneficiaries, via written questionnaires and face-to-face or online interviews.

The written questionnaire was prepared in Turkish and English and sent to various project beneficiaries and stakeholders, who were identified based on input from the project team. The questions were mostly open-ended, asking respondents to describe their roles and interactions with the project, and to provide their assessment of important issues and the project's effectiveness in addressing them. Eight out of fifteen questionnaires were completed and returned. The questionnaire and a list of recipients are presented in Annex C.

Project Partners and Stakeholders

Name	Type
MoEUCC	Minisitry, PEE
UNIDO	Agency
MoIT	Ministry, PSC member
MoT	Ministry, PSC member

EPSDER	Industry Association
IZODER	Industry Association
TSE	Government Agency
IZOCAM	Industry
RAVAGO	Industry
ERYAP	Industry
ODE	Industry
CFN KİMYA	Industry
DINAMIK	Industry
BTM	Industry
DIOKI	Industry
ASCHEM	Industry
WALLBOARD – BZ İnşaat	Industry

The face-to-face and online interviews were delivered to the project team and to project partners of central importance, including the following:

- **MoEUCC:** Bursev Doğan Artukoğlu, Gözde Aydoğ, Pınar Saylam
- **PMU:** Burak Erten Şahin (PC), Yasin Güray Hatipoğlu (PA)
- **National Technical Consultant:** Şerife Erçel
- **Gender Mainstreaming Expert:** Esra Demirkol Colosio
- **EPSDER:** Murat Kenet (Secretary General)
- **İZODER**: Timur Diz (Secretary General)
- **BTM:** Nur Çakı (Project Manager), Emre Tarım
- **ASCHEM Petrokimya:** Tolga Özkan (Team Leader)
- **İZOCAM A.Ş.:** Oktay Kaya (Project Manager)

MTR Expert also participated in a video conference organized by İZODER on December 27th, 2023. The purpose of the meeting was to discuss the agenda of the upcoming technical workshop agenda and needs of the İZODER members to be addressed during the workshop on January 24th, 2024. MTR expert had an opportunity to listen to the discussions and also introduced herself and explained the purpose of the MTR and importance of the contribution from İZODER members.

Following the receipt of responses to the questionnaire, interviews were conducted with industrial stakeholders. During these interviews, specific issues raised in the questionnaire were deliberated upon, alongside other comments and recommendations provided by the stakeholders.

Typically, the MTR process would have incorporated site visits to manufacturing plants; however, this was unfeasible due to the overlap of the MTR study with the Christmas and New Year holidays. Additionally, the MTR process was expedited at the request of MoEUCC, leaving insufficient time for on-site visits outside of Ankara.

II. Project Description & Background Context

The objective of the HBCD project, as stated in the Project Document, is ***to promote the replacement of persistent organic pollutants with environmentally sound alternatives in the EPS and XPS foam industries in Türkiye.*** With the objective of achieving this purpose, the United Nations Industrial Development Organization (UNIDO) and the Ministry of Environment, Urbanization, and Climate Change of the Republic of Türkiye have collaboratively formulated this project. The primary aim is to provide essential financial and technical assistance to industrial stakeholders, ensuring the complete cessation of Hexabromocyclododecane (HBCD). Simultaneously, the project seeks to establish a requisite legal framework and enhance institutional capacity for the purpose of monitoring and sustaining the outcomes of the project.

Development Context

As delineated in the CEO Endorsement Letter, the initial PIF for this project was initially submitted and technically sanctioned under GEF-6 in 2016. This submission promptly followed Türkiye's response to the inclusion of Hexabromocyclododecane (HBCD) in Annex A of the Stockholm Convention[3] (SC) and its identification as a priority in the SC National Implementation Plan (NIP) update, concurrently underway in Türkiye. Consequently, the country legally assumed the obligations associated with implementing this amendment. Nevertheless, owing to funding challenges within GEF-6, the final approval for project funding was postponed at that stage. Subsequently, the PIF was resubmitted in October 2018 and received approval in December 2018 in the same form as it was originally technically endorsed in 2016.

Between the initial preparation of the GEF-6 PIF and its final approval as a GEF-7 project, both the government and private sector entities in the Expanded Polystyrene (EPS) and Extruded Polystyrene (XPS) sectors collaboratively and proactively took significant preparatory actions based on the anticipation of forthcoming GEF support. Upon the detailed initiation of project preparation in early 2019, it became evident that certain modifications to the original project design were warranted. In fact, the proactive measures undertaken by the government and enterprises presented an opportunity to broaden the project scope, encompassing the complete elimination of HBCD in the country within the allocated grant resources. This expansion surpassed the initial plan, which focused on a limited number of demonstration conversions in selected enterprises.

Furthermore, noteworthy advancements in technical and market developments regarding environmentally sound alternatives to HBCD allowed the project's technical assistance to concentrate more on in-plant support. This strategic shift also aimed at ensuring equitable treatment between large and small enterprises in both sectors. Simultaneously, the government's proactive efforts in formulating the framework regulation facilitated a more targeted approach to the project's institutional and regulatory capacity-building support. This approach placed increased emphasis on enforcement, sustainability of elimination efforts, and integration with government and bilateral programs on chemicals management and Persistent Organic Pollutants (POPs) contaminated waste management.

In summary, the original rationale for the project, which was to enable the country to initiate institutional, technical capacity strengthening, and investment for commencing the phaseout of HBCD in accordance

[3] https://www.pops.int/

with Stockholm Convention obligations, remains intact. However, the proactive actions undertaken by both the government and the private sector have substantially enhanced the project's scope, encompassing the complete elimination of HBCD usage in the country.

Barriers, Strategy, and Expected Results

The Project has achieved most of its goals including the most important one, elimination of the use of HBCD in EPS and XPS sectors. Good progress also achieved in terms of improving legal framework, building institutional capacity, knowledge sharing and collaboration between industry and public stakeholders. There are a few remaining activities, mostly information dissemination workshops in collaboration with EPSDER and İZODER, to be completed until the end of the project. In addition, a critical task, direct analytical verification of the samples taken from producers is underway and expected to be completed by the end of the project.

Components, outcomes, and planned outputs are framed as follows:

Component 1: Regulatory strengthening, capacity building, stakeholder awareness and verification of environmental ly sound alternatives for the replacement of HBCD

Outcome 1.1: Up to date non-proprietary information respecting HBCD alternatives and facilitated access to them provided and broad stakeholder awareness on the issue communicated

- *Output 1.1.1:* International references and expert contacts documented for Dissemination to industrial stakeholders in the EPS and XPS sectors.
- *Output 1.1.2:* Workshops and information dissemination on alternatives and access to them featuring international and national experts organized and delivered to a broad range of industrial, institutional and NGO stakeholders impacted by HBCD phaseout.

Outcome 1.2: Regulatory capacity support for control and enforcement to sustained HBCD phase out delivered

- *Output 1.2.1:* Gaps in Regulatory control measures addressed in support of sustained elimination of HBCD use and import implemented including strengthening of customs controls on HBCD Imports consistent with international practices and elimination of 240 t of imported HBCD in imported production inputs.
- *Output 1.2.2*: Capacity building and support for MoEUCC regulatory enforcement of sustained HBCD elimination delivered including training and analytical capability to be provided by the Department of Building Materials in application of EPS and XPS product control for final product containing flame retardants and analytical services by TSE.

Outcome 1.3: Measures for the control and environmental ly sound management of HBCD containing waste implemented.

- *Output 1.3.1:* Support provided for development of a strategy for environmentally sound management of HBCD containing waste including definition of facility destruction requirements and options undertaken.

Component 2: Elimination of HBCD use in the EPS sector in Türkiye

Outcome 2.1: Pre-blended polystyrene (PS) producers have required technical information and capability to complete selection and production of alternative flame retardant containing production.

- *Output 2.1.1:* Individual pre-blended PS producers receive needed technical support on an individual proprietary basis to make optimum competitive decisions on alternative selection, finalize required investment to complete phase out and support producers of final EPS products in the production of HBCD free product.

Outcome 2.2: National EPS association (EPSDER) is technically supported in its programming to provide collective information and supporting laboratory capability for members on the use of alternative flame retardant in all stages of EPS production

- *Output 2.2.1:* Technical information dissemination on alternatives for the EPS sector is delivered Through EPSDER Through support of provision of technical references in Turkish and sponsorship of workshop events utilizing recognized international and national experts.
- *Output 2.2.2:* Technical support and laboratory capacity exists in the ESPDER CEVKAK laboratories to support sector product testing and certification requirements for qualification of non-HBCD containing flame retarded EPS.

Outcome 2.3: Complete phase out of HBCD use in domestic production of pre-blended polystyrene production (975 t HBCD/year) used in the EPS sector directed to national markets is achieved.

- *Output 2.3.1:* Phase out of HBCD based production and replacement with suitable alternatives completed such that baseline HBCD consumption of 975 t/year is eliminated.

Component 3: Elimination of HBCD use in the XPS sector in Türkiye

Outcome 3.1: XPS producers have required technical information and capability to complete selection and production of alternative flame retardant containing production.

- *Output 3.1.1:* Individual XPS producers receive needed technical support on an individual proprietary basis to make optimum competitive decisions on alternative selection and finalize required investment to complete phase out.

Outcome 3.2: National XPS association (İZODER) is technically supported in its programming to provide collective information for members on the use of alternative flame retardant in all stages of XPS production.

- *Output 3.2.1:* Technical information dissemination on alternatives for the XPS sector is delivered through İZODER through support of provision of technical reference in Turkish and sponsorship of workshop events utilizing recognized international and national experts.

Outcome 3.3: Complete phase out of HBCD use in domestic production of XPS production (705 t HBCD/year) used in the XPS sector is achieved.is achieved.

- *Output 3.3.1:* Phase out of HBCD based production and replacement with suitable alternatives completed such that baseline HBCD consumption of 705 t/year is eliminated.

Component 4: Monitoring and Evaluation

Outcome 4.1: Outcomes from project activities assessed and lessons learnt disseminated for sustainable replication.

- *Output 4.1.1:* Project impact indicators designed, applied and project mid-term review and terminal evaluation conducted.

The Project Results Framework sets forth targeted outcomes and expected results in each of these components and for the project on the whole. These include quantitative targets for reduction in HBCD usage, number of training programs and sampling process for direct analytical verifications, etc., as well as more qualitative goals for increased institutional capacity, technical assistance and support for enterprises, and enabling legal framework. For all of the specific language and numbers of these targets, see Section VI of the Project Document, as well as the Progress Toward Results Matrix in Section III below.

Implementation Arrangements

Day-to-day project activities are carried out by project staff, including a Project Coordinator, Burak Erten Şahin, Project Assistant, Yasin Güray Hatipoğlu and Finance/Procurement Expert, Fatih Çimen . The staff receive steady technical support from an International Advisory Consultant, National Technical Consultant and Gender Expert, as well as administrative and technical support from MoEUCC.

Project Coordinator, Burak Erten Şahin has more than ten years of experience in project management, planning, implementation, financing, and reporting, working with various stakeholders, such as ministries, municipalities, private sector, NGOs, academia, UN agencies, and other international organizations. His core competencies include climate change mitigation and adaptation, green economy, stakeholder analysis, and project cycle management.

III. Findings

A. Project Strategy

Project design

The project's design aims to overcome the primary obstacles to eliminating HBCD use. It focuses on supporting government-initiated institutional action to address the challenges arising from existing legislative, regulatory, and enforcement gaps, along with the limited awareness among the public and stakeholders. Specifically, the project takes a predominantly private sector approach, involving partial compensation of investments to facilitate the eradication of HBCD use at the enterprise level. Additionally, it offers international technical and operational capacity building for both sectors and individual enterprises, focusing on the selection and optimization of alternatives to HBCD.

Project design founded on these above explained pillars makes a lot of sense and proven to be working effectively in practice.

Country ownership and alignment with national goals

The project design is well aligned with Türkiye's national goals of full compliance with Stockholm Protocol for the elimination of POPs. MoEUCC, as the main beneficiary and also as the PEE, together with other relevant state organizations including MoIT, MoT, TSE and Customs authority, is fully dedicated and has shown full ownership not only providing necessary human resources and institutional capacity but also with commitments in terms of co-financing as shown in Table 3.

Reflection of gender in the project design

Gender issues are integrated into the project design and reflected in specific activities, based on a comprehensive gender analysis, which is presented in Annex H of the Project Document. This annex also includes a Gender Action Plan, which elaborates on the gender-disaggregated targets of the Project Results Framework and also sets forth additional targets, including that at least 50% of beneficiaries for training and capacity building will be women and women's employment will be increased in EPS and XPS sectors by 99 until the end of the project.

Project Results Framework

The Project Results Framework ("logframe") states the project objective and its intended outcomes, defines performance indicators, and presents baseline levels, midterm targets, and end-of-project targets for each indicator.

As the core document for measuring project success, a well-designed logframe should define indicators and targets that are "SMART" – Specific, Measurable, Achievable, Relevant, and Time-bound. SMART indicators and targets help to ensure the project team's clear understanding of project goals, and also to facilitate effective monitoring and evaluation.

The HBCD Project Results Framework has five objective-level indicators and ten outcome-level indicators, all with respective targets, as follows.

- **Objective indicator 1:** Quantity of HBCD consumed and number of enterprises eliminating the use of HBCD in the production of EPS and XPS in Türkiye by conversion to environmental sound alternatives. *End-of-project targets: (1) Four producers of pre blended PS and six XPS have eliminated HBCD use, (2) Imports of HBCD containing pre-blended PS eliminated, (3) Equivalent*

HBCD consumption eliminated in EPS and XPS sectors of 1,919 t/year, (4) Production of 521.000 t/tear of HBCD containing product eliminated.

This is the most defining indicator for the HBCD project which falls under GEF's Chemicals and Waste (CW1) program. It is specific and relevant. The targets are all quantitative therefore measurable and also achievable and time-bound.

- **Objective indicator 2:** Implemented regulatory framework for enforcement of bans on use and import of HBCD within an overall chemicals management that is harmonized with the EU and international practice. *End-of-project targets: 1) Comprehensive regulatory control measures within the current framework governing chemicals management and POPs and specifically HBCD harmonization with international practice. 2) Capability for effective enforcement of bans on HBCD and HBCD containing products and technical performance control in place 3) Strategy for management of HBCD containing wastes adopted. 4) Imports of HBCD in imported pre-blended PS eliminated (240 t/year*

  This indicator and targets are specific, relevant, and measurable. The targets are time-bound and achievable, but will be challenging for targets 2 and 3 because these initiatives just recently started and the remaining time of the project is limited for full implementation of these targets.

- **Objective indicator 3:** Tracked and quantified elimination of HBCD use and imports by the EPS and XPS sectors. *End-of-project target: Regular enterprise reporting on HBCD consumption and imports established and coordinated through EPS/XPS Associations and custom's authorities*

  This indicator is specific, measurable, achievable, relevant and time-bounded.

- **Objective indicator 4:** Türkiye is in full compliance with its SC Annex A obligations with respect to HBCD and providing support to other developing countries in achieving that status. *End-of-project target: 1) Türkiye has removed exemption provisions respecting HBCD and is operating in full compliance with the SC. 2) Türkiye has disseminated results and lessons learned in the project internationally.*

  This objective is specific, measurable, achievable and relevant. It is also tine-bound, however, international dissemination activities may continue beyond the end date of the project. This objective also assumes that there will be no scope change in SC Annex A which may bring further restrictions.

- **Objective indicator 5:** 1) Majority of women's participation will be provided in activities. 2) Encourage female candidates and pay attention to gender equality in procurement processes of experts. 3) Achievement of human empowerment. 4) Paying attention to usage of gender sensitive language in all documents. *End-of-project targets: 1) Participation rates of suitable females in sector will be increased. 2) HBCD-induced health problems on genders will be prevented. 3) sectors will be informed on gender equality. 4) Gender components incorporated*

into 6 awareness and 4 training events. 5) Women's employment in the EPS and XPS sectors increased by 99.

This is a human development indicator, common in UNIDO-supported projects. The indicator and targets are specific, measurable, relevant and time-bound. All targets are achievable except for 5, which envisages 99 new jobs for women in EPS and XPs sector. This target is very challenging although specific awareness and training programs have been implemented, there is no enforcement power of the project.

- **Outcome indicator 1.1:** Increased awareness for stakeholders impacted by the elimination of HBCD in the EPS and XPS sectors including producers, their customers, supply chains, impacted communities, institutional stakeholders and civil society including women. *End-of-project targets: 1) Project closure workshop for key stakeholders presenting project result, lesson learned and future chemicals management challenges. 2) Up to date web-site and social media based on outputs throughout the project. 3) Project technical and methodology results documented and widely disseminated in Türkiye and internationally through UNIDO*

  This indicator and target are specific, measurable, achievable, relevant and time-constrained.

- **Outcome indicator 1.2:** Effective chemicals management regulatory control applied to HBCD and alternatives through its comprehensive within the regulatory framework provided for in regulations governing POPs, chemicals management and registration including import and export, and application of performance standards applicable to EPS and XPS building materials . *End-of-project targets: 1) Comprehensive regulatory control measures within the current framework governing chemicals management and POPs and specifically HBCD harmonization with international practice. 2) Capability for effective enforcement of bans on HBCD and HBCD containing products in place within MoEUCC, TSE. and Customs authorit. 3) Imports of HBCD containing pre-blended PS eliminated. 4) Full performance control capability for EPS and XPS products using alternatives FRs supported by TSE. 5) Training of 450 MoEUCC/customs inspection staff and 320 product standards inspectors on HBCD detection undertaken annually and addition of analytical capacity in TSE in place. 6) 300 product analysis undertaken*

  This is rather a complex indicator with several quantitative and qualitative targets all relevant to the indicator and supporting each other. The indicator and targets are specific, measurable, relevant and time-constrained. Targets 1, 2 and 3 have already been achieved until MTR. Targets 4, 5 and 6 will be challenging to be achieved by the end of the project, since activities towards achieving those targets officially started in November 2023, after MoEUCC and TSE cooperation protocol was signed.

- **Outcome indicator 1.3:** National management strategy for POPs containing wastes including HBCD is implemented. *End-of-project target: A national strategy for the management of POPs containing waste has been developed and is being implemented with particular emphasis on HBCD containing waste.*

This objective is specific, measurable, achievable, relevant and time-bounded.

- **Outcome indicator 2.1:** Sufficient knowledge and technical / operational capacity exist within all producers of pre-blend PS on an equitable basis. *End-of-project targets: 1) All 4 (four) pre-blended PS producers demonstrate capacity and knowledge though continued operation on a competitive basis with environmentally sound alternatives. 2) All national EPS final product producers are using inputs containing HBCD alternatives. 3) 3 training events completed.*

  This indicator is specific, achievable, relevant and time-constrained. The word "sufficient" is qualitative rather than quantitative and therefore may be difficult to measure. However, the targets are clear and quantitative, so it is possible to measure them and this removes the ambiguity around the word "sufficient".

- **Outcome indicator 2.2:** EPSDER provides the EPS sector with access to common and current technical and operational information on HBCD alternative information to eliminate HBCD usage and maintain the domestic EPS sectors competitive position after completing elimination inclusive of supporting laboratory capability available to members. *End-of-project targets: 1) Closing technical workshop for EPSDER members on project results. 2) All EPSDER members fully familiar with technical principles, opportunities and lessons learned regarding the transition to environmentally sound FRs. 3) TSE/CEVKAK laboratory providing effective product development and certification support to both the EPS and XPS sectors.*

  This indicator is specific, achievable, relevant, measurable and time-constrained. In target 3, instead of using the term "effective" alone, it would be preferable to specify how effectiveness will be measured or observed.

- **Outcome indicator 2.3:** Quantity of HBCD consumed and number of enterprises eliminating the use of HBCD in the production of EPS in Türkiye by conversion to environmental sound alternatives. *End-of-project targets: 1) Four (4) producers of pre blended PS eliminated HBCD use in EPS sector. 2) Equivalent HBCD consumption eliminated in EPS sector of 975 t/year. 3) Production of 66.575 t/year of HBCD containing preblended PS EXP product eliminated. 4) Environmental management system certification in place for all enterprises.*

  This is a very important Outcome Indicator which has a direct impact on the overall objective of the project. The indicator and targets are specific, achievable, relevant and time-bounded. Targets are quantitative and therefore measurable.

- **Outcome indicator 3.1:** Sufficient knowledge and technical/operational capacity exist within all XPS producers on an equitable basis. *End-of-project target: All six (6) participating XPS producers demonstrate capacity and knowledge though continued operation on a competitive basis with environmentally sound alternatives.*

This indicator is specific, achievable, relevant and time-constrained. The word “sufficient” is qualitative rather than quantitative and therefore may be difficult to measure. However, the target is clear and quantitative, so it is possible to measure it and this removes the ambiguity around the word “sufficient”.

- **Outcome indicator 3.2:** İZODER provides the XPS sector with access to common and current technical and operational information on HBCD alternative information to eliminate HBCD usage and maintain the domestic EPS sectors competitive position after completing elimination. *End-of-project targets: 1) Closing technical workshop for İZODER members on project results. 2) All İZODER members fully familiar with technical principles, opportunities and lessons learned regarding the transition to environmentally sound FRs. 3) TSE/CEVKAK laboratory providing effective product development and certification support to both the EPS and XPS sectors.*

  This indicator is specific, achievable, relevant, measurable and time-constrained. In target 3, instead of using the term "effective" alone, it would be preferable to specify how effectiveness will be measured or observed.

- **Outcome indicator 3.3:** Quantity of HBCD consumed and number of enterprises eliminating the use of HBCD in the production of XPS in Türkiye by conversion to environmental sound alternatives. *End-of-project targets: 1) Six (6) enterprises in the XPS sector eliminated HBCD consumption. 2) HBCD equivalent consumption of 7055 t/year eliminated in the XPS sector. 3) Production of 454,000 t/year of HBCD containing XPS product eliminated. 4) Environmental management system certification in place for all enterprises.*

  This is a very important Outcome Indicator which has a direct impact on the overall objective of the project. The indicator and targets are specific, achievable, relevant and time-bounded. Targets are quantitative and therefore measurable.

- **Outcome indicator 4.1:** M&E applied to project in response to needs, mid-term evaluation findings with lessons learned extracted. *End-of-project target: Final evaluation report ready in the end of project.*

  Since there is a Monitoring and Evaluation Plan for the project exists and being used, this objective is specific, measurable, achievable, relevant and time-bounded.

B. Progress Toward Results

One of the MTR’s fundamental objectives is to review progress toward results. The MTR has carried out this assessment based on the Project Document, project work plans, GEF Tracking Tools, and PIRs, as well as results verified in the course of interviews and review of specific project outputs.

GEF Tracking Tool

Tables 1 below presents the project's key indicators as noted in the GEF Tracking Tool, with the quantitative targets set at the time of GEF CEO Endorsement and the levels of these targets at midterm.

Table 1

Quantitative Outcome Indicators from the Tracking Tool Targets and Midterm Levels Achieved

Quantitative Outcome Indicators				
Indicator number and description	**Subcategories of indicator and units**	**Notes from Tracking Tool**	**Target at CEO Endorsement**	**Level achieved at midterm as reported by project**
9. Reduction, disposal/destruction, phase out, elimination and avoidance of chemicals of global concern and their waste in the environment and in processes, materials and products (metric tons of toxic chemicals reduced)	9.1 Solid and liquid Persistent Organic Pollutants (POPs) removed or disposed (HBCD) metric tons	Data supporting these and the methodology associated with their calculation applicable to this core indicator are documented in Table 2 and Paragraph18 for the EPS sector and Table 3 and Paragraph 21 for the XPS sector, and are further elaborated under Global Environmental Benefits in Paragraph 38 of the CEO Endorsement.	7,436.00	9,310.00 (end of 2023)
	9.6 Quantity of POPs/Mercury containing materials and products directly avoided metric tons (this unit should have been cubic meter)		2,083,000.00	447,202 tons in EPS 68,558 tons (= 2,636,846 m3) in XPS (end of 2022)
11. Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment		: Indicator has been calculated based on the baseline numbers provided by the primary stakeholders during the PPG phase that have been supported by the Gender Assessment and it considers men and women participation at the project management/supervision level and men and women participation in the enterprises.	Female 182 Male 1,178 Total 1,360	Updated data not available at MTR Gender Mainstreaming Report is in progress

To clarify, measuring unit for the target for Indicator 9.6 is given as metric tons. However, National Technical consultant confirmed that it should be cubic meter. Production quantity in EPS sector is given as metric tons and in the XPS sector as cubic meters. One m3 XPS is approximately 26 kg. MTR Expert converted the production figures given in the TVR for XPS sector from tons to cubic meter.

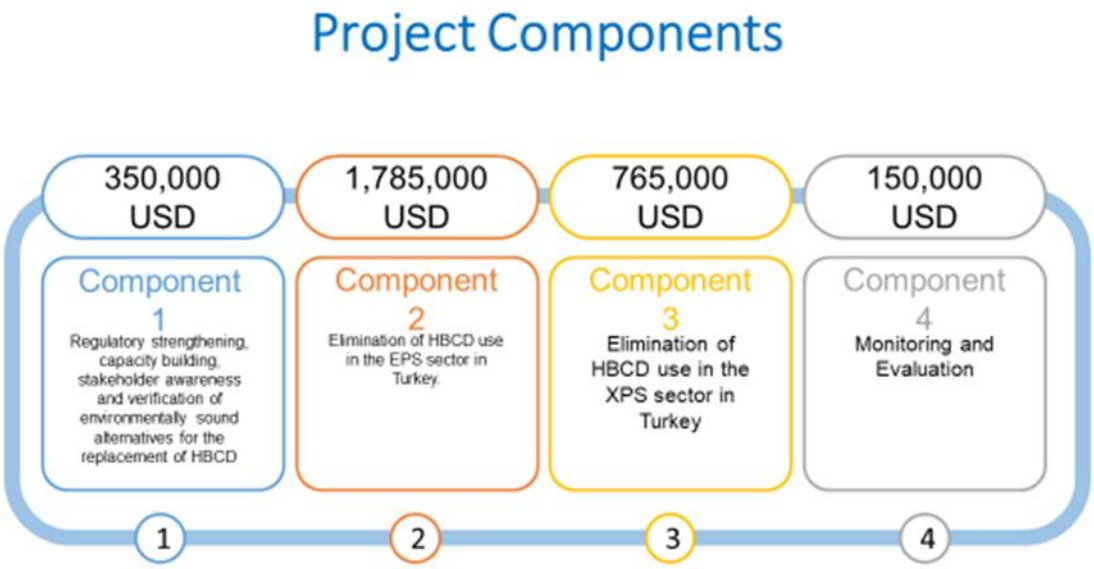
As the table clearly shows, the project has achieved results in terms of the quantitative indicators of elimination of POP usage.

Regarding Indicator 11, preparation of the evaluation report for the gender mainstreaming is in progress and it was not possible to make a comparison between the targets set ain the CEO Endorsement and MTR.

Assessment of progress and justifications for achievement ratings

Annex A presents the MTR expert's assessment and ratings of progress toward the targeted objectives and outcomes of the Project Results Framework. The rightmost column presents the assessments and ratings, with a summary of the justification for each.

The project has generated an impressive volume of work in four components, with varying degrees of concrete outcomes, demonstrated impact, and fulfillment of targets.



Component 1: Component 1 of the project focuses on regulatory strengthening, capacity building, and raising stakeholder awareness to facilitate the environmentally sound elimination of HBCD in the EPS and XPS sectors. The component aims to overcome institutional barriers by disseminating relevant information, addressing legislative gaps, eliminating import control barriers, and enhancing strategic policy and infrastructure planning for the management of HBCD stockpiles and waste. The goal is to ensure a rapid and sustainable elimination of HBCD, achieving effective elimination in the targeted sectors. Design of Component 1 is composed of three outcomes based on this concept and purpose.

Outcome 1.1 focuses on providing up-to-date, non-proprietary information on alternatives to HBCD and ensuring broad stakeholder awareness. The goal is to communicate technical details about HBCD alternatives, including their operational conditions, economic implications, and environmental impact. This aligns with the MoEUCC's priority to establish a fair playing field by making technical information on alternatives widely accessible in the EPS and XPS sectors. The outcome is being achieved through the implementation of two project-supported outputs.

Output 1.1.1 focuses on creating and sharing updated global technical references on HBCD alternatives, along with operational experiences and expert contacts. This output aims to equip industrial stakeholders in the EPS and XPS sectors with essential knowledge and tools to transition to environmentally sound alternatives. The initiative began during the PPG stage through technical discussions and materials provided by the MoEUCC.

Output 1.1.2 involves supporting an MoEUCC-administered program that includes workshops and various information dissemination methods on alternatives to HBCD. These activities, featuring international and national experts, target a wide range of stakeholders, including industrial, institutional, academic, and civil society representatives affected by the HBCD issue. This program emphasizes gender awareness and equity promotion.

Regarding the progress to date, rxpanding upon the groundwork laid during the PPG stage, the National Consultant (NC) has been actively incorporating updated information on available alternatives to HBCD. This information is seamlessly integrated into the technical verification process conducted by the National Coordinator (NC) and is further continued as part of the Environmental Assessment (EA) activities overseen by the Project Management Unit (PMU). A comprehensive working document, encompassing an international literature review and relevant references, has been meticulously prepared by the NC. This critical document is poised to be a focal point of discussion during the forthcoming planned dissemination workshop.

Furthermore, pertinent materials addressing the project scope, the significance of the EPS/XPS sectors, and information on HBCD alternatives and their accessibility have been thoughtfully incorporated into the Inception Workshop/Seminar (W/S). These materials are slated to feature prominently in the first information dissemination workshop scheduled for January 2024. Additional dissemination workshops, envisaged for the first and second quarters of 2024, will further emphasize the project's core elements, with particular attention given to collaboration with EPSDER/İZODER.

In a strategic move to enhance accessibility and outreach, materials pertaining to the HBCD Project are being actively integrated into the MoEUCC priority chemicals website (https://kalicikirleticiler.com/). This website serves as a central hub for information dissemination and will receive ongoing updates to ensure that stakeholders and the public are continually informed about the progress and developments of the HBCD Project.

Outcome 1.2 aims to provide regulatory capacity support for controlling and enforcing the sustained phase-out of HBCD. This support is directed towards the MoEUCC, with collaboration from the Ministry of Industry and Technology (MoIT) and the Ministry of Trade (MoT). The objective is to address regulatory gaps related to the control of HBCD use and import, as well as enforcement capacity, which currently pose significant barriers to the project's goal of HBCD elimination in the country. The strategic approach involves aligning these efforts with the broader framework of the country's chemical

management policies, ensuring effective harmonization with international control practices, particularly those in the EU. The Outcome will be achieved through the implementation of two project-supported outputs.

Output 1.2.1 focuses on addressing regulatory control gaps in the current chemicals management and Persistent Organic Pollutants (POPs) framework, particularly related to HBCD. This output aims to harmonize regulatory measures concerning HBCD with national legislations controlling chemicals, emphasizing strict registration and qualification processes for chemical use and trade, including the import of HBCD and HBCD-containing products. The initiative, consistent with international practice, strengthens customs controls on HBCD imports and is estimated to eliminate approximately 240 tons per year of HBCD in imported production inputs within the EPS and XPS sectors.

Output 1.2.2 provides necessary capacity building and support studies to empower the Ministry of Environment and Urbanization (MoEU) for the regulatory enforcement of sustained HBCD elimination within the established framework. A specific focus is on supporting the Department of Building Materials within MoEU by applying control measures to EPS and XPS products containing flame retardants. This includes training, analytical support delivered by the Turkish Standards Institute (TSE), and addressing alternative design approaches and materials that do not require chemical flame retardants.

With regard to progress to date, the discussions held have yielded significant advancements in the strengthening of the existing Persistent Organic Pollutants (POPs) chemicals management framework under the auspices of the MoEUCC Department of Priority Chemicals). Several key areas within the framework have been identified for enhancement.

A crucial milestone has been the signing of a protocol between the ministry and the Turkish Standards Institute (TSE) for the analytical monitoring of Hexabromocyclododecane (HBCD) and HBCD-containing products which was realized on November 17th, 2023. Training initiatives for TSE's central laboratory and provincial organization personnel, as well as customs personnel, are underway through information dissemination workshops, which commenced in January 2024.

Quality control studies on products utilizing HBCD and alternative flame retardants (FR) have affirmed that products containing alternative FR meet the standards mandated by national legislation. This determination has indicated that there is no need for a change in product control standards. The forthcoming analytical verification study by TSE will also encompass fireproofing tests on product samples obtained from beneficiary institutions.

Furthermore, the regulatory ban on imports of HBCD-containing pre-blended polystyrene (PS) in 2018, coupled with the global export closure of HBCD by China, has had a substantial impact. Analytical verification by TSE at both the retail and customs inspection levels is being initiated to ensure compliance.

Efforts to augment analytical capacity within TSE have been set in motion, and plans are underway to undertake 100 product analyses. These comprehensive measures collectively signify a significant stride towards the project's overarching goal of environmentally sound management and eventual elimination of HBCD in line with international best practices and regulatory standards.

Outcome 1.3 focuses on implementing measures for the control and environmentally sound management of waste containing Hexabromocyclododecane (HBCD). Aligned with the broader initiative of the MoEUCC) regarding the management of waste containing Persistent Organic Pollutants (POPs), this outcome is characterized by a single output.

Output 1.3.1 addresses challenges associated with managing wastes containing Hexabromocyclododecane (HBCD), generated from current production, phase-out implementation, and the end-of-life of products containing HBCD. With support from GEF resources and expert consultants, the MoEUCC will focus on developing a strategy for the environmentally sound management of HBCD-containing waste. This strategy encompasses activities such as capture, segregation, specialty treatment, and disposal of the waste, with a strong emphasis on resource and raw material recovery. The efforts align with the broader MoEUCC program framework, aiming to create a national integrated waste management strategy for chemical and chemical wastes, including Persistent Organic Pollutants (POPs), and will be integrated with existing and upcoming bilateral programs.

With regard to progress to date, the commencement of the development of a national strategy for the management of waste containing Persistent Organic Pollutants (POPs), including Hexabromocyclododecane (HBCD), marks a significant step forward. The study's scope, specifically focusing on the management of POPs waste, has been clearly defined. A comprehensive Terms of Reference (ToR) has been prepared to guide the involvement of international experts in this crucial study. The initiation of the purchasing procedure for the engagement of these experts underscores the project's commitment to advancing the environmentally sound management of POPs-containing waste, contributing to broader environmental and waste management objectives.

Component 2: Component 2 focuses on eliminating the use of Hexabromocyclododecane (HBCD) in the Expanded Polystyrene (EPS) sector in Türkiye. It primarily targets private sector beneficiaries, providing investment support to facilitate the cessation of HBCD consumption. Additionally, technical assistance and capacity building are integral to the component, aiming to ensure that enterprises across the sector have equal access to necessary technical and operational capabilities, maintaining competitive equity. The component comprises three outcomes: the first two concentrate on technical capacity development for HBCD elimination, while the third offers investment support for phase-out activities. Supported by a GEF grant of US$1,785,000, the private sector contributes co-financing of US$11,294,641, including US$11,254,641 in mobilized investments and an additional US$40,000 in kind co-financing.

Outcome 2.1 focuses on ensuring that pre-blended polystyrene (PS) producers possess the necessary technical knowledge and capabilities to choose and produce alternative flame retardant materials. The goal is to provide these producers with direct access to global expertise regarding alternatives to hexabromocyclododecane (HBCD). This outcome acknowledges the producers' specific needs for information and expertise while taking into account competitive and proprietary considerations. The single output associated with this outcome is described below.

Output 2.1.1 enables pre-blended polystyrene (PS) producers to make informed decisions regarding the selection of alternative flame retardants. It also facilitates the completion of necessary investments for transitioning away from hexabromocyclododecane (HBCD), maintaining product certification, optimizing production techniques, and supporting the production of HBCD-free expanded polystyrene (EPS) products. The focus is primarily on the two smaller national pre-blended PS producers with limited

expertise and progress in transitioning to non-HBCD-based production and obtaining product certification.

With regard to achievement to date, all four pre-blended polystyrene (PS) producers have showcased the requisite capacity and knowledge to operate competitively while embracing environmentally friendly alternatives. Additionally, every national expanded polystyrene (EPS) final product producer is now utilizing inputs that incorporate alternatives to hexabromocyclododecane (HBCD). Furthermore, the successful completion of three training events reflects a commitment to enhancing understanding and expertise in the adoption of sustainable practices within the industry.

Outcome 2.2 focuses on providing technical support to the National Expanded Polystyrene Association (EPSDER) to enhance its programming. The aim is to enable EPSDER to offer comprehensive information and laboratory support to its members throughout all stages of EPS production, specifically regarding the use of alternative flame retardants. This outcome involves a collaborative effort with EPSDER, the industry association, to strengthen the collective knowledge and laboratory capabilities of its members in adopting alternative flame retardants across EPS production processes.

Output 2.2.1 aims to disseminate technical information on alternative options for the Expanded Polystyrene (EPS) sector through the technical support program of the EPS Association (EPSDER). This involves providing resources for technical and market references in Turkish, along with sponsoring workshop events featuring recognized international and national experts.

On the other hand, Output 2.2.2 focuses on enhancing the technical capacity of the CEVKAK laboratory, supported by EPSDER. This includes upgrading product testing and certification capabilities for non-hexabromocyclododecane (HBCD) containing products. The approach involves modest grant financing for essential equipment and training. The resulting enhanced capacity will be accessible to both the EPS and Extruded Polystyrene (XPS) sectors.

With regard to achieved results to date, the Inception Phase technical workshop successfully delivered insights into alternatives and their practical application for participating pre-blended polystyrene (PS) producers. Individual follow-ups conducted by NC and ESIA experts during implementation further enhanced understanding.

The NC has compiled and provided updated technical materials, contact information for technical experts, and commercial contacts with alternative suppliers to EPSDER for widespread dissemination. This initiative aims to keep industry stakeholders informed and connected.

Moreover, the TSE laboratory, serving product testing and certification, has begun planning for capacity upgrades. The services will cater to both the Expanded Polystyrene (EPS) and Extruded Polystyrene (XPS) sectors, with contracts in progress. This strategic move ensures continued support and growth in technical capabilities.

Additionally, ÇEVKAK stands to gain from technical capacity development and information dissemination activities. Their participation in the workshop facilitated discussions on the analytical study results of hexabromocyclododecane (HBCD) and HBCD product monitoring conducted by TSE, contributing to shared knowledge within the industry.

Outcome 2.3 aims to achieve the complete phase-out of hexabromocyclododecane (HBCD) in the domestic production of pre-blended polystyrene used in the EPS sector for national markets, totaling 975 tons of HBCD per year. This is a key project objective, aligning with the broader goal of eliminating HBCD use in Türkiye. The three-year plan involves replacing HBCD with suitable alternatives, requiring a GEF grant allocation of US$1,535,000 and a total investment of US$9,719,641 across the four participating enterprises. The investment covers capital equipment, production facility modifications, product development, and testing/technical support costs. The overall co-financing, totaling US$11,254,641, reflects the producers' investments and planned expenditures, with the GEF grant cost-effectiveness at US$1.57/kg. The allocation of the block grant among enterprises will be decided during the inception phase, considering various distribution methodologies and stakeholder input to ensure fairness and competitiveness.

With regard to results achieved to date, the concerted efforts of all four pre-blended polystyrene producers have resulted in the successful elimination of hexabromocyclododecane (HBCD) usage within the Expanded Polystyrene (EPS) sector. This significant achievement encompasses the complete removal of the baseline HBCD consumption, amounting to 975 tons per year in the EPS sector. Notably, the production of 66,575 tons per year of EPS pre-blended polystyrene products containing HBCD has been effectively halted. In addition, comprehensive confirmation inspections, meticulously addressing compliance with national workplace health and safety standards, as well as environmental release regulations, have been carried out. These inspections were conducted as part of the Environmental Assessment (EA) work, with findings reported by the Project Management Unit (PMU) expert. This collective success marks a substantial milestone in the project's objectives towards environmental sustainability and regulatory adherence within the EPS sector.

Component 3: Component 3 of the project focuses on eliminating hexabromocyclododecane (HBCD) usage in the Extruded Polystyrene (XPS) sector in Türkiye, following a similar structure to Component 2. It is tailored to benefit private sector entities in the XPS sector by providing investment support to eradicate HBCD consumption. Additionally, technical assistance and capacity building are integral aspects, ensuring that all enterprises have equitable access to the necessary technical and operational capabilities. This approach aims to maintain competitive equity within the sector. The component comprises three outcomes, the first two concentrating on technical capacity development for HBCD phaseout, while the third offers investment support for phaseout activities. The allocated Global Environment Facility (GEF) grant for this component is US$ 565,000, complemented by private sector co-financing of US$ 3,380,414, consisting of US$ 3,320,414 in investment mobilization and US$ 60,000 in-kind co-financing.

Outcome 3.1 ensures that producers in the Extruded Polystyrene (XPS) sector possess the necessary technical knowledge and capabilities to finalize the selection and production of alternative flame retardant-containing products. This outcome addresses the industry's overarching need for access to global expertise in alternatives to hexabromocyclododecane (HBCD) while considering individual operational requirements, competitive factors, and proprietary considerations. The specific output associated with this outcome is detailed below.

Output 3.1.1 aims to equip XPS producers with the capacity to make optimal competitive decisions regarding alternative selection. It also facilitates the finalization of necessary investments for the complete elimination of hexabromocyclododecane (HBCD), optimization of production techniques, and

the maintenance of product certification for HBCD-free XPS products. Recognizing disparities in expertise and access, the focus will be directed towards XPS producers in the sector who are less advanced in transitioning to non-HBCD-based production and obtaining product certification.

With regard to progress to date, the successful implementation of the project has resulted in all six participating Extruded Polystyrene (XPS) producers showcasing the required capacity and knowledge. This has been evident through their sustained operations on a competitive basis, embracing environmentally sound alternatives. Notably, these producers are now actively involved in discussions regarding the potential evolution of even more environmentally friendly alternatives than those initially introduced to replace hexabromocyclododecane (HBCD). It is important to highlight that the project has effectively reached its final target at the enterprise level, marking a significant accomplishment in fostering environmentally sustainable practices within the XPS sector.

Outcome 3.2 focuses on providing technical support to the National Extruded Polystyrene Association (ISODER) in developing its programming. The aim is to enable ISODER to offer comprehensive information and enhance laboratory capabilities for its members at various stages of Extruded Polystyrene (XPS) production. This outcome involves collaboration with ISODER, the industry association, to strengthen collective knowledge and laboratory resources for members, specifically related to the use of alternative flame retardants in the XPS production process.

Output 3.2.1 is dedicated to disseminating technical information on alternatives within the Extruded Polystyrene (XPS) sector through ISODER's technical support programming for its members. This involves providing resources for technical and market references in Turkish, as well as sponsoring workshops with recognized international and national experts. The enhanced technical capacity at the CEVKAK laboratory, supported by EPSDER in Output 2.2.2 for product testing and certification of non-hexabromocyclododecane (HBCD) containing products, will also benefit the XPS sector.

With regard to achieved results to date, the Inception Phase of the project featured a technical workshop on alternatives and their practical applications, which was attended by participating Extruded Polystyrene (XPS) producers. Throughout the implementation, individual follow-ups by the National Coordinator (NC) and Environmental and Social Impact Assessment (ESIA) expert were conducted to ensure effective understanding and application.

Furthermore, the project facilitated the provision of updated technical materials, along with contacts for technical experts and commercial suppliers offering known alternatives. These resources were prepared by the NC and subsequently shared with İZODER for broad dissemination within the industry.

Additionally, the TSE/CEVKAK laboratory, dedicated to supporting product testing and certification, has embarked on planning capacity upgrades and service provisions for both the Expanded Polystyrene (EPS) and XPS sectors. Contracts for these services are currently being established. ÇEVKAK is set to benefit from the technical capacity development and information dissemination activities, actively participating in workshops to discuss the outcomes of the hexabromocyclododecane (HBCD) and HBCD product monitoring analytical study conducted by TSE.

Outcome 3.3 signifies the successful accomplishment of completely phasing out hexabromocyclododecane (HBCD) usage in the domestic production of Extruded Polystyrene (XPS), totaling 705 tons of HBCD per year. This outcome, one of the primary project objectives alongside

Outcome 2.3, addresses the investment necessary to replace HBCD with environmentally suitable alternatives, effectively eliminating the documented baseline HBCD consumption over a three-year period. The Global Environment Facility (GEF) grant allocated for this purpose is US$565,000, with a total net mobilized investment of US$2,755,414 across the six participating enterprises in the sector.

The overall investment requirements are based on documented expenditures from 2016-2018 for preparation and implementation, along with detailed cost estimates for additional investments essential for completing the phase-out during the project. These investments cover capital equipment and production facility modifications, product development, and testing/technical support costs.

Notably, the planned and executed investment by domestic XPS producers amounts to US$3,320,414, with the proposed grant serving as co-financing for the mobilized investment by the enterprises. The indicative co-financing involving the Multilateral Fund (MLF) grant for the elimination of hydrochlorofluorocarbons (HCFCs) in the sector, although not included in the current total investment, remains relevant to the selection of blowing agents in HBCD alternative choices.

The distribution of investment levels among enterprises varies widely, with no direct correlation to capacity or market share. The overall direct GEF grant cost-effectiveness (CE) for participating enterprises is US$0.80/kg, showcasing significant variability across enterprises, particularly among larger producers and HBCD consumers due to economies of scale and diverse production approaches.

Similar to the EPS sector, a final decision on the allocation of the block grant designated for this outcome will be deferred until the inception phase of the project initiation. The chosen methodology for allocation will consider collective input from relevant stakeholders in the proposal review process, ensuring a balance between achieving the Global Environment Benefit (GEB) and addressing differences in enterprise size and basic technical capacity to prevent competitive inequities.

With regard to achieved results to date, In conclusion, the concerted efforts of all six participating enterprises in the Extruded Polystyrene (XPS) sector have resulted in the successful phase-out of hexabromocyclododecane (HBCD) consumption. This accomplishment is particularly noteworthy as it aligns with the project's goal to eliminate HBCD use in Türkiye. The phased-out HBCD consumption was based on an updated baseline period, amounting to 705 tons per year, with 353 tons per year in both 2019 and 2020. This translates to the elimination of the production of 454,000 tons per year of XPS products containing HBCD, marking a substantial reduction in environmental impact.

Furthermore, confirmation inspections have been diligently conducted to ensure compliance with national workplace health and safety standards, as well as environmental release regulations. These inspections were an integral part of the Environmental and Social Impact Assessment (ESIA) work undertaken and were reported by the ESIA expert and National Consultant (NC). The successful completion of these inspections underscores the commitment to regulatory adherence and environmental responsibility within the XPS sector, marking a significant milestone in achieving sustainable practices and fostering environmental well-being.

Component 4: Component 4 focuses on Monitoring and Evaluation, playing a crucial role in overseeing and managing knowledge during the implementation of the Global Environment Facility (GEF) project. Under Outcome 4.1, the operational project outcomes and outputs, as detailed earlier, undergo assessment. Lessons learned are disseminated to facilitate sustainable replication, while project

indicators are thoroughly reviewed and evaluated through mid-term and terminal evaluations conducted by PEE and the United Nations Industrial Development Organization (UNIDO), respectively. This component is supported by a budget of US$150,000 from GEF funds and an additional US$580,000 in co-financing.

Achievements to date, a comprehensive Monitoring and Evaluation system has been established and implemented, encompassing gender and Environmental and Social Management Plan (ESMP) monitoring. Currently, a mid-term evaluation of the project's outputs and outcomes is in progress, undertaken by a contracted national Monitoring and Evaluation (M&E) consultant, with an anticipated completion date in January 2024.

C. Project Implementation & Adaptive Management

This section discusses the project's implementation arrangements and its application of adaptive management. The MTR reviewed the project implementation and adaptive management of the project to identify challenges and propose additional measures to support more efficient and effective implementation. The following aspects of project implementation and adaptive management have been assessed: management arrangements, work planning, finance and co-finance, project-level monitoring and evaluation systems, stakeholder engagement, reporting, and communications.

Management Arrangements

The project team consists of Project Coordinator (PC) Burak Erten Şahin, Project Assistant (PA) Yasin Güray Hatipoğlu, Finance/Procurement Expert (FPE) Fatih Çimen. Collectively, the team has strong expertise in policy, engineering, finance, and project management.

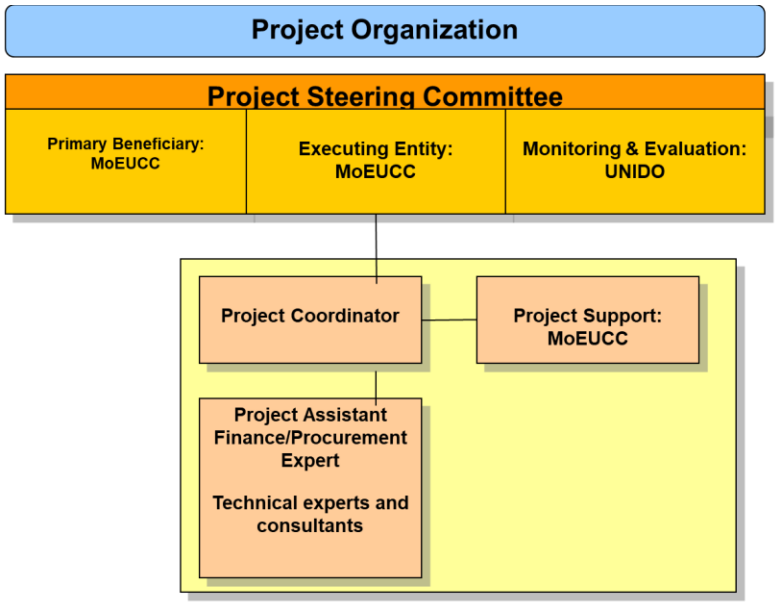
Technical support and managerial oversight

The project is supported by National Technical Consultant (NC) Şerife Erçel, Gender Mainstreaming Expert (GME) Esra Demirkol Colosio and International Advisory Consultant (IAC) Richard Cooke.

Ms. Şerife Erçel, the National Technical Consultant, holds a Bachelor of Science degree from Hacettepe University Engineering Faculty and a Master of Science degree from Kocaeli University in Environmental Engineering. With an extensive professional background spanning 25 years, she specializes in waste management, encompassing Municipal Solid Waste (MSW), hazardous waste, Persistent Organic Pollutants (POPs), POPs-contaminated sites, and electronic waste (e-waste). Her wealth of experience spans executive management roles to becoming a nationally recognized technical and project management expert. Ms. Erçel has assumed leadership positions in various waste projects, both privately and publicly financed, as well as in GEF-financed projects related to POPs and chemicals for UNDP and UNIDO. Her involvement covers the entire project cycle, including her roles as a technical and management consultant in projects such as the "HBCD Inventory and Phase Out in XPS and EPS Sector in Türkiye," Lead National Oversight Expert for the "POPs Legacy Elimination and POPs Release Reduction Project in Türkiye," and Key Expert-Senior Inventory Expert for developing inventories of HBB/HBCD in Bosnia and Herzegovina.

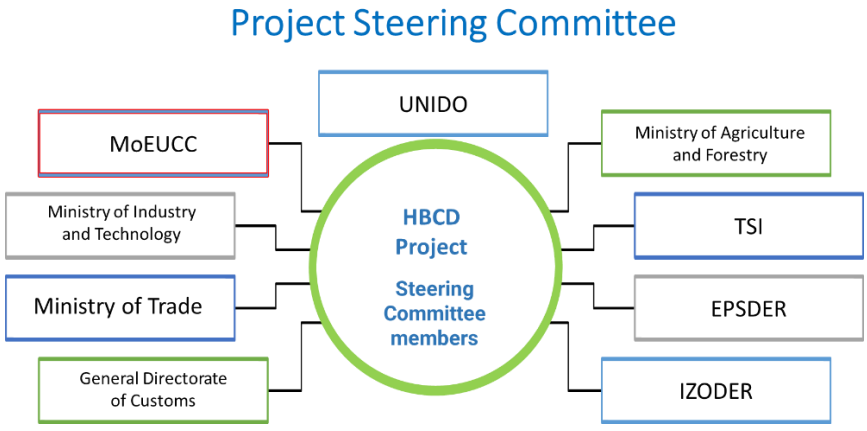
Dr. Esra Demirkol Colosio, holds PhD degrees in Sociology from Middle East Technical University and University of Sussex. She has 15 years experience in social research projects.

International Advisory Consultant, Richard Cooke, has an extensive knowledge and experience in international project consultancy and furnishes comprehensive technical and project management assistance for the execution of the Project. More specifically, this entails offering support to both the National Technical Consultant (NC) and the National Project Coordinator (PC).



Project Steering Committee

The Project Steering Committee comprises members representing the MoEUCC, UNIDO, the Ministry of Industry and Technology, Ministry of Trade, Ministry of Agriculture and Forestry, General Directorate of Customs, Turkish Standards Institute, EPSDER and İZODER.



PSC meets regularly once a year. According to project documentation, PSC had two meetings until now, one in July 2022 and one in July 2023.

Finance and co-finance

Initial project budget is given in Annex F of the CEO Endorsement and shown in Table 2a below.

Table 2a
Project Budget in CEO Endorsement

	Year 1	Year 2	Year 3	Total
Component 1				
Output 1.1	65,000	65,000	20,000	150,000
Output 1.2	7,000	88,000	80,000	175,000
Output 1.3	0	25,000	0	25,000
Total Component 1	**72,000**	**178,000**	**100,000**	**350,000**
Component 2				
Output 2.1	0	50,000	80,000	130,000
Output 2.2	0	100,000	20000	120,000
Output 2.3	1,535,000	0	0	1,535,000
Total Component 2	**1,535,000**	**150,000**	**100,000**	**1,785,000**
Component 3				
Output 3.1	0	60,000	40,000	100,000
Output 3.2	34,000	33,000	33,000	100,000
Output 3.3	565,000	0	0	565,000
Total Component 3	**599,000**	**93,000**	**73,000**	**765,000**
Component 4 (M&E)	**0**	**45,000**	**105,000**	**150,000**
Project Management Cost	**50,000**	**50,000**	**45,000**	**145,000**
Project Total	**2,256,000**	**516,000**	**423,000**	**3,195,000**

Disbursements

Commitments and realized disbursements as of MTR date are shown in Table 2b below.

Table 2b
Comparison of Project Disbursements by Year and Component

		2022			2023			2024		
Component	**Output**	Planned (Procurement Plan)	Contracted (Obligated)	**Spent (Disbursed)**	Planned (Procurement Plan)	Contracted (Obligated)	**Spent (Disbursed)**	Planned (Procurement Plan)	Contracted (Obligated)	**Spent (Disbursed)**
Component 1 (Outcome 1)- Regulatory strengthening, capacity building, stakeholder awareness and verification of environmentally sound alternatives for the replacement of HBCD	1.1	17,150.00	2,500.35	2,500.35	94,650.00	33,259.90	30,234.69	38,200.00		
	1.2	5,000.00			130,000.00	4,703.30	3,888.17	40,000.00		
	1.3	1,050.00	1,050.00	1,050.00	17,750.00	6,500.00	8,310.66	6,200.00		
Component 2 (Outcome 2)- Conversion from HBCD-based flame retardants promoted among EPS producers, by demonstrating economic and technical feasibility of alternative substances.	2.1	2,000.00	2,000.00	2,000.00	84,850.00	15,600.00	9,402.57	32,900.00		
	2.2	2,000.00	2,000.00	2,000.00	107,650.00	9,550.00	8,887.11	20,600.00		
	2.3				1,535,000.00	1,535,000.00	828,921.06			
Component 3 (Outcome 1)- Pilot conversion of production lines in the XPS sector in Turkey to showcase feasibility of alternatives.	3.1	2,000.00	2,000.00	2,000.00	59,250.00	17,450.00	9,402.57	24,750.00		
	3.2	2,000.00	2,000.00	2,000.00	82,850.00	8,550.00	8,887.11	29,150.00		
	3.3				565,000.00	565,000.00	300,079.99			
ME (Monitoring and Evaluation)		4,800.00	4,009.64	4,009.64	107,850.00	36,600.00	9,402.57	37,350.00		
PMC (Project Management Cost)		24,673.03	23,609.87	23,609.87	61,939.00	43,678.23	41,750.16	58,387.97		
	Total	60,673.03	39,169.86	**39,169.86**	2,846,789.00	2,275,891.43	**1,259,166.66**	287,537.97		

According to Table 2b, the project will very likely to be completed under budget. Although the original project budget was $3,195,000, only $2,315,061.29 was either contracted or spent by the end of 2023. With the amount of $287,537.97 planned to be spent in 2024, the total project cost will be $2,602,599.26, which is approximately 18.5% below the original project budget. Since the project has

either achieved or will achieve almost all of its objectives and outputs, this result indicates effective cost control in financial management of the project.

Co-financing

Amounts and sources of co-financing commitments at CEO-endorsement and their realization evels at MTR is given in Table 3.

Table 3

Co-Financing Amounts and Sources Confirmed at CEO Endorsement And Actual Amounts Secured and Confirmed at Midterm

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Committed Amount($)	Realized amount ($) on November 20th, 202	Realized Ratio (%)	Balance (USD)
Recipient Country Government	Ministry of Industry and Technology of Turkey (MoIT)	In-kind	Recurrent expenditures	2,104,419.00	1,753,539.00	83.33	350,880.00
Recipient Country Government	Turkish Standards Institute (TSE)	In-kind	Recurrent expenditures	1,049,800.00	892,330.00	85.00	157,470.00
GEF Agency	UNIDO	Grant	Investment mobilized	80,000.00	80,000.00	100.00	0.00
GEF Agency	UNIDO	In-kind	Recurrent expenditures	100,000.00	1,000,000.00	1000.00	-900,000.00
Private Sector	Industry Association - EPSDER	Equity	Investment mobilized	66,200.00	66,200.00	100.00	0.00
Private Sector	Industry Association - EPSDER	In-kind	Recurrent expenditures	100,000.00	100,000.00	100.00	0.00
Private Sector	Industry Association - IZODER	In-kind	Recurrent expenditures	100,000.00	100,000.00	100.00	0.00
Private Sector	Aschem	Equity	Investment mobilized	863,626.00	863,626.00	100.00	0.00
Private Sector	Aschem	In-kind	Recurrent expenditures	10,000.00	460,347.00	4603.47	-450,347.00
Private Sector	BTM	Equity	Investment mobilized	2,554,947.00	1,873,943.97	73.35	681,003.03
Private Sector	BTM	In-kind	Recurrent expenditures	10,000.00	32,360.42	323.60	-22,360.42
Private Sector	CFN	Equity	Investment mobilized	3,708,500.00	3,166,249.00	85.38	542,251.00
Private Sector	CFN	In-kind	Recurrent expenditures	10,000.00	152,950.00	1529.50	-142,950.00
Private Sector	Dinamik	Equity	Investment mobilized	140,960.00	167,152.80	118.58	-26,192.80
Private Sector	Dinamik	In-kind	Recurrent expenditures	10,000.00	25,965.03	259.65	-15,965.03
Private Sector	Dioki	Equity	Investment mobilized	1,631,758.00	1,307,911.00	80.15	323,847.00
Private Sector	Dioki	In-kind	Recurrent expenditures	10,000.00	46,977.00	469.77	-36,977.00
Private Sector	Eryap	Equity	Investment mobilized	110,000.00	2,411,976.46	2192.71	-2,301,976.46
Private Sector	Eryap	In-kind	Recurrent expenditures	10,000.00	7,649.35	76.49	2,350.65
Private Sector	Izocam	Equity	Investment mobilized	333,034.00	188,096.03	56.48	144,937.97
Private Sector	Izocam	In-kind	Recurrent expenditures	10,000.00	14,361.00	143.61	-4,361.00
Private Sector	ODE	Equity	Investment mobilized	23,050.00	343,382.23	1489.73	-320,332.23
Private Sector	ODE	In-kind	Recurrent expenditures	10,000.00	3,324.08	33.24	6,675.92
Private Sector	Ravago	Equity	Investment mobilized	5,050,757.00	5,619,702.00	111.26	-568,945.00
Private Sector	Ravago	In-kind	Recurrent expenditures	10,000.00	91,248.00	912.48	-81,248.00
Private Sector	Wallboard	Equity	Investment mobilized	158,423.00	263,730.21	166.47	-105,307.21
Private Sector	Wallboard	In-kind	Recurrent expenditures	10,000.00	1,596.39	15.96	8,403.61
Recipient Country Government	Ministry of Environment and Urbanization of Turkey (MoEU)	Grant	Investment mobilized	5,807,200.00	3,000,000.00	51.66	2,807,200.00
Recipient Country Government	Ministry of Environment and Urbanization of Turkey (MoEU)	Grant	Investment mobilized	1,024,800.00	750,000.00	73.19	274,800.00
Recipient Country Government	Ministry of Environment and Urbanization of Turkey (MoEU)	In-kind	Recurrent expenditures	1,152,480.00	1,152,480.00	100.00	0.00
			Total Co-Financing($)	**26,259,954.00**	**25,937,096.97**	**98.77**	**322,857.03**

Table 3. shows that 98.77% of the co-financing commitments were realized as of MTR date. This is very good and healthy signal that all partners fulfilled their financing commitments in the project.

Project-level monitoring and evaluation systems

Per the CEO Endorsement Letter, a Monitoring & Evaluation Plan has been developed during Inception Phase and included in the Inception Report. This plan is updated once a year.

Table 4 shows the key monitoring and evaluation activities in that plan and their status as of MTR date.

Table 4

Monitoring & Evaluation Plan from the Inception Report and Actual Fulfillment at Midterm

Activity/ Report	Time / Frequency	Responsible partner/staff	Budget Category	Status at MTR

PSC Meeting Project Evaluation Meeting Project Database	20 July 2022 and then at least once a year Will be held on October	PMU, PEE PMU, PEE, PSC, stakeholders	Public Awareness/ Consultation W/S	The SC for 2022 &2023 have been conducted. Project Database and all quantitative data has been updating under consultation of NC and IA.
Inception Report Progress Report Final Report	Within 3 months following the start of the project Once in six months Once after the implementation phase	PNC, PMU	-	Done The I&II&III&IV Progress report have been prepared The final Report will be prepared in end of May or first week of June
EPS/XPS sector general control Technical reports	Once following the termination of the education and meetings PMU and PEE will decide	PNC	National Project Consultant Project Int'l Advisory Consultant	On-Track. The periodic consultation meetings on EPS/XPS sector control have been conducted under facilitation with EPSDER/İZODER since Project initiation phase.
Gender Report	Once during the implementation phase	PEE, PMU	Gender Expert	On-Track
ESA Report	Once during the implementation phase	PEE, PMU	ESS Expert	The ESA reports have been prepared.
Independent mid-term evaluation	Mid-point of the project implementation phase	PEE	Independnt MTR Consultant	On-Track
Independent final evaluation	Once after the implementation phase	UNIDO	TE Consultant	**UNIDO**

M&V	Will be decided by UNIDO	UNIDO	Project M&V Consultant	**UNIDO**

Stakeholder engagement

Stakeholder engagement has been implemented effectively according to the Stakeholder Engagement Plan in Annex G of the Project Document and all of the following stakeholder engagement objectives have been achieved:

- Effectively involve the public to enhance the social, environmental, and financial sustainability of the project.
- Take responsibility for assuring that public involvement rests within the country and specifically with the Project executing agency in the form of the MoEUCC, the beneficiary private sector enterprises in the expanded and extruded polystyrene foam industries (EPS and XPS sectors) and with the support of UNIDO acting as the GEF Implementing Agency.
- Design and implement public involvement activities in a flexible manner, adapting and responding to recipient countries' national and local conditions and to project requirements.
- Deliver effective public involvement activities that are broad-based and sustainable.
- Include the appropriate allocation of resources, throughout the identification, design, implementation, monitoring and evaluation to ensure sustained commitments and actions related to public involvement activities.
- Carry out public involvement activities in a transparent and open manner.
- Provide full monitoring and documentation of public involvement.

In this context, MoEUCC assumed the responsibility of project execution based on an agreement with UNIDO effective from December 22nd, 2021. Primary stakeholders MoIT, MoT, TSE, General Directorate of Customs, İZODER and EPSDER, as Project Steering committee members, actively participated in steering committee meetings. Collaboration agreements between MoEUCC and TSE (Nov 17th, 2023), İZODER (October 3tg, 2023) and EPSDER (October 4th, 2023) have been signed and necessary financial resources have been mobilized for their support. Industry stakeholders (4 from EPS and 6 from XPS sector) have engaged in activities from the beginning of the project and financed under compensation agreements.

Reporting

The project seems to have established a good reporting mechanism to produce the following deliverables:

i) official announcement of the project steering committee,
ii) copies of posted job descriptions,
iii) copies of contracts,
iv) copies of work plans,
v) meeting minutes,
vi) copies of proposed agenda, list and meeting minutes of the project steering committee members,
vii) progress reports and deliverables highlighting any possible delay and preempting the issues that could impact in the implementation of the project.

The project has prepared one PIR to date, covering July 2022 through June 2023. This PIR was well prepared and reflective of the PIR's key purposes.

National Technical Consultant, Mrs. Şerife Erçel, has prepared several very valuable reports and documents including Technical Verification Reports.

In addition, the project has prepared Joint Quarterly Progress Reports for UNIDO submitted every 6 months.

Finally, the project generates still more regular reporting in the form of quarterly activity reports written by the International Advisory Consultant, Mr. Richard Cooke. These reports have extremely helpful sections on project implementation ("plans vs. reality"), and contain extensive recommendations seeking to define a helpful path forward for each component and activity of the project.

Communications

The project carries out communications at various levels.

The main type of communication to date has been internal communication with project allies and stakeholders – government agency partners including the MoEUCC, Ministry of Industry and Technology, Ministry of Trade, Turkish Standards Institute and Customs Agency; UNIDO; Industry Associations EPSDER and İZODER and ten industrial stakeholders from EPS and XPS sectors. Such communication has been consistent, comprehensive, and effective, largely because of the strong development, nurturing, and coordination of partnerships by MoEUCC and the project team. This communication includes interactions through the Project Steering Committee, as well as various trainings and workshops and bi-lateral or multi-lateral project internal meetings. The field study tours executed by the project have also enhanced personal and working relations among key individuals and industrial stakeholders.

Rating for Project Implementation and Adaptive Management

In light of all of the dynamics and effectiveness of project implementation in the seven areas enumerated above, **the MTR expert issues a rating of S (Satisfactory) for the overall category of Project Implementation & Adaptive Management** – which, according to the rating scale provided in the MTR guidance document, connotes that "*Implementation of most of the seven components is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action.*"

D. Sustainability

Sustainability within the project framework in Türkiye is fortified through a dual-pronged approach, aligning with the comprehensive elimination strategies adopted by major developed nations. A pivotal focus lies on reinforcing regulatory capacities for stringent controls on the import and utilization of hexabromocyclododecane (HBCD) and HBCD-containing products. This aligns seamlessly with Türkiye's evolving integrated chemicals management approach in consonance with the Strategic Approach to International Chemicals Management (SAICM). The engagement of key national institutional

stakeholders, including the MoEUCC, the Ministry of Industry and Technology (MoIT), and the Ministry of Trade (MoT), is integral to enforcement and substantial co-financing.

Technological sustainability is assured by promoting the latest flame retardant (FR) alternatives and associated production technologies for Expanded Polystyrene (EPS) and Extruded Polystyrene (XPS) producers. Forward-looking decisions consider potential international convention controls on FRs and related chemicals, including blowing agents and the prospective use of boron-mixed agents in the production process. Furthermore, the project actively encourages technological innovation and optimization, emphasizing cost-effective solutions to engage and inform both private and public sectors and, more broadly, civil society stakeholders. These efforts are solidified through robust linkages to an existing certification process adhering to national and international product standards.

Economic sustainability is fortified by the primary private sector partnerships embedded in the project design. Beneficiary enterprises are incentivized by enforced regulatory requirements mandating HBCD elimination, essentially a prerequisite for business continuity. Moreover, a performance-based grant disbursement mechanism further motivates enterprises, with payments contingent on meeting predefined phaseout milestones independently verified through inspections. The primary payment milestone occurs upon an enterprise's complete elimination of HBCD, confirmed through rigorous product analysis.

Social sustainability is ingrained in the project by reinforcing information disclosure and public participation. The dissemination of project outcomes to the general public via project website (https://kalicikirleticiler.com/) and social media channels is ensured. Crucially, local communities and women's groups are actively consulted in project activities to address risks and issues associated with legacy HBCDs and their alternatives. This approach aligns with the implementation of measures promoting gender equality and women's empowerment.

Risk log and risk mitigation countermeasures

Table 5 presents key elements of the Risk Log last revised in September 2023.

Taken together, these risks are nearly comprehensive. They are all well-stated and still applicable, with logical associated countermeasures. Therefore, the Risk Log constitutes a very helpful starting point for assessing the sustainability of the project, determining further actions, and monitoring risk mitigation throughout the rest of the project period.

Table 5
Revised Risk Log

#	Description	Date Identified	Type *Strategic *Financial *Environmental *Managemental	Impact & Probability (1: LOW / 5: Very HIGH)	Countermeasures / Mngt response	Owner
1	The economic fluctuations and delays in the compensation payments may affect	14.03.2023	Environmental Managemental	**P = 1** **I = 5**	The verification and regular checking process will be	MoEUCC

	manufacturers not to complete their HBCD phase-out activities. So, complete elimination of HBCD may not be achieved.				ensured by related Experts and PMU.	
2	Project beneficiary facilities are in high-risk earthquake zone cities. Also, three of them are very close to the south-eastern Anatolia region, which recently had an earthquake, and these facilities can be highly impacted. They can have a delay in completing the Project results.	14.03.2023	Environmental Strategic	**P = 3** **I = 4**	Conduct a detailed risk assessment and develop a mitigation plan accordingly	MoEUCC
3	Contamination, air pollution, and hazard risks may happen in the facilities due to any occurrence of an earthquake	14.03.2023	Environmental	**P = 1** **I =5**	Conduct a hazard risk assessment and develop a mitigation plan accordingly	MoEUCC
4	Since the earthquake affected the Southeast Anatolia region, transportation routes may be disrupted. This poses the risk that the facilities near the earthquake zone cannot obtain the needed raw materials.	14.03.2023	Environmental	**P = 2** **I = 4**	Alternative resource management can be held, and the raw material sources can be diversified and collaborate other enterprises	MoEUCC
5	Since alternative flame retardants and suitable technology are imported abroad, there is external dependency while producing EPS and XPS foam boards. This may cause a production risk.	14.03.2023	Environmental	**P = 1** **I = 4**	Building strategic partnerships with relevant institutions likewise technology and raw material suppliers, EPS and XPS producers abroad. Investing R&D activities	MoEUCC
6	Enterprises shift their technologies according to newly introduced flame retardants and hold product testing several times to reach the available standards. If the Company cannot	14.03.2023	Financial Environmental	**P = 3** **I = 3**	Providing technical assistance to company internal R&D and P&D activities to increase the product efficiency	MoEUCC

	guarantee success in complying with these standards of their R&D activities, this causes a high amount of budget loss.					
7	The project budget cannot be transferred to a company or person if any tax delinquency occurs.	14.03.2023	Financial	**P = 3** **I = 5**	Provide legal clauses that clearly outline the consequences of any tax delinquency to the enterprises. These clauses should specify the steps to take if tax obligations are unmet, including terminating the contract and seeking legal remedies.	MoEUCC
8	Alternative chemicals on the market instead of flame retardants containing HBCD also contain bromine. The use of bromine-containing compounds in flame retardants may be prohibited by the SC. This may cause a production risk.	05.09.2023	Financial Strategic	**P=4** **I=5**	Providing technical assistance to company about alternative flame retardant –free of brominated compounds.	MoEUCC
9	Environmental legislation violation that causes the revocation of the operation permit license of one of the project stakeholders	05.09.2023	Environmental	**P=3** **I=5**	The monitoring and regular checking process will be ensured by related Experts and provincial organization of MoEUCC	MoEUCC

Rating for sustainability

In view of all of the above-discussed risks to sustainability and proposed countermeasures, the MTR expert assigns a sustainability rating of **Likely**. According to the sustainability rating scale in the MTR guidance document, this means that there are *"Negligible risks to sustainability, with key outcomes on track to be achieved by the project's closure and expected to continue into the foreseeable future."*

IV. Conclusions & Recommendations

Conclusions

In conclusion, the evaluation of the project reveals a meticulously designed strategy in alignment with the GEF-7 Chemicals and Wastes focal area, particularly under the Chemicals and Wastes Industrial Chemicals Program (CW 1-1). This initiative, aimed at strengthening the sound management of industrial chemicals and their wastes, demonstrates a comprehensive approach to comply with Türkiye's international obligations, specifically in eliminating the use of Persistent Organic Pollutants (POPs) listed in Annex A of the Stockholm Convention. The project focuses on introducing internationally competitive technologies, techniques, and approaches for eliminating Hexabromocyclododecane (HBCD) in EPS and XPS foam insulation, crucial sectors for public safety and increased energy efficiency in Türkiye's buildings and infrastructure.

The progress toward the project's objective of promoting the replacement of HBCD with environmentally sound alternatives in the EPS and XPS foam industries is highly satisfactory. The TVRs indicate that necessary investments have been made, leading to the termination of HBCD use in the EPS sector by four producers in 2019 and in the XPS sector by six producers in 2020. This achievement reflects the effectiveness of the project in fulfilling its most important target.

Outcome 1.1 highlights significant progress in providing up-to-date non-proprietary information on HBCD alternatives, with a commendable alignment with the targeted objective. The dissemination of information, including an international literature review and references, during technical verification and Environmental Assessment activities, underscores a thorough and collaborative approach, setting the stage for a comprehensive dissemination workshop.

Outcome 1.2 showcases active efforts in regulatory capacity support, with ongoing discussions and outcomes under consideration for enhancing the POPs chemicals management framework. The meticulous execution through the MoEUCC reflects a conscientious approach to address identified gaps comprehensively, signifying proactive and strategic efforts toward improving regulatory control measures.

Outcome 1.3 indicates substantive progress in initiating the development of a national strategy for the management of waste containing POPs, including HBCD. The comprehensive strategy formulation, engaging both national and international expertise, reflects a robust and systematic approach, demonstrating the project's commitment to achieving its targets.

Outcomes in the EPS and XPS sectors (Outcome 2.1 to Outcome 3.3) demonstrate notable progress, with achievements surpassing mid-term and end-of-project targets. Producers and associations have effectively transitioned toward sustainable alternatives, showcasing a commitment to environmentally responsible practices within the PS production sector.

Outcome 4.1 emphasizes the assessment of project activities and dissemination of lessons learned for sustainable replication. Various project management and monitoring techniques have been implemented, with recommendations for further improvement.

The project's implementation and adaptive management have been efficient and effective, despite turnover within the project team. Areas for refinement exist, particularly in optimizing project management tools and reporting quality.

Sustainability risks are deemed negligible, with key outcomes expected to be achieved by the project's closure and likely to continue into the foreseeable future.

The project has already achieved high-impact outcomes, and the remaining tasks within the project can be successfully concluded by its conclusion. Overall, the project serves as a model for similar initiatives, contributing significantly to Türkiye's compliance with international agreements and promoting environmentally responsible practices in the chemicals and wastes sector.

Areas for further improvement are discussed along with associated recommendations in the next section.

Recommendations

Based on the findings and conclusions, the MTR expert recommends the following actions to help ensure the maximal fulfillment of targeted project outcomes and the sustainability of these outcomes even after the end of the project.

A. Project management

A1. Enhance the Work Plan by providing a more detailed account of the remaining activities within the project. The existing Work Plan in Excel is characterized by a lack of specificity, as it primarily offers a generalized overview with detailed information limited solely to the output level. It is imperative that the work packages, tasks, and subtasks essential for generating these outputs be delineated in a hierarchical structure, incorporating pertinent details such as duration, deadlines, budgetary considerations, and the respective individuals responsible for their execution.

Current Work Plan approach used in the project gives a general overview of project activities but lacks necessary details about the breakdown of those activities into tasks and subtasks, hierarchical, precise timing and inter-dependency relationship between activities.

Component	Outcome	Activity	WORKPLAN
			2022	2023											2024						
			Overall	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
Component 1. Regulatory Strengthening, capacity building, stakeholder awareness and verification of environmentally sound alternatives for the replacement of HBCD	**Outcome 1.1**. – Up to date non-proprietary information respecting HBCD alternatives and facilitated access to them provided and broad stakeholder awareness on the issue communicated	Output 1.1.1 – International references and expert contacts documented for dissemination to industrial stakeholders in the EPS and XPS sectors.																			
		Output 1.1.2 – Workshops and information dissemination on alternatives and access to them featuring international and national experts organized and delivered to a broad range of industrial, institutional, and NGO stakeholders impacted by HBCD phaseout.																			
	Outcome 1.2. - Regulatory capacity support for control and enforcement to sustained HBCD phase out delivered.	Output 1.2.1 –Gaps in regulatory control measures addressed in support of sustained phase out of use and import of HBCD developed and implemented with including strengthening of customs controls on HBCD imports consistent with international practice 240 t of HBCD in imported production inputs are eliminated.																			
		Output 1.2.2 – Capacity building and support studies for MoEU regulatory enforcement of sustained HBCD phase out provided.																			
	Outcome 1.3 – Measures for the control and environmentally sound management of HBCD containing waste implemented.	Output 1.3.1 – Support provided for development of a strategy for environmentally sound management of HBCD containing waste including definition of facility destruction requirements and options undertaken																			
Component 2: Elimination of HBCD use in the EPS sector in Turkey	**Outcome 2.1**- Pre-blended polystyrene (PS) producers have required technical information and capability to complete selection and production of alternative flame retardant containing production.	Output 2.1.1 – Individual pre-blended PS producers receive needed technical support on an individual proprietary basis to make optimum competitive decisions on alternative selection, finalize required investment to complete phase out and support producers of final EPS products in the production of HBCD free product.																			
	Outcome 2.2 – National EPS association (EPSDER) is technically supported in its programing to provide collective information and supporting laboratory capability for members on the use of alternative flame retardant in all stages of EPS production.	Output 2.2.1 – Technical information dissemination on alternatives for the EPS sector is delivered through EPSDER through support of provision of technical references in Turkish and sponsorship of workshop events utilizing recognized international and national experts.																			
		Output 2.2.2 – Technical support and laboratory capacity exists in the EPSDER CEVKAK laboratories to support sector product testing and certification requirements for qualification of non-HBCD containing flame retarded EPS																			
	Outcome 2.3 – Complete phase out of HBCD use in domestic production of preblended polystyrene production (975 t HBCD/year) used in the EPS sector directed to national markets is achieved	Output 2.3.1 – Phaseout of HBCD based production and replacement with suitable alternatives completed such that baseline HBCD consumption of 975 t/year is eliminated																			
Component 3: Elimination of HBCD use in the XPS sector in Turkey	**Outcome 3.1**- XPS producers have required technical information and capability to complete selection and production of alternative flame retardant containing production.	Output 3.1.1 – Individual XPS producers receive needed technical support on an individual on a proprietary basis to make optimum competitive decisions on alternative selection, and finalize required investment to complete phase out.																			
	Outcome 3.2 – National XPS association (ISODER) is technically supported in its programing to provide collective information for members on the use of alternative flame retardant in all stages of XPS	Output 3.2.1 – Technical information dissemination on alternatives for the XPS sector is delivered through ISODER through support of provision of technical reference in Turkish and sponsorship of workshop events utilizing recognized international and national experts.																			
	Outcome 3.3 – Complete phase out of HBCD use in domestic production of XPS production (705 t HBCD/year) used in the XPS sector is achieved	Output 3.3.1 - Phaseout of HBCD based production and replacement with suitable alternatives completed such that baseline HBCD consumption of 705 t/year is eliminated.																			
Component 4. Monitoring and Evaluation	**Outcome 4.1** - Outcomes from project activities assessed and lessons learnt disseminated for sustainable replication	Output 4.1.1 Project impact indicators designed, applied and project mid-term and terminal evaluation conducted.																			
Component 5. Project Management																					

Having a more detailed project work plan and monitoring system is crucial for several reasons:

- Clarity and Direction: A detailed project work plan provides a clear roadmap for project implementation. It outlines the tasks, milestones, and deliverables, offering a structured framework that guides the team in their activities.
- Resource Management: A well-defined plan helps in allocating resources efficiently. It enables project managers to identify resource needs, such as manpower, budget, and materials, and allocate them appropriately to ensure that the project stays on schedule.
- Risk Identification and Mitigation: A detailed work plan allows for a comprehensive assessment of potential risks. By breaking down the project into specific tasks, potential challenges and uncertainties can be identified early, and mitigation strategies can be developed and integrated into the plan.
- Communication and Coordination: A detailed plan serves as a communication tool, ensuring that all team members have a shared understanding of project goals, timelines, and responsibilities. It fosters coordination among team members, stakeholders, and partners.
- Progress Tracking: Monitoring is essential to track progress against the plan. It helps in identifying whether the project is on schedule, on budget, and meeting its objectives. Regular monitoring allows for timely adjustments and corrective actions if deviations are observed.
- Stakeholder Engagement: A detailed project plan provides a basis for engaging and managing stakeholders. Clear communication of project timelines and milestones enhances transparency and builds trust with stakeholders, including funders, team members, and beneficiaries.
- Quality Assurance: A well-planned project includes quality checkpoints and assurance measures. Monitoring ensures that project outputs and outcomes meet predefined quality standards, contributing to the overall success of the project.

- Learning and Improvement: Monitoring provides valuable data for project evaluation. By analyzing the effectiveness of different strategies and approaches, project managers can identify lessons learned and areas for improvement, informing future projects and initiatives.
- Compliance: For projects that need to adhere to regulations, standards, or contractual obligations, a detailed work plan and monitoring system help in ensuring compliance. It provides documentation for audit purposes and regulatory reporting.
- Cost Control: Detailed planning and monitoring contribute to effective cost control. By tracking expenses against the budget, project managers can identify cost overruns early and take corrective actions to keep the project financially viable.

Structuring activities, tasks, and subtasks in a detailed project work plan involves organizing them in a logical and sequential manner to ensure clarity, efficiency, and successful execution. Here's a suggested approach for structuring activities and their underlying tasks and subtasks:

Hierarchy of Activities: Begin with a top-level hierarchy that outlines major project activities. These are broad phases or categories that capture the primary components of the project.

Major Activities:

Break down the project into major activities. These are distinct phases that contribute to achieving project objectives. For example:

- Project Initiation
- Planning
- Execution
- Monitoring and Control
- Closure

Tasks within Major Activities: For each major activity, identify specific tasks that need to be completed. Tasks are more detailed and represent the steps necessary to achieve the major activity. For example:

Project Initiation

- Task 1: Develop Project Charter
- Task 2: Identify Stakeholders
- Planning
- Task 3: Develop Project Plan
- Task 4: Define Scope and Objectives

Subtasks: Break down tasks further into subtasks. Subtasks provide additional granularity and detail, making it easier for team members to understand the specific actions required. For example:

- Develop Project Plan
- Subtask 1: Define Project Scope
- Subtask 2: Identify Resource Requirements
- Subtask 3: Develop Project Schedule

Dependencies: Identify dependencies between tasks and subtasks. Dependencies highlight the order in which tasks need to be executed. Some tasks may be dependent on the completion of others.

Timeline and Milestones: Assign estimated durations to tasks and subtasks. This helps in creating a project timeline. Highlight key milestones that mark significant achievements or stages in the project.

Resource Allocation: Specify the resources required for each task and subtask. This includes human resources, budget, materials, and equipment.

Responsibilities: Assign responsibilities for each task and subtask. Clearly define who is accountable for the completion of each activity.

Quality Standards: Specify any quality standards or criteria associated with tasks and subtasks. This ensures that the project deliverables meet the required quality levels.

Risk Identification and Mitigation: Include tasks related to risk assessment and mitigation at appropriate stages. Address potential risks associated with specific activities.

Monitoring and Evaluation:Integrate tasks related to monitoring progress and evaluating outcomes. Define key performance indicators (KPIs) for each major activity.

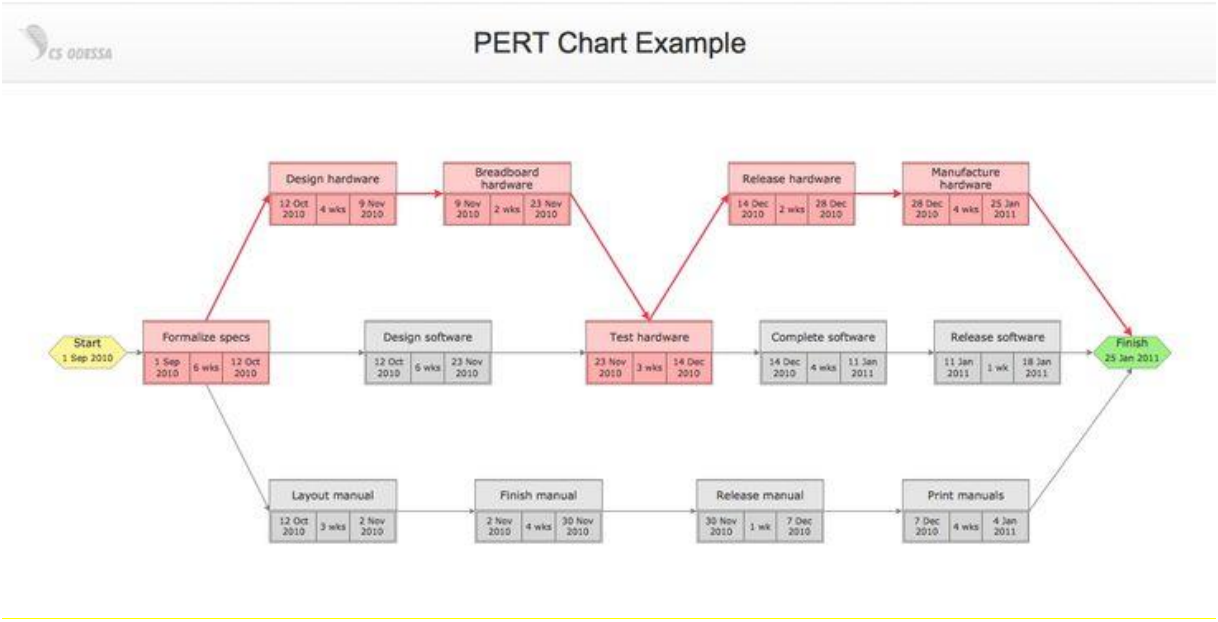
Communication Plan: Incorporate tasks related to communication within and outside the project team. This includes regular reporting schedules and methods.

Change Management: Include tasks related to change management processes. Specify how changes to the project plan will be identified, assessed, and implemented.

Documentation: Specify tasks related to documentation requirements for each activity. This ensures that there is a record of decisions, approvals, and outcomes.

Closure and Evaluation: Include tasks related to project closure and evaluation. Define criteria for closing out each major activity and the overall project.

By structuring activities, tasks, and subtasks in a hierarchical and organized manner, you create a roadmap that facilitates effective project management. This structure enhances communication, accountability, and the ability to track progress throughout the project lifecycle.



A2. It is recommended to consider using project management software tools like Jira, Microsoft Project, or Basecamp. These platforms provide interactive dashboards for quickly monitoring both overall project and individual progress statuses. They also offer Gantt timeline views that help identify upcoming due dates, potential roadblocks, or project progression. Additionally, these tools allow for effective budget tracking, ensuring control over expenditures and adherence to project timelines. Currently, project-related information, including the Work Plan, is stored in Excel, a platform not specifically designed for comprehensive project management purposes.

The recommendation to consider using project management software tools such as Jira, Microsoft Project, or Basecamp is grounded in the need for a more robust and specialized approach to project management. The existing practice of storing project-related information, including the Work Plan, in Excel, while versatile, lacks the comprehensive features necessary for efficient project oversight. The justification for this recommendation is outlined below:

Interactive Dashboards: Project management software tools offer interactive dashboards that provide a real-time snapshot of both overall project and individual progress statuses. These dashboards enhance visibility, allowing stakeholders to quickly assess the project's health and identify potential areas of concern or success.

Gantt Timeline Views: These platforms include Gantt timeline views that offer a visual representation of project timelines. This feature aids in identifying upcoming due dates, potential roadblocks, and the overall progression of the project. Gantt charts are invaluable for project planning and scheduling.

Budget Tracking: Project management software facilitates effective budget tracking. It allows for the creation and monitoring of budgets, ensuring control over expenditures and adherence to project timelines. This feature is critical for financial management and helps prevent budget overruns.

Centralized Information Hub: These tools serve as centralized information hubs, consolidating project-related data in one accessible location. Unlike Excel, which may lead to dispersed information and

version control challenges, project management software ensures that all stakeholders have access to the most up-to-date and accurate information.

Collaboration and Communication: Project management platforms facilitate collaboration and communication among team members. They offer features such as task assignment, progress updates, and discussion forums, fostering efficient teamwork and reducing the risk of miscommunication.

Customization and Scalability: Many project management tools allow for customization to fit the specific needs of a project. They are also scalable, accommodating the growth and changing requirements of a project over time.

Automation of Repetitive Tasks: These platforms often include automation features, streamlining repetitive tasks and reducing the manual effort required for project management activities. This leads to increased efficiency and fewer errors.

Security and Data Integrity: Project management software tools prioritize security and data integrity. They often include access controls and permissions, ensuring that sensitive project information is only accessible to authorized individuals.

Integration Capabilities: These tools can integrate with other software and services, creating seamless workflows. This allows for the integration of project management with other business processes, enhancing overall organizational efficiency.

Comprehensive Reporting: Project management software provides comprehensive reporting capabilities, generating detailed reports on project progress, resource utilization, and other key metrics. This aids in informed decision-making and performance analysis.

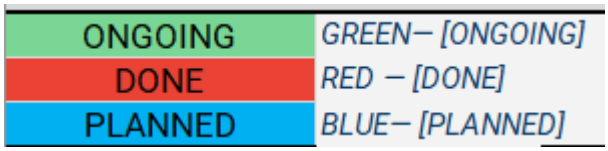
A3. In monthly progress reports, create a dashboard to closely monitor the progress in the fulfillment of incomplete indicators as identified in the MTR report.

The recommendation to include a dashboard in monthly progress reports, specifically concentrating on the fulfillment of incomplete indicators identified in the Mid-Term Review (MTR) report, is substantiated by several compelling reasons. This proposed dashboard allows for a concentrated and efficient monitoring of indicators highlighted as incomplete during the Mid-Term Review, directing resources and attention to critical areas in need of improvement. Regular monitoring on a monthly basis enables the project team to swiftly identify deviations from the planned trajectory, facilitating proactive measures to address issues before they escalate and impact overall project success. The dashboard, with its visual representation of incomplete indicators, enhances transparency, providing stakeholders with a clear view of performance trends and areas requiring additional attention. It fosters a sense of accountability among team members responsible for incomplete indicators, encouraging ownership and active contributions to achieving set objectives. The dashboard also serves as a valuable tool for strategic decision-making, allowing project managers and stakeholders to make informed decisions on resource allocation and targeted interventions. This initiative aligns directly with MTR recommendations, demonstrating a proactive approach to addressing identified gaps and ensuring responsiveness to review findings. The dashboard acts as an effective communication tool, offering regular updates to stakeholders and promoting a shared understanding of the project's current status. The emphasis on continuous improvement is evident, as regular monitoring cultivates a culture of ongoing enhancement,

optimizing project performance over time. Additionally, the identification of incomplete indicators supports proactive risk mitigation, minimizing the likelihood of challenges escalating into significant risks that could jeopardize project objectives. Ultimately, the creation of a dedicated dashboard reflects the project team's commitment to success, showcasing a proactive and results-oriented approach that instills confidence among stakeholders in the achievement of project goals.

A4. In monthly progress reports, use widely accepted color codes to identify planned, on-going and completed tasks. Current color code used in the monthly progress reports does not comply with widely accepted project management conventions.

In monthly progress reports prepared by the proect staff in Excel, some color codes are used to identify the status of any specific task. There are three color codes used: green, blue and red as shown in the following figure.



This color coding is not compliant with the widely accepted project management conventions. In project management, color codes are often used to visually represent and convey information about various aspects of a project, such as task status, priority, and resource allocation. While there isn't a universally standardized set of color codes, here are some common color conventions and their typical meanings:

Red: Red is often used to highlight critical or overdue tasks at risk of project delays.

Yellow or Amber: Yellow or amber may represent high-priority tasks that require attention but are not yet critical.

Green: On Track: Green typically represents tasks that are on schedule. It indicates that things are going well.

Blue: Represents completed tasks.

Gray: Represents unallocated tasks.

A5. Identify the root causes of occasional slow decision-making challenges and approval procedures which caused delays in engagement of experts, recruitment of project staff and preparation and finalization of contracts and implement a targeted strategy aimed at expediting the decision-making and approval process.

During the Mid-Term Review (MTR) and stakeholder interviews, notable delays were observed in the finalization of various recruitment and cooperation agreement processes. For instance, while the contract between UNIDO and MoEUCC was signed in December 2021, the core project team was not hired and commenced work until July 2022. Similarly protracted was the hiring process for the Gender Mainstreaming Expert, which extended beyond six months. The initiation of the MTR process itself took approximately six months from the commencement of preparation work. Additionally, delays were evident in concluding collaboration agreements with TSE, EPSDER, and İZODER, finalized at a later stage of the project in October/November 2023, leaving limited time for anticipated deliveries from these institutions within the project timeframe.

The recommendation to identify the root causes of occasional slow decision-making challenges and approval procedures, leading to delays in engaging experts, recruiting project staff, and finalizing contracts, is essential for optimizing project efficiency. A targeted strategy should be implemented to expedite the decision-making and approval process. This recommendation is justified by the need to address specific bottlenecks that hinder the project's progress. By identifying the root causes, the project team can pinpoint areas where the decision-making process is prone to delays, whether due to procedural complexities, organizational structures, or other factors. Once these root causes are understood, a tailored strategy can be developed to streamline decision-making and approval procedures, reducing the time taken for crucial activities such as engaging experts, hiring staff, and finalizing contracts. This targeted approach ensures that the project operates with greater agility, minimizes delays, and maximizes its overall effectiveness.

B. Component 1

B1. Facilitate the expeditious advancement of training of 450 MoEUCC / customs inspection staff and 320 product standards inspectors on HBCD detection and addition of analytical capacity in TSE in place and 300 product analysis undertaken, which currently lag behind the mid-term and end-of-project targets, over the remaining six months of the project's duration. Employ meticulous planning, prompt execution, and rigorous monitoring to ensure the attainment of the specified targets by the conclusion of the project.

The recommendation to facilitate the expeditious advancement of training for 450 MoEUCC/customs inspection staff and 320 product standards inspectors on HBCD detection, along with the addition of analytical capacity in TSE and the completion of 300 product analyses, is crucial for aligning project progress with mid-term and end-of-project targets. To address the current lag behind these targets over the remaining six months of the project, meticulous planning, prompt execution, and rigorous monitoring are essential. By prioritizing the training of relevant personnel and enhancing analytical capabilities, the project aims to bridge the existing gaps in skillsets and capacities. The emphasis on expedited execution underscores the urgency of achieving the specified targets within the designated timeframe. Through careful planning and close monitoring, the project can ensure that the training and analytical activities progress efficiently, contributing to the overall success of the project and meeting the established objectives.

B2. To enhance the effectiveness and broader reach of information dissemination pertaining to the project, it is recommended to implement the following measures: Firstly, update the project webpage regularly at https://kalicikirleticiler.com, incorporating recent developments and news related to the project. Additionally, ensure the inclusion of the HBCD project among the ongoing projects in the English version of the webpage. Secondly, augment awareness by expanding the project's presence on social media platforms, including but not limited to Youtube, Linkedin, Facebook, Twitter, and Instagram. Presently, there are only two subscribers to the @kalicikirleticiler Youtube channel, suggesting the potential for growth and increased visibility across diverse social media channels.

The recommendation to implement measures for enhanced information dissemination is essential for maximizing the effectiveness and reach of the project. Firstly, regular updates on the project webpage at https://kalicikirleticiler.com are crucial to keeping stakeholders informed about recent developments and news related to the project. Ensuring the inclusion of the HBCD project among the ongoing projects

in the English version of the webpage contributes to broader accessibility and understanding. Secondly, expanding the project's presence on various social media platforms, including Youtube, Linkedin, Facebook, Twitter, and Instagram, is imperative for increasing awareness. With only two subscribers to the @kalicikirleticiler Youtube channel at present, there is significant potential for growth and heightened visibility across diverse social media channels. These measures collectively contribute to a comprehensive and dynamic approach to information dissemination, fostering greater engagement and understanding among stakeholders.

B3. Facilitate the expeditious advancement of dissemination and training activities (workshops) for the EPS and XPS sectors, which currently lag behind the mid-term and end-of-project targets, over the remaining six months of the project's duration. Employ meticulous planning, prompt execution, and rigorous monitoring to ensure the attainment of the specified targets by the conclusion of the project.

The recommendation to expedite the dissemination and training activities for the EPS and XPS sectors in the remaining six months of the project is grounded in the imperative to meet mid-term and end-of-project targets. The current lag in these activities necessitates a strategic and focused effort to bridge the gap and ensure that project objectives are met within the specified timeframe.

Meticulous planning is essential to identify key milestones, allocate resources efficiently, and design targeted dissemination and training programs. Prompt execution becomes paramount to make up for lost time and capitalize on the remaining project duration effectively. The urgency of the situation requires a proactive approach to ensure that workshops are scheduled, organized, and conducted without unnecessary delays.

Rigorous monitoring is crucial to track progress, identify potential bottlenecks, and implement corrective measures promptly. By closely monitoring the execution of dissemination and training activities, the project team can adapt strategies in real-time, ensuring that the EPS and XPS sectors align with the predetermined targets by the conclusion of the project.

In essence, this recommendation advocates for a concerted and efficient effort to accelerate activities in lagging activities, emphasizing the importance of detailed planning, timely execution, and vigilant monitoring. This approach enhances the likelihood of meeting project goals and maximizing the impact of dissemination and training initiatives within the available timeframe.

C. Component 2

C1. Make sure that at least three training events and information dissemination activities have been completed by the end of the project to meet the Component 2 targets in this respect.

Ensuring the completion of at least three training events and information dissemination activities by the end of the project is crucial to meeting the Component 2 targets. These activities play a pivotal role in disseminating essential knowledge and building capacity, aligning with the project's objectives and contributing to the successful implementation of Component 2. The recommendation underscores the importance of fulfilling specific targets related to training and information dissemination within the designated project timeline.

D. Component 3

D1. Ensure the timely execution of the second and third technical workshops in February, as well as the fourth technical workshop in March, with the participation of all İZODER members.

Ensuring the timely execution of the second and third technical workshops in February, followed by the fourth technical workshop in March, with the participation of all İZODER members is crucial for several reasons. Firstly, these workshops serve as essential forums for knowledge sharing, collaboration, and skill development within the İZODER community. A punctual schedule guarantees that members can benefit from these opportunities without disruption, maximizing the value derived from the workshops.

Secondly, the sequential arrangement of workshops in February and March allows for a structured progression of technical content, building on the insights gained in earlier sessions. This logical sequence enhances the learning experience and ensures that participants can apply cumulative knowledge to increasingly advanced topics.

Moreover, the active involvement of all İZODER members is vital for fostering a sense of community and inclusivity. Timely workshops encourage broad participation, ensuring that diverse perspectives are considered and that the collective expertise of İZODER is effectively harnessed.

Lastly, adherence to the proposed timeline is essential for overall project efficiency. It allows for adequate preparation, coordination, and follow-up activities, contributing to the seamless execution of the technical workshops. Overall, this recommendation prioritizes effective knowledge transfer, skill development, and community engagement, ultimately supporting the overarching objectives of the project.

E. Component 4

E1. Facilitate the prompt recruitment of the International POPs/Hazardous Waste Consultant to ensure sufficient time for the development of the environmentally sound management roadmap of wastes containing or contaminated with persistent organic pollutants including HBCD finalized within the constrained timeframe leading to the conclusion of the project.

The prompt recruitment of the International POPs/Hazardous Waste Consultant is crucial for expeditiously advancing the development of the environmentally sound management roadmap. The urgency stems from the need to address wastes containing or contaminated with persistent organic pollutants, including HBCD, within a constrained timeframe. The timely appointment of a specialized consultant is imperative to leverage his/her expertise and experience, ensuring a focused and efficient approach to the complex task at hand. This proactive measure not only facilitates the acceleration of the project but also allows ample time for comprehensive planning and strategy formulation, ultimately contributing to the successful and timely conclusion of the initiative. The significance of meeting environmental targets and regulations underscores the importance of swift and informed decision-making, making the prompt recruitment of the consultant an essential step towards achieving the goals of the project.

E2. Conduct a risk analysis with regard to the possibility of not being able to reach the Gender Mainstreaming targets set forth for the end of the project and develop a mitigation plan.

Based on the information from the project documents and interview with the Gender Mainstreaming Expert, it seems that there is a risk of not achieving quantitative target in terms of increasing women's employment in the EPS and XPS sectors compared to baseline: by 25 at MTR and by 99 at the end of the project. Developing a mitigation plan based on the findings of the risk analysis ensures that the project is

equipped with contingency measures. This proactive approach not only enhances the project's resilience but also demonstrates a commitment to addressing gender mainstreaming objectives effectively. The mitigation plan acts as a roadmap for the team to navigate challenges, allowing for timely adjustments and interventions to keep the project on course. In essence, this recommendation aligns with best practices in project management, emphasizing foresight, adaptability, and a commitment to achieving gender mainstreaming targets within the established timeframe. By addressing potential risks upfront, the project team can enhance its capacity to navigate uncertainties and ultimately increase the likelihood of meeting its Gender Mainstreaming goals.

Annexes

Annex A. Progress Toward Results Matrix

Annex B. Matrix of Evaluative Questions for the MTR

Annex C. Written questionnaire and list of recipients

Annex A. Progress Toward Results Matrix (Achievement of Outcomes against End-of-Project Targets)

Note: *KPIs partially fulfilled or not fulfilled are shown in italic under the "Mid Term Levels & Evaluation" column*

Applicable GEF Strategic Objective and Program:
CW1-1: Phaseout, elimination and avoidance of HBCD, a chemical of global concern, and its waste in the environment and in processes, materials and products, namely EPS/XPS insulating foam consistent with country obligations under the Stockholm Convention

	Indicator	Baseline	Targets			Achievement Rating & Justification
			Mid-term Target	Mid-Term Levels & Assessment	End of project	
Objective: To promote the replacement of persistent organic pollutants with environmentally sound alternatives in the EPS and XPS foam industries in Türkiye	Quantity of HBCD consumed and number of enterprises eliminating the use of HBCD in the production of EPS and XPS in Türkiye by conversion to environmental sound alternatives.	• No phaseout of HBCD initiated in XPS and EPS sectors on initial project approval and country assumption of phase out obligations (2016) • Consumption of HBCD in the EPS and XPS sectors is 1,919 t/year including imports. • Total production of HBCD EPS and XPS containing product 521,000 t/year.	• Two (2) producers of pre blended PS and three (3) XPS have eliminated HBCD use. • Imports of HBCD containing pre-blended PS reduced to 120 t/year. • HBCD Phase out in EPS and XPS sectors of 1,189 t/year	• All four (4) producers of pre blended PS and All six (6)) XPS have eliminated HBCD use.by the end of 2019 (small use in 2020 associated with permitted use of remaining stocks (34 t). Offset by environmentally sound destruction of 20 t in 2020 • Imports of HBCD containing pre-blended PS ceased at the end of 2018 with application of regulatory ban and closure of global export of HBCD by China. Estimated average imports from2016-18 was 237 t/year (Baseline was 240 t/year). • HBCD Phase out in EPS and XPS sectors of targeted baseline consumption quantity (1,919 t/year – 2016-18 average) was achieved and verified. As reported in the TVR summary, actual HBCD consumption elimination for the project period (2016 - 2018) was 2,809 tonnes and	• Four (4) producers of pre blended PS and six (6) XPS have eliminated HBCD use • Imports of HBCD containing pre-blended PS eliminated. • Equivalent HBCD consumption eliminated in EPS and XPS sectors of 1,919 t/year • Production of 521.000 t/tear of HBCD containing product eliminated.	**Highly Satisfactory (HS)** As sources of verification confirm, not only mid-term targets but also end-of-project targets have been met by the project as of MTR date. Complete phase out of HBCD will be further confirmed by the direct analytical verifications to be carried out by TSE. Sources of Verification: • Project progress/ supervision reports. • Regular enterprise/ and industry association reports • Regulatory inspection reports. • Custom's authority reporting. • Technical Verification Reports (TVRs) on each enterprise and overall summary report completed in January 2023. • Continued monitoring by national technical consultant/PMU staff/MOEUCC inspection.

	Indicator	Baseline	Targets			Achievement Rating & Justification
			Mid-term Target	Mid-Term Levels & Assessment	End of project	
			• Total production of HBCD EPS and XPS containing product eliminated is 261,000 t/year	in the absence of the Project there would have been an additional 4,610 tonnes of HBCD consumed in 2019-2021 period or an estimated annual average for this period of 1,537 tonnes based on the total alternative flame-retardant consumption volumes being discounted by 25% to account for increase in volume use of alternatives relative to HBCD. This provides a measure of HBCD avoidance for a 5-year period in absence of the GEF project. • Total production of HBCD EPS and XPS containing product eliminated is 521,000 t/year based on the baseline estimate 2018 consumption. Actual consumption evaluated in the enterprise TVRs indicates somewhat lower actual HBCD containing production largely due to early phase out of HBCD production to the EU market (bans already in-place) and weak domestic construction market. Nevertheless, the project eliminated generation of a large quantity of future HBCD contaminated legacy wastes that would have otherwise occurred.		
	Implemented regulatory framework for enforcement of bans on use	• Türkiye has initiated a program targeting EU harmonization in relation to	• Gaps in regulatory control measures within the current framework governing chemicals	• Gaps in regulatory control measures within the current framework governing chemicals management, POPs and specifically	• Comprehensive regulatory control measures within the current framework governing chemicals	**Satisfactory (S)** In accordance with data derived from verification sources, the MTR survey, and consultations with stakeholders, it is

	Indicator	Baseline	Targets			Achievement Rating & Justification
			Mid-term Target	Mid-Term Levels & Assessment	End of project	
	and import of HBCD within an overall chemicals management that is harmonized with the EU and international practice	chemicals management inclusive of HBCD elimination and the private sector has initiated the phase out of HBCD. • HBCD is covered by amendment of national POPs regulation but not fully enforced while exemption provision of the Türkiye's adoption of its coverage under the SC apply. • Türkiye's chemical management and registration framework not yet fully developed limiting comprehensive enforcement on use and import of HBCD pending full harmonization with international regulations.	management, POPs and specifically HBCD being actively addressed in MoEUCC and other agencies. • Training and capacity building on regulatory and technical performance control of HBCD and HBCD containing products undertaken. • Development of strategy studies on management of HBCD containing waste initiated • Imports of HBCD in imported pre-blended PS reduced to 120 t.year	HBCD are being actively addressed in MoEUCC and other agencies. Specific activities planned, undertaken and in progress described against Outcome 1.2 below. • Training and capacity building on regulatory and technical performance control of HBCD and HBCD containing products undertaken has been initiated. Specific activities planned, undertaken and in progress described against Outcome 1.2 below. • Development of strategy studies on management of HBCD containing waste in progress. Specific activities in progress described against Outcome 1.3 below initiated. • Imports of HBCD in imported pre-blended PS effectively eliminated with enforcement of regulatory bans and discontinuing of exports by principle international producers. Program of analytical enforcement monitoring of end product upon import and placed on the market being initiated by TSE.	management and POPs and specifically HBCD harmonization with international practice. • Capability for effective enforcement of bans on HBCD and HBCD containing products and technical performance control in place • Strategy for management of HBCD containing wastes adopted. • Imports of HBCD in imported pre-blended PS eliminated (240 t/year).	noteworthy that the designated indicator, along with all intermediate targets, has been successfully attained, excluding the numerical benchmarks related to training activities and workshops. Observations indicate a delayed commencement of training and dissemination initiatives, with the majority scheduled for execution during Q1-Q2 2024, marking the culmination of the project. It is recommended that these activities be strategically scheduled at earlier stages of the project for enhanced efficiency and overall benefit. Sources of Verification: • Task specific reports and technical documentation • Supervisory consultant reports • Import reporting from Customs Authorities and industry partners
	Tracked and quantified elimination of HBCD use and imports by the EPS and	• No systematic national data collection and reporting undertaken until done so during the	• Regular enterprise reporting on HBCD consumption established coordinated through EPS/XPS Associations	• Program of enterprise reporting on HBCD consumption as part of HBCD phase out technical verification completed and documented in enterprise	• Regular enterprise reporting on HBCD consumption and imports established and coordinated through	**Highly Satisfactory (HS)** The target "Regular enterprise reporting on HBCD consumption established coordinated through EPS/XPS Associations" aimed at setting up a

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	EXPS sectors	project's PPG stage that established a baseline for consumption in both sectors.	.	TVRs and summary verification report. MoEUCC in coordination with the PMU, NC and EPS/EXPS associations maintaining regular reporting of nil HBCD consumption. This is being supported by an TSE analytical monitoring program that has been initiated.	EPS/XPS Associations and custom's authorities	systematic reporting mechanism within enterprises in collaboration with EPS/XPS Associations. The result, "Program of enterprise reporting on HBCD consumption as part of HBCD phase-out technical verification completed and documented in enterprise TVRs and summary verification report," signifies the successful implementation of a program that incorporates enterprise reporting on HBCD consumption as an integral component of the HBCD phase-out technical verification. The MoEUCC, in coordination with the Project Management Unit (PMU), National Committee (NC), and EPS/EXPS Associations, ensures regular reporting of zero HBCD consumption. Furthermore, this is reinforced by the initiation of a TSE analytical monitoring program. In assessment, the result indicates a commendable achievement in meeting the intended target. The established program not only incorporates regular reporting but also integrates it into the broader context of HBCD phase-out, enhancing transparency and adherence to regulatory requirements. The collaboration with relevant entities and the implementation of a monitoring program will further strengthen the effectiveness of the reporting system. Sources of Verification: • Enterprise, industry association and custom authority reports. • Technical Verification Reports on each enterprise and overall summary report completed in January 2023
	Türkiye is in full compliance	• Türkiye is generally in compliance with its obligations	• Türkiye finalizes and notifies the SC on the date at which its current	• Türkiye has completed notification procedures that its original exemption	• Türkiye has removed exemption provisions respecting HBCD and is	**Highly Satisfactory (HS)**

	Indicator	Baseline	Targets			Achievement Rating & Justification
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	with its SC Annex A obligations with respect to HBCD and providing support to other developing countries in achieving that status	under the SC but in the case of elimination of the Annex A chemical HBCD is operating under the provision for a limited time exemption.	exemption respecting HBCD will be removed.	respecting HBCD consumption should be removed effective *(Expiry date of exemption: 26.11.2019 and Türkiye updated the NIP in 2022 and sent it to the SC secretariat).*	operating in full compliance with the SC. • Türkiye has disseminated results and lessons learned in the project internationally.	The achieved result indicates that Türkiye has successfully fulfilled the commitment by completing the required notification processes for the removal of its original exemption regarding HBCD consumption. The update to the National Implementation Plan (NIP) in 2022 and its subsequent submission to the SC secretariat further underscores Türkiye's compliance with reporting obligations. The result demonstrates a successful accomplishment of the targeted objective. Türkiye has not only notified the SC about the removal of the exemption but has also adhered to the timeline specified in the original exemption. Additionally, the proactive step of updating the NIP and sharing it with the SC secretariat reflects Türkiye's commitment to transparency and compliance with international obligations under the Stockholm Convention. Sources of Verification: • MOEUCC regulatory documents produced. • Project supervision reports. • SC convention reporting documents
	- Majority of women's participation will be provide in activities - Encourage female candidates and pay attention to gender equality in procurement processes of experts	- In both sectors employment of women is low in production operations and management - Majority of people living in the areas that include these sectors are lack of education on gender equality - In these sectors, working areas are	- As a result of awareness activities on gender norms and gender equality majority of the employees will be informed. (Gender components incorporated in 3 awareness events) - Education on gender sensitivity will be given (gender components	*-A gender expert held a face-to-face informational meeting with representatives of female employees at the facilities of 4 EPS producers and 6 XPS producers. Awareness activities on gender norms and gender equality majority of the employees included in the Inception W/S and will be included in the first information dissemination W/S planned for January 2024, in third and fourth W/S*	- Participation rates of suitable females in sector will be increased. HBCD-induced health problems on genders will be prevented - sectors will be informed on gender equality - Gender components incorporated into 6 awareness and 4 training events Women's employment in the EPS and XPS sectors increased by 99	**Satisfactory (S)** The Gender Mainstreaming Expert (GME) was incorporated into the project in June 2023, a point in time relatively advanced within the project's duration, which constrained the initiation of planned activities and the attainment of tangible outcomes within the remaining project timeframe. Although the recruitment process commenced in January 2023, the engagement of the GME was protracted, exceeding a duration of six months.

	Indicator	Baseline	Targets			Achievement Rating & Justification
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	- Achievement of human empowerment - Paying attention to usage of gender sensitive language in all documents.	mostly gender oriented. - Access of resource and technology mostly in the management of men	incorporated into 2 training programs) - Women's employment in the EPS and XPS sectors increased by 25	*involving EPSDER/İZODER planned in the first and second quarter of 2024.* *- survey data update on current female employment in beneficiary enterprises has been initiated.*		Since assuming the role in June 2023, the GME has exerted substantial efforts, conducting various training and awareness activities, executing surveys and interviews with stakeholders, and producing preliminary reports. As of the date of the Mid-Term Review (MTR), a final assessment report is pending, determining conclusively whether the mid-term targets have been successfully met or not. Sources of Verification: - Reports of Gender Mainstreaming Expert - Interview with Gender Mainstreaming Expert
	Component 1: Regulatory Strengthening, capacity building, stakeholder awareness and verification of environmentally sound alternatives for the replacement of HBCD					
Outcome 1.1 - Up to date non-proprietary information respecting HBCD alternatives and facilitated access to them provided and broad stakeholder awareness on the issue communicated	Increased awareness for stakeholders impacted by the elimination of HBCD in the EPS and XPS sectors including producers, their customers, supply chains, impacted communities, institutional stakeholders and civil society including women.	• Limited information availability, awareness at the institutional, user, consumer and public levels respecting alternatives to HBCD and impact of HBCD elimination.	• International references and expert contacts documented for dissemination to industrial stakeholders in the EPS and XPS sectors. • Three (3) introductory workshops/information dissemination sessions on project scope, importance of	• Building on materials prepared and disseminated during the PPG stage, updated information on alternatives as available conveyed to enterprises during the technical verification process by the NC and is continued as part of EA activities undertaken by PMU. A working document including international literature review and references has been prepared by the NC and the issue will be addressed in the planned dissemination W/S. • *Materials related to project scope, importance of EPS/XPS sectors, HBCD alternatives and access to them included in the*	• Project closure workshop for key stakeholders presenting project result, lesson learned and future chemicals management challenges. • Up to date web-site and social media based out puts throughout the project • Project technical and methodology results documented and widely disseminated in Türkiye and internationally through UNIDO.	**Satisfactory (S)** The achieved result indicates significant progress, with updated information on alternatives being communicated to enterprises during the technical verification process by the National Consultant (NC). This dissemination of information is not only a continuation of activities initiated during the Pre-Project Phase (PPG) but also extends into activities conducted by the Project Management Unit (PMU) as part of Environmental Assessment (EA) endeavors. Notably, the NC has diligently prepared a working document encompassing an international literature review and references. This document is scheduled to be addressed comprehensively during the planned dissemination workshop. The achieved result demonstrates a commendable alignment with the targeted objective. The comprehensive

	Indicator	Baseline	Targets			Achievement Rating & Justification
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			EPS/XPS sectors, HBCD alternatives and access to them, targeting the following stakeholders – institutions, private sector users/customers/supply chain participants, and external stakeholders (product consumers, impacted communities, women's advocacy group and civil society stakeholders generally impacted by HBCD phaseout). • Project web-site and social media platform established	*Inception W/S and will be included in the first information dissemination W/S planned for January 2024, in third and fourth W/S involving EPSDER/İZODER planned in the first and second quarter of 2024.* • Addition of materials for HBCD Project being included in MOEUCC priority chemicals web site (https://kalicikirleticiler.com/) with continuing updates.		documentation of international references, coupled with the proactive dissemination of alternative information to stakeholders during both technical verification and EA activities, underscores a thorough and collaborative approach. The forthcoming dissemination workshop is poised to further enhance the outreach and impact of the information gathered, contributing significantly to the project's overarching goals. As a criticism, it is noted that the objective concerning three introductory workshops or dissemination activities has not been entirely achieved as of the mid-term review date. It would be advisable to schedule these activities at an earlier phase rather than the last months of the project for optimal efficacy and impact. Sources of Verification: • Project status reports • Workshop materials and feedback documentation • Supervision reports • Web-site and social media records • Technical Verification Reports on each enterprise and overall summary report completed in January 2023 • Documentation from enterprise EA study work undertaken by PMU
Outcome 1.2: Regulatory capacity support for control and enforcement to sustained HBCD phase out delivered	Effective chemicals management regulatory control applied to HBCD and alternatives through its comprehensive within the	• General regulatory framework for POPs tracking SC obligations but with gaps in coverage and enforcement for new POPs such as HBCD Developing but	• Gaps in regulatory control measures within the current framework governing chemicals management, POPs and specifically HBCD being actively addressed in MoEUCC and other agencies.	• The results emerging from these discussions are being considered in the strengthening of the existing POPs chemicals management framework, which is being carried out through the MOEUCC (Department of Priority Chemicals). (*a list of specific areas where the*	• Comprehensive regulatory control measures within the current framework governing chemicals management and POPs and specifically HBCD harmonization with international practice. • Capability for effective enforcement of bans on	**Satisfactory (S)** The achieved result indicates active efforts in addressing these issues, with discussions yielding outcomes that are currently under consideration for the enhancement of the existing POPs chemicals management framework. This process is being meticulously executed through the MOEUCC, specifically by the Department of Priority Chemicals. Notably, a

	Indicator	Baseline	Targets			Achievement Rating & Justification
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	regulatory framework provided for in regulations governing POPs, chemicals management and registration including import and export, and application of performance standards applicable to EPS and XPS building materials	fragmented regulatory framework for sound chemicals management that is progressing to harmonization with international control measures but not yet providing registration and import//export control consistent with international requirements • Imports of pre-blended PS from Asia remains (240 t HBCD/year) • National capability for control of EPS and XPS performance standards lacks capability to differentiate between HBCD and alternative FRs • Market surveillance inspections and testing on EPS and XPS done but capability for differentiation between HBCD and non-HBCD containing product absent	• Training for MoEUCC, TSE, and Customs staff undertaken on control of HBCD and HBCD containing products undertaken. (2 training events with 50 participants each) • Capacity building for enhanced EPS and XPS product control in terms of performance standards and differentiation between HBCD and alternative containing products	*POPs chemicals management framework is being strengthened)* • *A protocol was signed between the ministry and TSE regarding the analytical monitoring of HBCD and products containing HBCD. The training of the TSE central laboratory and the provincial organization personnel who will perform the sampling was carried out within the scope of this protocol. For the training of customs personnel, this department has been invited to information dissemination workshops, the first of which will be held in January 2024, and others are planned.* • *Quality control studies were carried out on the products obtained by manufacturers using HBCD and alternative FR. Products containing alternative FR have met the standards required by national legislation. Thus, it has been determined that alternative FRs do not require a change in product control standards. The analytical verification study to be carried out by TSE also includes fireproofing tests on product samples to be taken from beneficiary institutions.*	HBCD and HBCD containing products in place within MoEUCC, TSE. and Customs authority • Imports of HBCD containing pre-blended PS eliminated. • Full performance control capability for EPS and XPS products using alternatives FRs supported by TSE • Training of _450 MoEUCC/customs inspection staff and 320 product standards inspectors on HBCD detection undertaken annually and addition of analytical capacity in TSE in place • 300 product analysis undertaken	comprehensive list delineating specific areas of improvement within the POPs chemicals management framework has been delineated. The achieved result aligns effectively with the targeted objective, as evidenced by the ongoing actions undertaken by MOEUCC in collaboration with relevant agencies. The delineation of specific areas for strengthening the regulatory framework demonstrates a conscientious approach to address identified gaps comprehensively. This outcome signifies a proactive and strategic effort toward improving regulatory control measures within the chemicals management framework, particularly in the context of POPs and HBCD. Nevertheless, it seems that as of MTR date, the mid-term targets for the capacity building and training activities have not been fully satisfied and it has come to attention that the initiation of capacity building and training initiatives occurred relatively recently subsequent to the signing of the cooperation protocol between the MoEUCC and the Turkish Standards Institution (TSE) on November 17th, 2023. This delay in the commencement of capacity building and training activities has resulted in their execution being relegated to the limited timeframe remaining before the project's conclusion. Sources of Verification: • Task specific reports and technical documentation • Supervisory consultant reports • Import reporting from Customs Authorities and industry partners

	Indicator	Baseline	Targets			Achievement Rating & Justification
			Mid-term Target	Mid-Term Levels & Assessment	End of project	
			• Imports of HBCD containing pre-blended PS reduced to 120 t/year. • Training of 275 MoEUCC and Customs inspection staff plus 160 Product standards inspection staff for HBCD detection undertaken annually • Addition of analytical capacity in TSE initiated • 150 product analysis undertaken	• Imports of HBCD containing pre-blended PS ceased at the end of 2018 with application of regulatory ban and closure of global export of HBCD by China. Analytical verification by TSE at retail and customs inspection level being initiated. • *The training of the TSE central laboratory and the provincial organization personnel who will perform the sampling was carried out within the scope of this protocol. For the training of customs personnel, this department has been invited to information dissemination workshops, the first of which will be held in 17 January 2024, and others are planned.* • Addition of analytical capacity in TSE has been initiated • *100 product analysis planned to be undertaken.*		
Outcome 1.3: Measures for the control and environmentally sound	National management strategy for POPs containing	National waste management regulatory framework for hazardous waste for	• Development of a national strategy for the management of POPs containing waste	• Development of a national strategy for the management of POPs containing waste including HBCD has been initiated.	• A national strategy for the management of POPs containing waste has been developed and is being implemented with	**Satisfactory (S)** The target aimed at initiating the development of a national strategy for the management of waste containing

	Indicator	Baseline	Targets			Achievement Rating & Justification
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management of HBCD containing waste implemented.	wastes including HBCD is implemented	environmentally sound treatment and disposal is in place but does on fully encompass all POPs containing waste including those containing EPS and XPS production wastes and end of life EPS and XPS products.	including HBCD has been initiated.	The scope of the strategy study to be developed for the management of POPs waste, including HBCD, has been determined. A ToR has been prepared for the employment of international experts who will take part in this study. The purchasing procedure for employment has been initiated.	particular emphasis on HBCD containing waste.	Persistent Organic Pollutants (POPs), including Hexabromocyclododecane (HBCD). The achieved result indicates substantive progress, as the initiation of the national strategy development has commenced. Furthermore, the scope of the strategy study, specifically tailored for the management of POPs waste, including HBCD, has been delineated. Notably, a Terms of Reference (ToR) has been meticulously prepared to engage international experts integral to this study, and the procurement process for their employment has been set into motion. This outcome reflects a robust and systematic approach toward achieving the target, underscoring a comprehensive strategy formulation encompassing both national and international expertise. Sources of Verification: • Strategy development documents. • Expert study reports • Project supervision reports
	Component 2: Elimination of HBCD use in the EPS sector in Türkiye					
Outcome 2.1: Pre-blended polystyrene (PS) producers have required technical information and capability to complete selection and production of alternative flame retardant containing production	Sufficient knowledge and technical/ operational capacity exist within all producers of pre-blend PS on an equitable basis.	• Knowledge of alternatives and technical/operational capacity within individual pre-blended PS producers varies and presents a barrier for smaller producers to complete elimination of HBCD	• All 4 (four) pre-blended PS producers are offered and as required are utilizing international/ national expertise, technical information and commercial contacts to complete phase out of HBCD.	• All 4 (four) pre-blended PS producers have demonstrated capacity and knowledge through continued operation on a competitive basis with environmentally sound alternatives and are now being engaged with respect to potential evolution of new more environmentally sound alternatives than initially introduced to replace	• All 4 (four) pre-blended PS producers demonstrate capacity and knowledge though continued operation on a competitive basis with environmentally sound alternatives. • All national EPS final product producers are using inputs containing HBCD alternatives • 3 training event completed	**Satisfactory (S)** The target aimed at ensuring that all four pre-blended Polystyrene (PS) producers utilize international and national expertise, technical information, and commercial contacts to successfully phase out HBCD. The achieved result signifies notable progress, as all four pre-blended PS producers have not only demonstrated their capacity and knowledge but have also operated competitively with environmentally sound alternatives. The engagement of these producers extends beyond the initial replacement of HBCD,

	Indicator	Baseline	Targets			Achievement Rating & Justification
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				HBCD *(Note:* The final end of project target is effectively complete at the enterprise level). • *Information dissemination undertaken to producers of final EPS products, including those formally directly importing HBCD based inputs being planned in association with EPSDER including at Jan. 2024 W/S.* *A series of interviews and surveys were conducted with EPS producers to determine their current needs. 2 workshops are planned by EPSDER February 2024 and March 2024.*		focusing on the potential evolution of new and even more environmentally sound alternatives. It is noteworthy that, at the enterprise level, the final end-of-project target is effectively complete, showcasing a successful transition toward sustainable alternatives and the continued commitment to environmentally responsible practices within the PS production sector. But, on the other hand, it seems that the quantitative targets set for the mid-term in terms of 2 training events and information dissemination activities have not been completed. Sources of Verification: • Expert reporting • Technical documentation disseminated • Project supervision reports
			• Information dissemination undertaken to producers of final EPS products, including those directly importing HBCD based inputs. • 2 training events completed			
Outcome 2.2: National EPS association (EPSDER) is technically supported in its programing to provide collective information and supporting laboratory capability for members on the use of alternative flame retardant in all stages of EPS production.	EPSDER provides the EPS sector with access to common and current technical and operational information on HBCD alternative information to eliminate HBCD usage and maintain the domestic EPS sectors competitive position after completing	• EPSDER has a effective communication with a broad base of preblended PS producers, end product producers and supply chain enterprises but lacks access and technical support capability to provide the necessary support to members, .including limitation in capability related to product testing	• Inception Phase technical workshop on alternatives and their operational application provided to all four preblended PS producers • Current technical materials, technical expert contacts and commercial contacts with known alternative suppliers prepared and disseminated to EPSDER members. • The TSE/CEVKAK laboratory available to	Inception Phase technical workshop on alternatives and their operational application provided to participating preblended PS producers with individual follow up undertaken by NC and ESIA expert during implementation. Provision of updated technical materials, technical expert contacts and commercial contacts with known alternative suppliers prepared by the NC and provided to EPSDER for dissemination The TSE laboratory available to support product testing and certification has initiated	• Closing technical workshop for EPSDER members on project results. • All EPSDER members fully familiar with technical principles, opportunities and lessons learned regarding the transition to environmentally sound FRs. • TSE/CEVKAK laboratory providing effective product development and certification support to both the EPS and XPS sectors	**Satisfactory (S)** The technical workshop during the inception phase was executed successfully, encompassing the preparation and dissemination of current technical materials, technical expert contacts, and commercial contacts with identified alternative suppliers. The official engagement of the EPSDER was established through a cooperation protocol signed on October 3rd, 2023. However, this initiation is considered belated in terms of extending official engagement and providing requisite financial support for associated activities. Furthermore, the collaboration protocol between the MoEUCC and the Turkish Standards Institution (TSE) was formalized

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	elimination inclusive of supporting laboratory capability available to members.	laboratory capacity.	support product testing and certification has initiated capacity upgrading and service provisions to both EPS and XPS sectors.	planning of capacity upgrading and service provisions to both EPS and XPS sectors including contracting for said services. ÇEVKAK will benefit from technical capacity development/information dissemination activities by participating in the workshop to discuss the results of HBCD and HBCD product monitoring analytical study conducted by TSE.		on November 17th, 2023, a date comparatively late in the project's progression. The optimization of project outcomes could be enhanced through the initiation of these engagements at earlier stages.
Outcome 2.3: Complete phase out of HBCD use in domestic production of preblended polystyrene production (975 t HBCD/year) used in the EPS sector directed to national markets is achieved	Quantity of HBCD consumed and number of enterprises eliminating the use of HBCD in the production of EPS in Türkiye by conversion to environmental sound alternatives.	• No elimination of HBCD initiated in EPS sectors on initial project approval and country assumption of phase out obligations. • Consumption of HBCD in the EPS sector 975 t/year excluding imports. • Total production of HBCD EPS containing product 66,573 t/year. • Baseline compliance with national workplace, health and safety standards and environmental release regulations	• Two (2) of four (4) producers of pre blended PS eliminated HBCD use in EPS sector. • HBCD elimination in EPS sector of 881 t/year • Production of 50,000 t/year of HBCD containing EPS preblended PS product eliminated. • Confirmation inspections respecting compliance with national workplace health and safety standards, and environmental release regulations	• All four (4) producers of pre blended PS eliminated HBCD use in EPS sector • HBCD elimination in EPS sector of 975 t/year baseline HBCD consumption, • Production of 66,575 t/year of baseline HBCD containing EPS preblended PS product eliminated. • Confirmation inspections respecting compliance with national workplace health and safety standards, and environmental release regulations have been completed as part of EA work undertaken and reported by PMU expert.	• Four (4) producers of pre blended PS eliminated HBCD use in EPS sector. • Equivalent HBCD consumption eliminated in EPS sector of 975 t/year • Production of 66.575 t/year of HBCD containing preblended PS EXP product eliminated. • Environmental management system certification in place for all enterprises	**Highly Satisfactory (HS)** All mid-term targets and even the end-of-project targets have been achieved in terms of elimination of HBCD use in EPS sector. Sources of Verification: • Project progress/supervision reports. • Regular enterprise/ and industry association reports • Regulatory inspection reports. • Custom's authority reporting. • Technical Verification Reports on each enterprise and overall summary report completed in January 2023 • Documentation from enterprise EA study work undertaken by PMU •

	Indicator	Baseline	Targets			Achievement Rating & Justification
			Mid-term Target	Mid-Term Levels & Assessment	End of project	
Component 3: Elimination of HBCD use in the XPS sector in Türkiye						
Outcome 3.1: XPS producers have required technical information and capability to complete selection and production of alternative flame retardant containing production.	Sufficient knowledge and technical/operational capacity exist within all XPS producers on an equitable basis.	Knowledge of alternatives and technical/operational capacity within individual pre-blended PS producers varies and presents a barrier for smaller producers to complete elimination of HBCD	• All six (6) participating XPS producers are offered and as required are utilizing international/ national expertise, technical information and commercial contacts to complete elimination of HBCD.	• All 6 (six) participating XPS producers now have demonstrated capacity and knowledge through continued operation on a competitive basis with environmentally sound alternatives and are now being engaged with respect to potential evolution of new more environmentally sound alternatives than initially introduced to replace HBCD (Note: The final end of project target is effectively complete at the enterprise level).	• All six (6) participating XPS producers demonstrate capacity and knowledge though continued operation on a competitive basis with environmentally sound alternatives.	**Satisfactory (S)** Based on the information from the verification sources, all six (6) participating XPS producers have been offered and as required are utilizing international/ national expertise, technical information and commercial contacts to complete elimination of HBCD. Sources of Verification: • Expert reporting • Technical documentation disseminated • Project supervision reports
Outcome 3.2: National XPS association (ISODER) is technically supported in its programing to provide collective information for members on the use of alternative flame retardant in all stages of EPS	İZODER provides the XPS sector with access to common and current technical and operational information on HBCD alternative information to eliminate HBCD usage and maintain the domestic EPS sectors competitive position after completing elimination.	ISODER has a effective communication with a broad base of XPS producers and supply chain enterprises but lacks access and technical support capability to provide the necessary support to members, including limitation in capability related to product testing laboratory capacity.	• Inception Phase technical workshop on alternatives and their operational application provided to all six participating XPS producers • Current technical materials, technical expert contacts and commercial contacts with known alternative suppliers prepared and disseminated to İZODER members. • The TSE/CEVKAK laboratory available to	• Inception Phase technical workshop on alternatives and their operational application provided to participating XPS producers with individual follow up undertaken by NC and ESIA expert during implementation. • Provision of updated technical materials, technical expert contacts and commercial contacts with known alternative suppliers prepared by the NC and provided to İZODER for dissemination The TSE/CEVKAK laboratory available to	• Closing technical workshop for İZODER members on project results. • All İZODER members fully familiar with technical principles, opportunities and lessons learned regarding the transition to environmentally sound FRs. • TSE/CEVKAK laboratory providing effective product development and certification support to both the EPS and XPS sectors	**Satisfactory (S)** Based on the information from sources of verification, mid-term targets seem to be achieved. One criticism regarding timing: The official engagement of the İZODER was established through a cooperation protocol signed on October 4th, 2023. However, this initiation is considered belated in terms of extending official engagement and providing requisite financial support for associated activities. Furthermore, the collaboration protocol between the MoEUCC and the Turkish Standards Institution (TSE) was formalized on November 17th, 2023, a date comparatively late in the project's progression. The optimization of project outcomes could be enhanced through the initiation of these engagements at earlier stages.

	Indicator	Baseline	Targets			Achievement Rating & Justification
			Mid-term Target	Mid-Term Levels & Assessment	End of project	
			support product testing and certification has initiated capacity upgrading and service provisions to the XPS sectors.	support product testing and certification has initiated planning of capacity upgrading and service provisions to both EPS and XPS sectors including contracting for said services. ÇEVKAK will benefit from technical capacity development/information dissemination activities by participating in the workshop to discuss the results of HBCD and HBCD product monitoring analytical study conducted by TSE.		Sources of Verification: • Workshop documentation and attendee survey results. • Technical documentation disseminated • Project supervision reports • İZODER membership surveys
Outcome 3.3: Complete phase out of HBCD use in domestic production of XPS production (553 t HBCD/year) used in the XPS sector is achieved	Quantity of HBCD consumed and number of enterprises eliminating the use of HBCD in the production of XPS in Türkiye by conversion to environmental sound alternatives.	• No phaseout of HBCD initiated in XPS sectors on initial project approval and country assumption of phase out obligations (2016) • Consumption of HBCD in XPS sector 635 t/year. • Total production of HBCD XPS containing product 454,000 t/year. • Baseline compliance with national workplace, health and safety standards and environmental release regulations	• Three of six enterprises in the XPS sector phased out HBCD consumption. • HBCD equivalent Phase out of HBCD in the XPS sector 303 t/year. • Production of 163,000 t/year of HBCD containing XPS product eliminated. • Confirmation inspections respecting compliance with national workplace health and safety standards, and environmental release regulations	• All 6 (six) participating enterprises in the XPS sector phased out HBCD consumption. • HBCD updated baseline period Phase out of HBCD in the XPS sector of 705 t/year with 353 t/year in 2019 and 2020. • Production of baseline 454,000 t/year of HBCD containing XPS product eliminated. • Confirmation inspections respecting compliance with national workplace health and safety standards, and environmental release regulations have been completed as part of ESIA work undertaken and reported by ESIA expert and NC.	• Six (6) enterprises in the XPS sector eliminated HBCD consumption. • HBCD equivalent consumption of 7055 t/year eliminated in the XPS sector. • Production of 454,000 t/year of HBCD containing XPS product eliminated. • Environmental management system certification in place for all enterprises	**Highly Satisfactory (HS)** All mid-term targets and even the end-of-project targets have been achieved in terms of elimination of HBCD use in XPS sector. Sources of Verification: • Project progress/supervision reports. • Regular enterprise/ and industry association reports • Regulatory inspection reports. • Custom's authority reporting. • Technical Verification Reports on each enterprise and overall summary report completed in January 2023 • Documentation from enterprise EA study work undertaken by PMU

	Indicator	Baseline	Targets			Achievement Rating & Justification
			Mid-term Target	Mid-Term Levels & Assessment	End of project	
	Component 4: Monitoring, and evaluation					
Outcome 4.1: Outcomes from project activities assessed and lessons learnt disseminated for sustainable replication	M&E applied to project in response to needs, mid-term evaluation findings with lessons learned extracted.	No Monitoring and Evaluation system No evaluation of project output and outcomes	Monitoring and Evaluation system developed and applied including gender and ESMP monitoring. Mid-term-evaluation of project output and outcomes conducted with lessons learnt at 24 months of implementation.	Monitoring and Evaluation system developed and applied including gender and ESMP monitoring Mid-term-evaluation of project output and outcomes is currently being undertaken by a contracted national M&E consultant and scheduled for completion *(Jan 2024)*. .	Final evaluation report ready in the end of project	**Satisfactory (S)** The following management and monitoring tools are in place: - Work Plan - Project Steering Committee - Project management support (PMU) - Internal meetings Following reporting mechanisms are either in effect or planned: - Inception report - Project Implementation Report (PIR) - Annual reports - Technical and Periodic thematic reports - Monthly Progress s Report - MTR Progress Report - Project Terminal Report Overall evaluation of the project will be based on two independent reports: - MTR (at 24th month of the project) - Terminal Evaluation (at the end of project) MTR was originally supposed to be done in June-July 2023 (24th month of the project), however, due to the delay in recruitment process due to technical reasons, MTR process was initiated only in December 2023, 6 months latr than the original target date.

Annex B. Matrix of Evaluative Questions for the MTR

Evaluative Criteria	Questions	Indicators	Sources	Methodology
Strategy: How does the objectives of the project relate to the main objective of the GEF focal area and UNIDO, and to the environment and development priorities of the local beneficiaries?				
Is the project Relevant to GEF priorities?	• How does the project support the GEF focal area and strategic priorities	• Existence of a clear relationship between the project objectives and GEF priorities	• Project Documents • GEF focal areas strategies and documents	• Documents analyses • GEF website • Interviews with UNIDO and project
Is the project Relevant to UNIDO priorities?	• To which extent does the project correspond with the Country Project Action Plan?	• Priorities and work areas are incorporated	• Project Documents • UNIDO Country Action Plan for Türkiye • National policies and strategies	• Documents analyses • UNIDO website • Interviews with MoEUCC and project team
Is the project relevant to Türkiye's environment and sustainable development objectives?	• How does the project support the environment and sustainable development objectives of the Country? • Does the project support Türkiye´s objectives in terms of controlling POPs? • Is the project Country-driven? • What was the level of stakeholder participation in project design? What was the level of stakeholder ownership in Implementation? • Does the Project adequately take into account the national realities, both in terms of institutional capacity and legal and policy frameworks?	• Degree to which the project supports National environmental objectives • Degree of coherence between the project and national priorities, policies and strategies in particular for those associated with control of POPs • Appreciation from national stakeholders with respect to adequacy of project design and Implementation to national realities and existing capacities • Level of Involvement of government officials and other partners in the project design process • • Coherence between needs expressed by national stakeholders and UNIDO-GEF Criteria	• Project documents • National policies and strategies • Key project • Partners.	• Documents analyses • Interviews with UNIDO and project partners
Is the project addressing the specific needs of target beneficiaries at the local and national levels?	• How does the project support the specific needs of relevant stakeholders? • Has the Implementation of the project been inclusive of all relevant Stakeholders? • Were local beneficiaries and stakeholders adequately involved in project design and implementation?	• Strength of the link between expected results from the project and the needs of relevant stakeholders • Degree of involvement and inclusiveness of stakeholders in project design and implementation	• Project partners and stakeholders • Needs assessment studies • Project documents	• Document analysis • Interviews with all relevant stakeholders

Is the project internally coherent in its design?	• Are there Logical linkages between expected results of the project (log frame) and the project design (in terms of project components, choice of partners, structure, delivery mechanism, scope, budget, use of resources etc.)? • Is the length of the project sufficient to achieve Project outcomes?	• Level of coherence between project expected results and project design internal logic • Level of coherence between project design and project implementation approach	• Project documents • Key project stakeholders	• Document analysis • Key interviews
Does the project provide relevant lessons and experiences for other similar projects in the future?	• Has the experience of the project provided relevant lessons for other future projects targeted at similar objectives?	• Lessons learned from activities that have been implemented so far	• Data collected throughout evaluation	• Data analysis
Effectiveness: To what extent have/will the expected outcomes and objectives of the project been/be achieved?				
Has the project been effective in achieving the expected outcomes and objectives?	• Has the project been effective in achieving its expected outcomes?	• Extent to which indicators in project document results framework and log frame have been achieved	• Project documents • Project team and relevant stakeholders • Data reported in project reports	• Document analysis • Interviews
How have and are risks and risk mitigation being managed?	• How well are risks, assumptions and impact drivers being managed? • What was the quality of risk mitigation strategies developed? Were these sufficient? Are they institutionalized for future learning and cooperation? • Are there clear strategies for risk mitigation related with long-term sustainability of the project?	• Completeness of risk identification and assumptions during project planning and Design • Quality of existing information systems in place to identify emerging risks and other issues • Quality of risk mitigations strategies developed and followed	• Project documents • MoEUCC, project team, and relevant stakeholders	• Document analysis • Interviews

What lessons can be drawn regarding effectiveness for other similar projects in the future?	• What lessons have been learned from the project regarding achievement of outcomes? • What changes could have been made (if any) to the design of the project in order to improve the achievement of the project's expected results?	• Lessons learned from activities that have been implemented so far	• Data collected throughout the evaluation	• Data analysis
How effectively funds from the program have been transferred to local partners and / or government?	• Timely and transparent information on available funds • Timely disbursement • Correspondence between information on funds released and received amounts • Well defined (and respected) payment triggers • Relation to other (government) funds	• Information from financial report	• MoEUCC, Local partners, Associations and NGOs	• Data analysis
Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards?				
Was project support provided in an efficient way?	• Was adaptive management used or needed to ensure efficient resource use? • Did the project logical framework and work plans and any changes made to them use as management tools during implementation? • Were the accounting and financial systems in place adequate for project management and producing accurate and timely financial information? • Have progress reports been produced accurately, timely and responded to reporting requirements including adaptive management changes? • Was project implementation as cost effective as originally proposed (planned vs. actual) • Did the leveraging of funds (co financing) happen as planned? • Were financial resources utilized efficiently? • Could financial resources have been used more efficiently?	• Availability and quality of financial and progress reports • Timeliness and adequacy of reporting provided • Level of discrepancy between planned and utilized financial expenditures • Planned vs. actual funds leveraged • Cost in view of results achieved compared to costs of similar projects from other organizations • Adequacy of project choices in view of existing context, infrastructure and cost • Quality of results-based management reporting (progress reporting, monitoring and evaluation) • Occurrence of change in project design/implementation approach (i.e. restructuring) when needed to improve project efficiency	• Project documents and Evaluations • MoEUCC • Project team • Co-financing stakeholders	• Document analysis • Key interviews

How efficient are partnership arrangements for the project?	▪ To what extent partnerships/ linkages between institutions/ organizations were encouraged and supported? ▪ Which partnerships/linkages were facilitated? Which ones can be considered sustainable? ▪ What was the level of efficiency of cooperation and collaboration arrangements? ▪ Which methods were successful or not and why?	▪ Specific activities conducted to support the development of cooperative arrangements between partners, ▪ Examples of supported partnerships ▪ Evidence that particular partnerships will be sustained ▪ Types / quality of partnership cooperation methods utilized	▪ Project documents and evaluations ▪ Project partners and relevant stakeholders ▪ MoEUCC ▪ Beneficiaries	▪ Document Analysis ▪ Interviews
Did the project efficiently utilize local capacity in implementation?	▪ Has an appropriate balance struck between utilization of international expertise as well as local capacity? ▪ Has the project taken into account local capacity in design and implementation of the project? ▪ Has there been an effective collaboration between institutions responsible for implementing the project?	▪ Proportion of expertise utilized from international experts compared to national Experts ▪ Number/quality of analyses done to assess local capacity potential and absorptive capacity	▪ Project documents and ▪ Evaluations ▪ MoEUCC ▪ Beneficiaries	▪ Document analysis ▪ Interviews
What lessons can be drawn regarding efficiency for similar projects in the future?	▪ What lessons can be learnt from the project regarding efficiency? ▪ How could the project have more efficiently carried out implementation (in terms of management structures and procedures, partnerships arrangements etc.)? ▪ What changes could have been made (if any) to the project in order to improve its efficiency?	▪ Lessons learned from activities implemented so far	▪ Data collected throughout evaluation	▪ Data analysis
How effectively has program management implemented the work plans / updated plans to match modified conditions?	▪ Rate of delivery on the annual work plans? ▪ Achievements against targets (as set-out in the ProDoc and in the modified work plans if any)	▪ Document analysis ▪ Interviews	▪ Program reports, ▪ Work plans ▪ Project team ▪ Stakeholders	▪ Document analysis ▪ Interviews
To what extent have the GEF /UNIDO country / regional offices ensured oversight and guidance functions?	▪ Number of visits to project sites ▪ Existence of clear mechanisms / instruments to share information and provide feedback ▪ Sharing of lessons learnt ▪ Responsiveness to requests for TA	▪ The role played by UNIDO country and regional offices and its effects on project performances ▪ Levels of effectiveness of their performance	▪ Program reports, ▪ Project team, Regional office, Stakeholders	▪ Document analysis ▪ Interviews

How well has monitoring and evaluation been linked to the management processes?	▪ Existence of baseline data ▪ Evidence that an M&E system is set-up and updated ▪ Evidence that the M&E system is shared with stakeholders ▪ Availability of up-to-date indicators of progress, regular and informative reports	▪ Document analysis ▪ Interviews	▪ Data sources of M&E unit, reports, ▪ Project team, ▪ Stakeholders	▪ Data sources of M&E unit, reports, ▪ Project staff, ▪ NGO staff
Are M&E data and reporting used to share or disseminate information and/or to inform strategic decisions?	▪ Quality, comprehensiveness and timeliness of reporting ▪ Degree of use of data from M&E to inform investment decisions ▪ Degree of use of data and reports to enhance knowledge base of local and national policy makers	▪ The structure of M&E systems ▪ Specific contribution of M&E structures to the overall project efficiency.	▪ Data system used by M&E unit; ▪ M&E reports; ▪ Interviews with M&E and Project team ▪ Stakeholders	▪ Data system used by M&E unit; ▪ M&E reports; ▪ Interviews with M&E and Project team ▪ Stakeholders
How effective has Technical Advice been in supporting the program?	▪ Quality of technical reports ▪ Responsiveness of reports to program needs	▪ Document analysis ▪ Interviews	▪ Program documents	▪ Document analysis ▪ Interviews
Sustainability: How do the objectives of the project relate to the main objective of GEF focal area and UNIDO, and to the environment and development priorities at the local beneficiaries?				
Has the program been conducive to replicating the HBCD project model in other areas of Türkiye?	▪ Are investments being planned to replicate the HBCD project model in other areas of the country?	▪ Documentary analysis ▪ Interviews	▪ Project documents	▪ Document analysis ▪ Interviews

Strategy	▪ Which actions has the project put in place to guarantee the sustainability of the results? ▪ Which are the key challenges and risks that the project is facings to ensure the sustainability of the results?	▪ Document analysis ▪ Interviews	▪ Project documents	▪ Document analysis ▪ Interviews
Financial sustainability	▪ How did the project address its financial and economic sustainability in the medium to long run?	▪ Document analysis ▪ Interviews	▪ Project documents	▪ Document analysis ▪ Interviews
Institutional sustainability	▪ Is the institutional framework capacity adequate to support the elimination of POPs in Türkiye?	▪ Document analysis ▪ Interviews	▪ Project documents	▪ Document analysis ▪ Interviews
Catalytic Role: To which extent has the project demonstrated having a catalytic role in Türkiye or in other geographic areas?				
Scalability and replicability	▪ Have the results of the project been applied across the country or in other geographic areas? ▪ How can the country benefit from the results and lessons learned from the project?	▪ Document analysis ▪ Interviews	▪ Project documents	▪ Document analysis ▪ Interviews
Impact: To which extent did the project achieve impact or advanced in achieving the expected results and impacts? Has there been unexpected situations?				
Impact	How has the project contributed to the expected impact with regard to: ▪ Environment ▪ Economic wellbeing of the country ▪ Other socio-economic aspects	▪ Document analysis ▪ Interviews	▪ Project documents	▪ Document analysis ▪ Interviews

Annex C. Written questionnaire and list of recipients

Actual questionnaire sent to recipients as in Turkish.

Questionnaire for Stakeholders Interacting with the "Enhancing Environmental Performance in the Expanded and Extruded Polystyrene Foam Industries in Türkiye" Project

(hereinafter – "the Project")

Respondent Name: Organization:

Position in the project:

e-mail:

Phone:

№	Question	Answer
1	What is your relationship with the project or how are you involved? When have you been involved and how frequently do you interact with the project team (regularly, during the month, during seminars, etc.)?	
2	How important has your collaboration/partnership with the Project been to date, and what are your plans for such collaboration in the near future?	
3	What influence has your organization's participation in the Project's activity had on the expected results on Enhancing Environmental Performance in the Expanded and Extruded Polystyrene Foam Industries in Türkiye?	
4	What is, or what could be, the contribution from women to the Project, either on the whole or for any specific component?	
5	How has the project been useful to you or your organization/agency/association/business since its beginning?	
6	What suggestions do you have for further collaboration with the Project and/or with UNIDO/GEF for achievement of the Project targets and beyond?	

7	Do you think that the project strategy is relevant to achieving the desired outcomes? Do you think that the project strategy provides the most effective route towards expected/intended results? Do you think that the project is designed correctly?	
8	Do you think that the project addresses country priorities. Review country ownership. Do you think that the project concept is in line with the national sector development priorities and plans of the country?	
9	Regarding the decision-making processes: were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes?	
10	Do you think that the project's log frame indicators and targets are appropriate and the midterm and end-of-project targets are SMART (Specific, Measurable, Attainable, Relevant, Time-bound) enough? Do you have any suggestions for any specific amendments/revisions to the targets and indicators?	
11	In your opinion, are the project's objectives and outcomes or components clear, practical, and feasible within its time frame?	
12	Are you satisfied with the Project's outcomes to date? Do you see any areas to improve or any risks? What are your recommendations? Do you see any remaining barriers to achieving the project objective in the remainder of the project?	
13	Could you please list the areas that you find the project successful?	
14	What do you think about the overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision- making transparent and undertaken in a timely manner? Please recommend areas for improvement.	
15	What do you think about the quality of execution of the Executing Agency/Implementing Partner(s) and please recommend areas for improvement?	

16	Were there any delays in project start-up and implementation? If yes, what were the causes identify the causes? Have they been resolved? If yesi how? If no, why?	
17	Were any changes made in the project's results framework/ log frame since project start?	
18	Were there any changes to fund allocations as a result of budget revisions? If yes, what was the reason?	
19	Do you think co-financing is being used strategically to help the objectives of the project? Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans?	
20	What project monitoring tools are currently being used? Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive?	
21	Do you think that the project has developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders?	
22	Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?	
23	In your opinion, to what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?	
24	What do you think about the internal project communication with stakeholders? Is communication regular and effective? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability of project results?	
25	What do you think about the external project communication? Are proper means of communication established or being established to express the project progress and intended impact to the public? Do you think project web	

	site (https://kalicikirleticiler.com/turkiyede-genlestirilmis-ve-sikistirilmis-polistiren-kopuk-endustrilerinde-cevresel-performansin-arttirilmasi-projesi/) is useful? Do you have any suggestions to improve project web site? Did the project implement appropriate outreach and public awareness campaigns?	
26	In your opinion, what is the likelihood of financial and economic resources not being available once the GEF assistance ends (consider potential resources can be from multiple sources, such as the public and private sectors, income generating activities, and other funding that will be adequate financial resources for sustaining project's outcomes)?	
27	Do you foresee any risks for the sustainability of the project results? Financial risks? Socio-economic risks? Institutional framewrokd and Government risks? Environmental risks?	
28	Do you have any concluding remarks or recommendations?	

List of recipients the questionnaire was sent (around 20 December, 2023)

#	Name	Organization	Contacts
Ministry of Environment, Urbanization and Climate Change			
1	**Bursev Doğan Artukoğlu**	MoEUCC	bursev.artukoglu@csb.gov.tr
2	**Gözde Aydoğ**	MoEUCC	gozde.aydog@csb.gov.tr
3	**Pınar Saylam**	MoEUCC	pinar.saylam@csb.gov.tr
4	**Ertan Öztürk**	MoEUCC	ertan.ozturk@csb.gov.tr
Industry Associations			
5	**Murat Kenet**	EPSDER Secretary General	mkenet@epsder.org.tr
6	**Timur Diz**	İZODER) Secretary General	timur@izoder.org.tr
EPS and XPS sector companies			
6	**Nur Çakı**	BTM	nur.caki@btm.co
7	**Remzi Uysal**	Ravago	remzi.uysal@ravago.com
8	**İsmail Berber**	ODE	i.berber@ode.com.tr
9	**Onur Eriş**	Eryap	Onur.Eris@eryapgrup.com.tr
10	**Cenker Çetin**	Dioki	cenker.cetin@dioki.com.tr
11	**Tolga Özkan**	AsChem	tolgao@aschem.com.tr
12	**Haldun Destan**	CFN	haldun.destan@cfnkimya.com
13	**Oktay Kaya**	İzocam	kaya@izocam.com.tr
14	**Ahmet Doğan**	BZ İmşaat (Wallboard)	ahmet.dogan02@hotmail.com
15	**Hakkı Tatar**	Dinamik	hakki@dinamik-izmir.com

Annex D. Audit Trail

Based on the track changes made by PMU on the draft MTR report on January 22nd.

Author	#	Para No./ comment location	Comment/Feedback on the draft MTR report	MTR expert response and actions taken
PMU	1	Page 12, paragraph 3	Date must be 8 July, 2021	Accepted
PMU	2	Page 12, paragraph 4	UNDP word changed to UNIDO	This is the guidance document used in the MTR and its title is "Guidance for conducting midterm reviews for UNDP supported GEF financed projects". Therefore, change was not accepted.
PMU	3	Whole document	Format changes	All accepted