



Project Implementation Report

(July 1st 2022 – June 30th 2023)

Project Title:	Global Environment Facility - Improvement of the Environmental Performance of the Foam Sector: Phase out and Management of Hexabromocyclododecane (HBCD) in China
GEF ID:	10163
UNIDO ID:	180288
GEF Replenishment Cycle:	GEF-7
Country(ies):	China
Region:	EAP - East Asia and Pacific
GEF Focal Area:	Chemicals and Waste (CW)
Integrated Approach Pilot (IAP) Programs¹:	N/A
Stand-alone / Child Project:	N/A
Implementing Department/Division:	ENV / IPM
Co-Implementing Agency:	N/A
Executing Agency(ies):	Foreign Environmental Cooperation Center (FECO), Ministry of Ecology and Environment (MEE) of the People's Republic of China
Project Type:	Full-Sized Project (FSP)
Project Duration:	60 months
Extension(s):	0
GEF Project Financing:	USD 12,600,000
Agency Fee:	USD 1,134,000
Co-financing Amount:	USD 100,140,000
Date of CEO Endorsement/Approval:	3/2/2021
UNIDO Approval Date:	3/4/2021

¹ Only for GEF-6 projects, if applicable

Actual Implementation Start:	4/22/2021
Cumulative disbursement as of 30 Jun. 2023:	USD 9,529,700
Mid-term Review (MTR) Date:	10/1/2023
Original Project Completion Date:	6/4/2026
Project Completion Date as reported in FY22:	4/30/2026
Current SAP Completion Date:	4/30/2026
Expected Project Completion Date:	4/30/2026
Expected Terminal Evaluation (TE) Date:	7/30/2026
Expected Financial Closure Date:	4/30/2027
UNIDO Project Manager²:	Carmela Centeno

I. Brief description of project and status overview

Project Objective
<p>The objective of the project is to improve the environmental performance of the foam sector in China through the phase-out, introduction of HBCD alternatives and environmentally-sound management of HBCD-containing EPS/XPS foams. The main project components endorsed by the GEF to fulfill the country gaps and contribute to the Global Environment Benefits (GEBs) include (1) strengthening the policy and regulatory framework on the management of HBCD and HBCD-containing EPS/XPS polymer foam products in China, (2) promoting technology transfer and investment on the production of HBCD alternatives and application of alternatives to the EPS/XPS foam sector, (3) implementing of environmentally-sound management (ESM) of EPS/XPS foam wastes containing HBCD, and (4) improving information dissemination, building capacity and establishing knowledge management. The project commits to the achievement of HBCD or POPs removal of 54,300MT for the duration of the project.</p>

Baseline
<p>Hexabromocyclododecane (HBCD) is a persistent organic pollutant which in May 2013 was listed in Annex A of the Stockholm Convention on Persistent Organic Pollutants (POPs) for its elimination. On July 2nd 2016, the 21st meeting of the 12th session of the Standing Committee of the National People's Congress made the decision on ratifying the amendment to the Stockholm Convention on POPs to list HBCD.</p> <p>HBCD has been put into the global market since the late 1960s. At that time, it was mainly produced in Europe, Japan and the United States. Around 2000, some enterprises in Shandong and Jiangsu Provinces in China, having access to abundant bromine resources, began to produce HBCD. Since the 1990s, the cumulative production of HBCD in China has reached more than 200,000 metric tons and since 2009, the yearly production exceeded 10,000 t.</p>

² Person responsible for report content

Considering the initiatives undertaken so far and even given the exemptions provided by the Stockholm Convention on the use of HBCD in the EPS/XPS sectors, there are identified gaps for China to comply to the HBCD amendment of the Stockholm Convention. These gaps encompass laws and regulations, product labeling, public awareness, alternative technologies, information on HBCD waste inventory and technologies for HBCD wastes disposal and lacked information collection and sharing. The current project aims to remove the barrier and address the gaps that would allow China to fully address and solve the issue of HBCD.

Please refer to the explanatory note at the end of the document and select corresponding ratings for the current reporting period, i.e. FY23. Please also provide a short justification for the selected ratings for FY23.

In view of the GEF Secretariat's intent to start following the ability of projects to adopt the concept of adaptive management³, Agencies are expected to closely monitor changes that occur from year to year and demonstrate that they are not simply implementing plans but modifying them in response to developments and circumstances or understanding. In order to facilitate with this assessment, please introduce the ratings as reported in the previous reporting cycle, i.e. FY22, in the last column.

Overall Ratings ⁴	FY23	FY22
Global Environmental Objectives (GEOs) / Development Objectives (DOs) Rating	Satisfactory (S)	Satisfactory (S)
<p>The project is envisaged to reach its GEOs and DOs. The PDO of GEBs (18,000 tonnes/year of HBCD phased out) have been achieved with the closure of HBCD production lines. With consistent capacity building efforts on supervision and enforcement of related policies, the possible illegal HBCD production and use will be controlled. The project has successfully implemented the strategies on the management of current existent and the future HBCD containing waste.</p>		
Implementation Progress (IP) Rating	Satisfactory (S)	Satisfactory (S)
<p>During the reporting period, the project has implemented activities as planned.</p>		
Overall Risk Rating	Low Risk (L)	Low Risk (L)
<p>The project is considered low risk considering that China's economy is recovering slowly back to the pre- Covid-19 situation. Industrial production has already re-started in the country to mitigate economic losses. The project is expediting required activities.</p>		

³ Adaptive management in the context of an intentional approach to decision-making and adjustments in response to new available information, evidence gathered from monitoring, evaluation or research, and experience acquired from implementation, to ensure that the goals of the activity are being reached efficiently

⁴ Please refer to the explanatory note at the end of the document and assure that the indicated ratings correspond to the narrative of the report

II. Targeted results and progress to-date

Please describe the progress made in achieving the outputs against key performance indicator's targets in the project's **M&E Plan/Log-Frame at the time of CEO Endorsement/Approval**. Please expand the table as needed.

Please fill in the below table or make a reference to any supporting documents that may be submitted as annexes to this report.

Activities	Indicators	Baseline	Target	Progress in FY23
<i>Component 1: Policy and regulatory framework</i>				
Outcome 1.1: Policy and regulatory framework strengthened on the management and supervision of HBCD and HBCD-containing EPS/XPS polymer foam products in China				
Output 1.1.1: National legislation, regulatory framework and technical specifications to ban the production, usage, import and export of HBCD used in EPS/XPS in China				
Activity 1.1.1.1: Draft national legislation, regulatory framework and technical specifications to ban the production, usage, import and export of HBCD in China.	Number of revised or newly formulated regulations to ban the production, usage, import and export of HBCD in China.	Lack of effective regulations, limits or policies to ban the production, usage, import and export of HBCD in China.	<p>Midterm and terminal:</p> <p>One (1) National announcement on banning HBCD production and usage</p> <p>One (1) updated customs policy on banning the import and export of HBCD</p> <p>One (1) updated technical policy to eliminate and reduce HBCD and HBCD-containing EPS/XPS</p>	<ul style="list-style-type: none"> ● One (1) national announcement on banning HBCD production and usage. On July 2nd, 2016, the 21st session of the 12th Standing Committee of the National People's Congress of China reviewed and approved the Amendment to the Addition of HBCD to the Stockholm Convention on POPs", prohibiting the production, use, and import and export of HBCD, but retains its specific exemptions for the production and use of EPS and XPS in buildings, which ended on December 25th, 2021. [https://www.mee.gov.cn/gkml/hbb/bgg/201612/t20161228_378327.htm] ● One (1) updated customs policy on banning the import and export of HBCD. On June 6th, 2023, Ministry of Commerce and General Administration of Customs jointly published the 8th <i>Catalogue of Banned Imports</i> and the 7th <i>Catalogue of Banned Exports</i>. The two catalogues both have HBCD included.

				<p>[http://topic.mofcom.gov.cn/article/zwgk/gkzcfb/202306/20230603414825.shtml]</p> <ul style="list-style-type: none"> ● One (1) updated technical policy to eliminate and reduce HBCD and HBCD-containing EPS/XPS. Added NO HBCD (content of HBCD less than 100 ppm) policy into current Green Procurement Guidelines for Real Estate, which covers 60% real estate developers of the market (March 2021). This drives the upstream HBCD producers and EPS/XPS producers reduce the production of HBCD products. [See Annex 1]
Output 1.1.2: Regulatory policies developed to reduce and eliminate the application of HBCD in EPS/XPS polymer foams, with focus on environmental quality standards and chemical limits of HBCD in EPS/XPS polymer foams and all potential HBCD users				
Activity 1.1.2.1: Draft regulatory environmental quality standards and chemical limits for regulation and supervision of HBCD.	Number of newly formulated or revised regulatory policies on environmental quality standards and chemical limits considering the Basel low POP content and other relevant criteria Availability of a monitoring study with at least 300 testing for HBCD content	Lack of effective regulations or policies on environmental quality standards and chemical limits for HBCD	<p>Midterm and terminal:</p> <p>One (1) set of detection standards of HBCD in EPS/XPS products</p> <p>One (1) report of policy study of HBCD limits in EPS/XPS products and environment</p> <p>Draft of limits of HBCD in EPS and XPS products</p> <p>One (1) a set of detection methods of HBCD in the environment</p>	<ul style="list-style-type: none"> ● One (1) set of detection standards of HBCD in EPS/XPS products. The draft of the HBCD detection method standard "<i>HBCD Detection Method Standard for Building Thermal Insulation Materials in Energy-Saving Projects</i>" for building materials used in engineering site was completed, and is currently soliciting advice. [http://news.sohu.com/a/586849523_121123678] "Research Report on Threshold Management of HBCD-Containing Waste", which is completed, addresses current HBCD-containing waste detection methodology in China. [See Annex 1] "Report on the Detection Methods of HBCD and its Substitutes" is also planned to be drafted.

			Monitoring study of at least 300 samples for HBCD content and contamination in EPS/XPS products	<ul style="list-style-type: none"> ● Three (3) reports of policy study of HBCD limits in EPS/XPS products and environment have been completed. ● Limits of HBCD in EPS and XPS products. Enacted one set of Industrial Standard for HBCD detection method in the EPS/XPS products has published (2021.4), enabling the supervision of the HBCD content in building product. [See Annex 1] Enacted one National Standard of HBCD limit in the building insulation products. It has passed the public consultation (2021.9) became effective on Jan 1st, 2022. This limit has been recommended to all EPS/XSP enterprises on nation level. [http://c.gb688.cn/bzgk/gb/showGb?type=online&hcno=AB63BC80C09EF34817054A69B8C408BB] “<i>Research Report on Threshold Management of HBCD-Containing Waste</i>” was also compiled and completed, proposing the limits and standards of HBCD containing EPS/XPS waste. [See Annex 1] ● One (1) set of detection methods of HBCD in the environment. More study on the detection of HBCD and its substitutes is planned to be conducted. (2023-2024)
Output 1.1.3: Framework for governmental alternative assessment established and flame retardant alternatives for HBCD and alternative insulation materials for HBCD-containing EPS/XPS foams evaluated				
Activity 1.1.3.1 Development of an evaluation frame and capacity for alternatives assessment on	Number of government related institution that have the capacity to assess and evaluate alternatives for	No specific assessment framework exists in China on governmental level to evaluate alternatives to	Midterm: One (1) review report on assessment approaches of alternatives in other countries or regions. Terminal:	<ul style="list-style-type: none"> ● Two (2) relevant review reports on assessment approaches of alternatives in other countries or regions are to be drafted. Investigation has been carried out in terms of the alternatives on environmental risk assessment methods developed by UNEP, US EPA, OECD and other institutions.

governmental institution level.	HBCD and HBCD in EPS/XPS	POPs in current use (e.g. USEPA assessment within the “design for the environment”)	An assessment framework and capacity for the assessment of alternatives is developed in one (1) governmental institution	<p>Further investigation on the current status of substitutes of HBCD and the usage of HBCD substitutes in EPS/XPS industries in other countries or regions is planned to be performed by the international expert in 2023 and 2024. “<i>Report on the Current Status of HBCD Substitutes</i>” and “<i>Report on the Usage of HBCD Substitutes in EPS/XPS Industries</i>” are going to be drafted.</p> <ul style="list-style-type: none"> ● An assessment framework and capacity for the assessment of alternatives developed in one (1) governmental institution. <p>Investigation has been carried out in terms of the alternatives on environmental risk assessment methods developed by UNEP, US EPA, OECD, and other institutions. The draft for soliciting comments of “<i>Technical Guidelines for Environmental Risk Assessment of Alternatives</i>” is planned to be developed by the Solid Waste & Chemicals Management Center (SCC) of the MEE.</p> <p>Investigation, research and policy proposals on production of HBCD alternatives and non-EPS/XPS building thermal insulation production industry were ongoing as a baseline analysis on the alternatives of HBCD and EPS/XPS, providing broad reference to the assessment framework.</p>
Activity 1.1.3.2 Assessment of alternatives to HBCD in the governmental level	Number of alternatives for HBCD evaluated in the governmental level	Lack of official evaluation of alternatives for HBCD. Some information on alternatives Stockholm HBCD in EPS/XPS exist;	<p>Midterm: One (1) review report on available information on alternatives to HBCD and HBCD in EPS/XPS is compiled including a gap analysis of the alternatives</p> <p>Terminal:</p>	<ul style="list-style-type: none"> ● One (1) review report on available information on alternatives to HBCD and HBCD in EPS/XPS including a gap analysis of the alternatives. ● Two (2) alternatives for HBCD are being evaluated by a governmental related institution for environmental, economic and social impacts. <p>The evaluation and reports on two HBCD alternatives- Brominated SBS and TBBPA were conducted by the Solid Waste and Chemicals Management Center of MEE.</p>

			At least 2 alternatives for HBCD evaluated by a governmental related institution for environmental, economic and social impacts.	Investigation on HBCD substitutes producing enterprises is currently ongoing.
Output 1.1.4: National managerial capacity, enforcement, supervision policies, monitoring methods of HBCD and HBCD-containing products strengthened to coordinate and monitor and establish problem-finding mechanism for the polymer foam production sector				
Activity 1.1.4.1 National capacity building in management, enforcement, and supervision of HBCD production and usage	Existence of a formal interministerial group for HBCD management Number of coordination meetings held.	Lack of inter-ministerial cooperation in supervision and enforcement of HBCD elimination. Ministry of Ecology and Environment has piloted supervision visit regarding irregular POPs production activities nationwide	Midterm: Interministerial group of ministries for supervision and enforcement of HBCD elimination established and at least 3 coordination meetings held Terminal: At least 5 coordination meetings held and formal interministerial group for HBCD management established	<ul style="list-style-type: none"> ● Interministerial group of ministries for supervision and enforcement of HBCD elimination established, and two (2) coordination meetings were held. Came up with HBCD national work plan with 4 focus ministries (Ministry of Eco. & Env., Ministry of Industry and Info. Technology, Ministry of Housing & Urban-Rural Construction, and State Administration for Market Regulation) and conducted one national-level supervision field trip and all provincial governments conducted one local-level supervision field trip. [https://www.mee.gov.cn/xxgk2018/xxgk/xxgk06/202106/t20210608_836846.html] * Cooperated with State Administration for Market Regulation (SAMR) on carrying out capacity building activities on the enforcement of HBCD and other POPs. Nation-wide inspections and supervision on production and usage of HBCD is being conducted. The manual and training on supervision and management of HBCD and other POPs are planned to be done by 2024, to enhance national capacity building in management, enforcement, and supervision of HBCD.
Activity 1.1.4.2 Capacity building of HBCD monitoring in production and usage	No. of trainings conducted on HBCD monitoring	Lack of monitoring ability on HBCD and HBCD in EPS/XPS for governmental	Midterm: One (1) institution developed capacity for proper monitoring	<ul style="list-style-type: none"> ● Three (3) institution developed capacity for proper monitoring. ● Monitoring capacity of three (3) institutions established.

	Number of institutions capable to conduct the monitoring	assessment and enforcement.	1 training sessions conducted Terminal: Monitoring capacity of 3 institutions established 3 training sessions conducted	Beijing Research Institute of Eco. & Env. Protection and Guangdong Solid Waste & Chemicals Management Center were performing third-party regulatory and effectiveness evaluation for local HBCD demonstration enterprises. SAMR is carrying out on-site inspections, detection, laboratory analysis, as well as monitoring capacity building activities on the enforcement of HBCD and other POPs over the nation.
Activity 1.1.4.3: Build managerial capacity, enforcement, supervision policies and monitoring methods for HBCD in demonstration province	Number of demonstration province (s) which developed and enhanced managerial capacity, enforcement, supervision policies and monitoring methods for HBCD in the life cycle. Number of samples analysed	Lack of capacity for assessing and managing HBCD in local governments	Midterm: 1 to 2 demonstration provinces draft plans for management, detection and supervision of HBCD in production and usage and monitoring initiated. Terminal: 1 to 2 demonstration provinces establish problem-finding mechanism for the HBCD production and polymer foam production and use sector At least 50 samples analysed	<ul style="list-style-type: none"> ● One (1) demonstration province drafted plans for management, detection and supervision of HBCD in production and usage and monitoring. Signed the Demonstration Province Agreement with Shandong Province in August 2021. The demonstration province has published a plan for management, detection and supervision of HBCD in production and usage, monitoring, as well as establishing a POPs laboratory as output of the Agreement, which is currently ongoing. [See Annex 1] ● One (1) demonstration province established problem-finding mechanism for the HBCD production and polymer foam production and use sector. Shandong Province published the provincial work plan on HBCD phase-out, conducted 4 rounds of inspection, 3 times of policy publicity, helped each HBCD producer and user make phase-out plan. [See Annex 1]
<i>Component 2. Promotion of technology transfer and investment on the production of HBCD alternatives and application of alternatives to the XPS/EPS foam sector</i>				
Outcome 2.1 Total phase out of the production of HBCD in China				
Output 2.1.1: HBCD production lines closed down or converted to HBCD alternatives				

<p>Activity 2.1.1.1 Demonstration of closing down production lines of at least 2 HBCD producers</p>	<p>Number of demonstration plants stopping HBCD production.</p>	<p>Production of HBCD is 18,000 metric tons per year</p>	<p>Midterm and terminal: The 2 HBCD demonstration enterprises no longer produce or sell HBCD.</p>	<p>● Three (3) HBCD demonstration enterprises no longer produce or sell HBCD. Shandong Dongxin New Materials Technology Co., Ltd., Shandong Sunris New Materials Co., Ltd., and Shouguang Yangbo Technology Co., Ltd.</p>
<p>Activity 2.1.1.2: Verify and evaluate the close-down of all HBCD production lines</p>	<p>Amount of HBCD production phase-out and amount and percentage of HBCD stockpile properly stored for disposal (tons)</p>	<p>HBCD is still being produced in the country.</p>	<p>Midterm and Terminal: production of 18000 metric tonnes of HBCD has been stopped.</p> <p>All the remaining HBCD and wastes from HBCD production is stored in an environmentally sound manner</p>	<p>● Production of 18,000 metric tonnes of HBCD has been stopped. For the three demonstration enterprises above, Dongxin New Materials Technology phased out 5,000 t of HBCD annual production capacity; Sunris New Materials phased out 3,000 t of HBCD annual production capacity; Yangbo Technology phased out 5,000 t of HBCD annual production capacity. [See Annex 1] Fundamentally, all previous HBCD production was stopped. Overall, the total HBCD production capacity phased-out was 28,000 t. [http://www.sdein.gov.cn/ztbd/xwfbh/202111/t20211113_3772893.html]</p> <p>● All the remaining HBCD and wastes from HBCD production is stored in an environmentally sound manner. All 8 HBCD producers (including the 3 demonstration producers supported by GEF) have ceased producing HBCD before October 2021, dismantled the production lines and properly treated the production waste following the requirements of hazardous waste before November 2021. The plans and reports on the environmentally sound treatment of HBCD waste are requested for all demonstration enterprises. [See Annex 1] Shandong Province supervised this process with experts and retained the photocopies of relevant documents. It formally reported the result to FECO.</p>

				<p>[http://epaper.cenews.com.cn/html/2021-11/23/content_71562.htm] [See Annex 1, the same attachment to Activity 1.1.4.3]</p>
<p>Activity 2.1.1.3: Demonstration, verification and evaluation of conversion production of HBCD alternatives</p>	<p>Number of HBCD producers converted to productions of alternatives as demonstration and evaluated Amount of HBCD alternatives produced in demonstration plants; Number of BAT/BEP been identified for the individual alternatives Number of samples for HBCD testing carried out</p>	<p>HBCD producers still in production Some HBCD producers have initiatives of producing HBCD alternatives</p>	<p>Midterm and terminal: The 2 demonstration producers have the capacity of producing HBCD alternatives supported by the project At least 2000 metric tons/year of HBCD alternatives produced in demonstration enterprises. 1-2 alternatives of HBCD are evaluated in the production of the 2 demonstration enterprises and BAT/BEP has been identified for the individual alternatives 100 samples for HBCD testing carried out</p>	<ul style="list-style-type: none"> ● Two (2) demonstration producers have the capacity of producing HBCD alternatives supported by the project. Shandong Dongxin New Materials Technology Co., Ltd., and Shandong Sunris New Materials Co., Ltd. ● At least 2,000 metric tons/year of HBCD alternatives produced in demonstration enterprises. Dongxin New Materials Technology has TBBPA annual production capacity of 5,000 t. Sunris New Materials has TBBPA annual production capacity of 25,000 t, and has Br-SBS annual production capacity of 6,500 t. [See Annex 1, the same attachment to Activity 2.1.1.2] ● Two (2) alternatives of HBCD are evaluated in the production of the two (2) demonstration enterprises and BAT/BEP has been identified for the individual alternatives. The production lines evaluation has been done in the approved ESMP of Dongxin New Materials Technology and Sunris New Materials supported and requested by the project, as well as “<i>Report on Clean Production Lines and Production Evaluation</i>” pending submission. [See Annex 1, the same attachment to Activity 2.1.1.2]
<p>Outcome 2.2: Prohibition of HBCD usage in the production of polymer foams or application of other alternatives through the promotion of BAT/BEP</p>				
<p>Output 2.2.1: Demonstration activities on at least 4 types of alternative materials for EPS/XPS foam manufacturing through technology transfer and research implemented</p>				
<p>Activity 2.2.1.1: Select and demonstrate the use of at least 1-2 alternative for HBCD</p>	<p>Number of HBCD alternatives adopted in EPS sector;</p>	<p>9400 tons/year of HBCD are used in EPS sector Some EPS producers have</p>	<p>Midterm and terminal: At least 2 EPS pilot enterprises use 1-2 HBCD alternative flame</p>	<ul style="list-style-type: none"> ● Two (2) EPS pilot enterprises use 1-2 HBCD alternative flame retardants supported by the project.

used in 2 EPS in pilot plants	Number of EPS demonstration enterprises supported by the project to adopt the alternatives and evaluated Amount of HBCD avoided by the pilot plants (tons); Number of samples for HBCD testing carried out	initiatives to replace HBCD with other flame retardants	retardants supported by the project At least 800 tonnes/year of HBCD use avoided by 2 EPS demonstration plants 60 samples for HBCD testing carried out	2 joint parties of one EPS beads producer and one EPS boards producer were selected as the demonstration enterprises, which are Liaoning Litian New Materials Co., Ltd. (EPS beads) + Ningxia Baoli Jieneng Technology Co., Ltd. (EPS boards), and Wuxi Xingda New Foam Plastic Material Co., Ltd (EPS beads) + Hebei Wuzhou Kaiyuan New Material Co., Ltd. (EPS boards). ● At least 800 tonnes/year of HBCD use avoided by 2 EPS demonstration plants. Xingda Foam eliminated usage of 566 t HBCD in 2021, and Litian eliminated usage of 310 t HBCD in 2021. [See Annex 1] They have finished the production conversion and produced the boards with alternatives (HBCD content less than 100 ppm). They have avoided 2,000 tons/year of HBCD use since Oct. 2021, based on production capacity.
Activity 2.2.1.2 Select and demonstrate at least 1-2 alternatives in 2 pilot enterprises for HBCD used in XPS with research on co-benefits of HCFCs reduction	Number of HBCD alternatives adopted in XPS sector; Number of XPS demonstration enterprises supported by the project to adopt the alternatives and evaluated Amount of HBCD avoided by the pilot plants	6000 metric tons/year of HBCD are used in XPS sector Some XPS producers have initiatives to replace HBCD with other flame retardants	Midterm and terminal: At least 2 XPS enterprises use 1-2 HBCD alternative flame retardants supported by the project 160 metric tons of HBCD avoided by 2 XPS demonstration plants 60 samples for HBCD testing carried out	● Three (3) XPS enterprises use 1-2 HBCD alternative flame retardants supported by the project. Beijing Beipeng Building Materials Group Co., Ltd., Beijing Hongqiangxinsheng Building Materials Co., Ltd., and Guangzhou Fudatec Insulation Materials Co, Ltd. ● 160 metric tons of HBCD avoided by three XPS demonstration plants. Beipeng Building Materials eliminated usage of 370 t HBCD in 2021; Hongqiangxinsheng Building Materials eliminated usage of 40.5 t HBCD in 2021; and Fudatec eliminated an estimated usage of 186 t HBCD in 2021 under the demonstration project framework. [See Annex 1]

	Number of samples for HBCD testing carried out			They have finished the production conversion and produced the boards with alternatives (HBCD content less than 100 ppm). They have avoided 1,500 tons/year of HBCD use since Oct. 2021, based on production capacity.
Activity 2.2.1.3: Verify and evaluate the production of alternative insulation materials to EPS/XPS	Number of alternative insulation material to EPS/XPS assessed	No specific environmental, health and social assessment of the production of alternatives to EPS/XPS insulation has been conducted by environmental ministries	<p>Midterm Concept for assessment alternatives to EPS/XPS developed</p> <p>Terminal At least 3 alternative insulation materials to EPS/XPS are assessed</p>	<p>● Concept for assessment alternatives to EPS/XPS developed. The implementation plan of the HBCD Alternatives Environmental Risk Assessment Method and Demonstration project was developed. [Annex] Beipeng Building Materials and Hongqiangxinsheng Building Materials are assessed and verified by Beijing Research Institute of Eco. & Env. Protection; Fudatec is assessed and verified by Guangdong Solid Waste & Chemicals Management Center. Litian New Materials + Baoli Jieneng Technology and Xingda New Foam + Wuzhou Kaiyuan New Material have been assessed by the ESMP team FECO expert team.</p> <p>● Two (2) alternative insulation materials to EPS/XPS are being assessed. One (1) more assessment is planned to be conducted in the next reporting period. Assessments on TBBPA and Brominated SBS are being conducted. “<i>Environmental Risk Assessment Report on Substitution of HBCD with TBBPA-DBMPE</i>” and “<i>Environmental Risk Assessment Report on Substitution of HBCD with Brominated SBS</i>” are being compiled. Study on None EPS/XPS Building Thermal Insulation Materials Production and Usage Industry Status was launched to study the HBCD alternatives in the field of non-EPS/XPS. [See Annex 1]</p>

<p>Activity 2.2.1.4: Compile lessons learned and best practice of the substitution of HBCD in EPS and XPS production to educate the other EPS/XPS producers on the switch to alternatives and include the materials for the knowledge platform</p>	<p>Number of case studies on substituting HBCD in EPS and XPS production.</p>	<p>No case study available in China or in the Stockholm Convention BAT/BEP guidance on practical substitution of HBCD in EPS/XPS</p>	<p>Midterm and terminal At least 3 case studies to share lessons learned on best practice of substitution of HBCD in EPS/XPS</p>	<p>Planned to be conducted in the next reporting period. Further information on the delay of this activity is in section VII and VIII.</p>
<p>Output 2.2.2 Replication activities on the best alternatives undertaken in at least 5 companies and outcomes promoted national wide</p>				
<p>Activity 2.2.2.1: Replicate the best alternatives of HBCD to at least 5 companies</p>	<p>Number of companies that produce or use alternatives to HBCD supported by the project.</p> <p>Amount of HBCD production/use avoided by the replication plant.</p> <p>Number of samples tested</p>	<p>Some HBCD producers and EPS/XPS producers have initiatives to produce or use HBCD alternatives</p>	<p>Midterm and end: At least 5 manufacturers start to produce and adopt HBCD alternatives/ produce alternative materials</p> <p>3000 tonnes of HBCD production/use avoided by the replication plant.</p> <p>170 samples tested</p>	<ul style="list-style-type: none"> ● More than five (5) manufacturers start to produce and adopt HBCD alternatives/ produce alternative materials As indicated above, three demonstration HBCD manufactures have started producing and adopting HBCD alternatives. Five demonstration EPS/XPS manufactures have started producing insulation products with alternative flame retardants/ ● 28,000 tonnes of HBCD production/use avoided by the replication plant. As indicated above, total HBCD production capacity phased out was 28,000 t/y.
<p>Output 2.2.3: Promotion of venture capital investment and technology transfer on switching to HBCD-alternatives established.</p>				
<p>Activity 2.2.3.1 Establish public-private partnership or other financial mechanism to support the phase-</p>	<p>Number of financial mechanisms developed to support the phase-out of HBCD in EPS/XPS</p>	<p>No financial mechanism in EPS/XPS sector to support the change to alternative flame retardants</p>	<p>Midterm: Private sectors engaged in PPP or other financial mechanism established and offered to EPS/XPS</p>	<p>Planned to be conducted in the next reporting period. Further information on the delay of this activity is in section VII and VIII.</p>

out of HBCD in EPS/XPS production	production national wide		and HBCD alternative producers Terminal: PPP mode or other financial mechanisms replicated in EPS/XPS sectors	
Activity 2.2.3.2 Incentive programs or other promotions to support the replication of the demonstration experiences of substitution of HBCD to other EPS/XPS producers	Number of initiatives supported by the incentive programs or other promotions Total amount of HBCD phased out in EPS and phased out in XPS sector	Productions of EPS/XPS for insulation is currently using HBCD as flame retardant. A few EPS/XPS producers have initiatives to stop using HBCD	Midterm: 1 Plan of incentive programs Draft BAT/BEP guidelines for phase-out of HBCD and promotion of HBCD alternatives Terminal: 9400 metric tons of HBCD phased out in EPS production 6000 metric tons of HBCD in XPS production phased out 1 set of BAT/BEP guidelines for phase-out of HBCD and use of HBCD alternatives	Planned to be conducted in the 3rd reporting period.
<i>Component 3. Implementation of environmentally-sound management (ESM) of EPS/XPS foam wastes containing HBCD</i>				
Outcome 3.1: ESM of HBCD-containing EPS/XPS foams implemented				
Output 3.1.1: National inventory and data base on HBCD stocks and waste built and periodically updated				

<p>Activity 3.1.1.1: Establish the inventory and database of HBCD stocks and waste in HBCD production and EPS and XPS sectors.</p>	<p>Presence of the inventory and database of HBCD stocks and waste in HBCD production and EPS and XPS sectors.</p>	<p>No national inventory and database on HBCD stocks and waste. Study from research institution on the stock and initial predicted flow of HBCD available</p>	<p>Midterm: Preliminary HBCD inventory with gap analysis; Guidance of building inventory and database of HBCD stocks and waste in production and EPS/XPS sectors.</p> <p>Terminal: Inventory and database of HBCD stocks and waste in production and EPS/XPS sectors</p>	<p>Planned to be conducted in the next reporting period.</p> <ul style="list-style-type: none"> * The raw HBCD is regarded as hazardous waste in China. The local governments reported all manufacturers have properly dealt with the remaining HBCD. * All HBCD-containing EPS/XPS boards before Dec 25, 2021 could be used, others will be destroyed as solid waste.
<p>Activity 3.1.1.2: Demonstration of establishing inventory and database of in-use HBCD in EPS/XPS building materials in pilot provinces/cities</p>	<p>Number of province/city selected for piloting inventories and database of in-use HBCD containing EPS/XPS in buildings and construction</p>	<p>No identification of the-of HBCD containing EPS/XPS in buildings and no related database in China</p>	<p>Midterm: Preparation of the demonstration inventory of HBCD in EPS/XPS in 1 province/city</p> <p>Terminal: Inventory for 1 demonstration province/city established and integrated in a database</p> <p>1 report of methodology study of establishing the database of in-use HBCD</p>	<p>Planned to be conducted in the next reporting period.</p> <ul style="list-style-type: none"> * Determining the work scope and the subcontractor. * The implementation plan including the technical methodologies has been approved by a group of experts of 20.
<p>Output 3.1.2: Develop HBCD waste identification and management methods on HBCD and HBCD-containing wastes disposal</p>				
<p>Activity 3.1.2.1: Develop</p>	<p>Number of draft regulation and</p>	<p>No specific standard for</p>	<p>Midterm:</p>	<p>● Two (2) sets of identification strategy and methodology of HBCD and HBCD-containing</p>

<p>identification and regulatory strategy of HBCD containing waste in production and ESP/XPS sectors</p>	<p>identification methodologies for HBCD containing EPS/XPS waste</p>	<p>identification and regulation of HBCD containing waste in China.</p>	<p>One (1) set of identification strategy and methodology of HBCD and HBCD containing EPS/XPS waste established</p> <p>Terminal One (1) draft regulation for management of HBCD containing EPS/XPS waste</p>	<p>EPS/XPS waste established, with one completed and the other ongoing.</p> <p>The proposal of “<i>Guidelines for the Environmentally Sound Management of Wastes Containing HBCD</i>” is completed, concerning standards and methodology of identifying HBCD-containing EPS/XPS wastes. [See Annex 1]</p> <p>“<i>The Identification Method of HBCD-Containing Thermal Insulation Materials in Existing Buildings</i>” is being prepared. (2023)</p> <p>● Two (2) sets of draft regulation for management of HBCD containing EPS/XPS waste.</p> <p>The proposal of “<i>Guidelines for the Environmentally Sound Management of Wastes Containing HBCD</i>” is completed.</p> <p>The proposal of “<i>Technical Standards on Treatment of HBCD Containing Waste</i>” was drafted. [See Annex 1]</p> <p>The raw HBCD is regarded as hazardous waste in China.</p> <p>The local governments reported that all manufacturers have properly dealt with the remaining HBCD.</p> <p>All HBCD-containing EPS/XPS boards before Dec 25, 2021 can be used, others will be destroyed as solid waste.</p>
<p>Activity 3.1.2.2 Develop identification and management strategy of in-use HBCD in the construction industry and de-commissioning of buildings.</p>	<p>Presence of identification and management strategy and technical specification of in-use HBCD in building industry</p>	<p>No policies or standard for identifying in-use HBCD in EPS/XPS and Construction & Demolition waste in China</p>	<p>Midterm: 1 set of identification and management strategy of in-use HBCD in construction and industry and de-commissioning of buildings established</p> <p>Terminal:</p>	<p>● One (1) set of identification and management strategy of in-use HBCD in construction and industry and de-commissioning of buildings established.</p> <p>As reported, “<i>The Identification Method of HBCD-Containing Thermal Insulation Materials in Existing Buildings</i>” is being prepared. (2023)</p>

			1 set of technical specification for identification of HBCD containing EPS/XPS in buildings and C&D waste	<ul style="list-style-type: none"> ● Two (2) sets of technical specification for identification of HBCD containing EPS/XPS in buildings and C&D waste. As reported, the proposed drafts of “<i>Guidelines for the Environmentally Sound Management of Wastes Containing HBCD</i>” and “<i>Technical Standards on Treatment of HBCD Containing Waste</i>” are completed. [See Annex 1, the same attachment to Activity 3.1.2.1]
Activity 3.1.2.3: Develop technical guidelines for ESM of HBCD containing waste	Number of technical guidelines for ESM of HBCD containing waste	No technical guideline for treating HBCD-containing waste in China	Midterm and terminal: One (1) set of technical guidelines developed for ESM of HBCD containing waste	<ul style="list-style-type: none"> ● One (1) set of technical guidelines developed for ESM of HBCD containing waste. As reported, the proposed draft of “<i>Guidelines for the Environmentally Sound Management of Wastes Containing HBCD</i>” was completed. [See Annex 1, the same attachment to Activity 3.1.2.1]
Activity 3.1.2.4: Compilation of information on screening, classification and separation of HBCD containing waste and management methods for the knowledge management platform	Availability of Information materials online in Chinese and English	No information materials available in Chinese	Midterm: Draft training materials available off-line. Terminal: Information and training materials available on-line	Planned to be conducted in the next reporting period. * Currently, 6 technical seminars have been conducted, including 3 international web-seminars that involved the topics of BEP/BEP demonstration of ESM, monitoring and data collection of the HBCD containing in-use boards and de-brominated and EPS/XPS recovery, supported by UNIDO and Bavaria state EPA.
Output 3.1.3 BAT/BEP demonstration of environmentally sound management and disposal of HBCD waste including assessment, comparison and demonstration of different treatment technologies, including volume reduction, HBCD extraction, HBCD decomposition, disposal, circular economy approach for bromine and EPS/XPS recovery				
Activity 3.1.3.1: Assessment and selection of technologies for ESM of HBCD-containing EPS/XPS waste considering	Number of ESM technologies for HBCD-containing waste evaluated and selected	Currently EPS/XPS waste is largely going to landfills and dump sites (Li et al. 2016).	Terminal: At least 4 technologies are evaluated and at least 2 technologies are selected for the pilots	<ul style="list-style-type: none"> ● Three (3) technologies have been evaluated and selected for the pilots. Cement kiln co-processing technology (primarily performed by Beijing Building Materials Academy of Scientific Research (BBMA), and the pilot is performed at Beijing Cement Plant Co., Ltd.);

circular economy and life cycle				<p>Hazardous waste incineration technology (primarily performed by Solid Waste & Chemicals Management Center of MEE, and the pilot is performed at Tianjin Binhaihejia Veolia Environmental Service Co., Ltd.); and</p> <p>Municipal waste incineration co-processing technology (primarily performed by Zhenjiang University, and the pilot is performed at Wuhu Lvzhou Environment & Energy Co., Ltd.).</p>
<p>Activity 3.1.3.2: Demonstration and implementation at least 2 pilot projects for environmental sound management and disposal of HBCD-containing EPS/XPS waste</p>	<p>Number of pilot project to destroy HBCD or HBCD containing EPS/XPS in an environmentally sound manner Amount of HBCD-containing wastes destroyed/avoided</p>	<p>Currently no destruction project for HBCD containing EPS/XPS in China. Some experiences available in industrial countries.</p>	<p>Midterm: Technical specifications for at least 2 pilot projects are developed</p> <p>Terminal At least 2 pilot projects for ESM of HBCD containing foam are successfully operated and HBCD is destroyed with the required efficiency.</p> <p>At least 100 metric tons of HBCD containing wastes destroyed</p>	<ul style="list-style-type: none"> ● Technical specifications for the three (3) pilot projects are developed. All three feasibility reports of the three technologies applied have been submitted, reviewed and approved. The technical specifications for the three technologies and their pilots are going to be drafted. (2023) ● Three (3) pilot projects for ESM of HBCD containing foam are successfully operated and HBCD is destroyed with the required efficiency. The evaluation reports of the three technologies are to be submitted. (2023) The experiments of the cement kiln co-processing technologies and the hazardous waste incineration technology were completed; The experiment of the municipal waste incineration co-processing technology is currently ongoing. ● At least 40 metric tons of HBCD containing wastes have been destroyed so far. The subproject of cement kiln co-processing technology has destroyed at least 15 t HBCD; The subproject of hazardous waste incineration technology has destroyed at least 10 t HBCD; and The subproject of municipal waste incineration co-processing technology has destroyed at least 15 t of HBCD.

<p>Activity 3.1.3.3: Compilation of information and lessons learned on environmental sound management and disposal of HBCD-containing EPS/XPS waste for the knowledge management platform</p>	<p>Number of pilot studies for ESM of HBCD containing EPS/XPS for which information material is compiled</p>	<p>No case study for sound management of EPS/XPS in China or Asia is available. Only short-term pilot studies from industrial countries for EPS/XPS destruction is available.</p>	<p>Midterm and terminal: Information on lessons learned on ESM and disposal of HBCD-containing EPS/XPS waste for the knowledge platform.</p>	<p>Planned to be conducted in the next reporting period.</p>
<p><i>Component 4. Information dissemination, capacity building and knowledge management</i></p>				
<p>Outcome 4.1: Improved technical and regulatory capacity on the management of HBCD and HBCD-containing wastes</p>				
<p>Output 4.1.1: Technical trainings for various stakeholders (enterprises, government staff, technicians, researchers etc.) designed and implemented to strengthen capacity on substitution in the HBCD and the EXPS/EPS foam sector, in general.</p>				
<p>Activity 4.1.1.1: Training sessions of management and technical capacity building targeting different stakeholders (government, private sectors, technicians, researchers), as well as targeting females specifically who are in direct contact with hazardous chemicals including HBCD</p>	<p>Number of training materials, Number of trainees disaggregated by gender</p>	<p>No training materials and trainings for the HBCD/alternative BFR production sector, the EPS/XPS production sector or ESM available in Chinese.</p>	<p>Midterm: Two (2) sets of stakeholder training materials, which include gender-specific training information Training session offered once at least.</p> <p>Terminal: 1000 policy makers, technicians, researchers trained; at least 40% of them are female;</p>	<ul style="list-style-type: none"> ● Two (2) sets of stakeholder training materials, which include gender-specific training information. Two sets of training materials are planned to be completed. One is about the ESM of HBCD waste, and the other is designed for the project demonstration enterprises regarding the risk of women's exposure to hazardous chemicals and measures to improve the well-being of women working in the relevant industries. (2023) ● Two (2) training sessions to be offered. ● At least 1000 policy makers, technicians, researchers trained; at least 40% of them are female. Attended/held four industrial meetings for HBCD phaseout policies publicity and consultation, influencing over 2,000 decision makers in the HBCD related plastic and building industries and HBCD private sectors. Two training courses on raising women's awareness of HBCD related production technology, management

				<p>concept and self-protection are planned to be held (2023), with a target number of audience of at least 1,000 people.</p> <p>* Invited by PINFA China and held a live stream to the industries, which is viewed by 3,000 times in June 2020.</p>
<p>Activity 4.1.1.2: Assessment of the social and economic impacts of gender-mainstreaming in foam sector</p>	<p>Presence of such assessment report; Number of audiences reached when disseminating such report</p>	<p>No assessment report in place</p>	<p>Midterm: The assessment report developed, with a special focus on the impacts on female workers – benefits and risks, as well as why it is important to include gender</p> <p>Terminal Dissemination of the report results through trainings, workshops, and online platforms, reaching 1,000 audiences</p>	<ul style="list-style-type: none"> ● The assessment report developed, with a special focus on the impacts on female workers – benefits and risks, as well as why it is important to include gender. After questionnaire and on-site surveys in foam industry, a draft of “<i>Social and Economic Impact Assessment Report</i>” was submitted and is currently under reviews and evaluation. ● Dissemination of the report results through trainings, workshops, and online platforms, reaching 1,000 audiences planned. As reported, two online or on-site training courses with a special focus on the impacts on female workers covering the benefits and risks are planned to be held (2023), with a target number of audience of at least 1,000 people.
<p>Output 4.1.2: Awareness raising activities undertaken for various relevant stakeholders including the general public, NGOs, women and youth sector etc.</p>				
<p>Activity 4.1.2.1 Development of stakeholder specific awareness raising materials and approach for the general public, women, NGOs and the youth sector on HBCD and other POPs in construction</p>	<p>Number of appropriate awareness raising training materials for informing the general public, women, and the youth on HBCD and other POPs in construction materials and alternatives</p>	<p>No awareness raising materials on HBCD and other POPs in insulation and other construction materials</p>	<p>Midterm: Three (3) sets of awareness raising materials and methodologies:</p> <ul style="list-style-type: none"> ● Development of a set of training materials with gender-specific information on how HBCD and other POPs may affect human body 	<ul style="list-style-type: none"> ● Development of one (1) set of training materials with gender-specific information on how HBCD and other POPs may affect human body differently for women, men, and infants. ● Development of one (1) set of knowledge dissemination materials regarding HBCD and POPs for youth. ● Development of one (1) set of overall training materials for the general public. Published a brochure with China Plastic Processing Industrial Association, which contains information on

materials and alternatives			<p>differently for women, men, and infants;</p> <ul style="list-style-type: none"> ● Development of a set of knowledge dissemination materials regarding HBCD and POPs for youth; ● Development of a set of overall training materials for the general public 	<p>how HBCD and POPs in general may affect people's health and well-being differently.</p> <p>As reported, two sets of training materials are planned to be completed. One is about the ESM of HBCD waste, and the other is designed for the project demonstration enterprises regarding the risk of women's exposure to hazardous chemicals and measures to improve the well-being of women working in the relevant industries. (2023)</p> <p>The publicity materials of HBCD and its substitution (in Chinese and English) are planned to be compiled as a core mission for the HBCD Project Advocacy Consulting Services, and the publicity materials are expected to be finished in 2024).</p>
Activity 4.1.2.2: Awareness raising activities for general public, women, NGOs and the youth sector.	Number of persons (male/female) from the general public, , NGOs and the youth informed about the issues of HBCD and POPs, as well as the different impacts they may have on different demographic groups; Ratio of women and youth reached among that number	No awareness raising materials on HBCD in insulation materials	<p>Midterm: 500 citizens, women, NGOs and the youth sector are informed on HBCD and other POPs in buildings; among which 50% should be women and youth.</p> <p>Terminal: 1000 citizens, women, NGOs and the youth sector are informed on HBCD and other POPs in construction; among which 50% should be women and youth.</p>	<ul style="list-style-type: none"> ● 1000 citizens, women, NGOs and the youth sector are informed on HBCD and other POPs in construction; among which 50% should be women and youth. <p>At least 3 publicity activities targeting different people, produce short videos (in Chinese and English) are planned and will be published on suitable platforms, which should be covered by mainstream news media. The activities are going to be performed under the HBCD Project Advocacy Consulting Services.</p>
Outcome 4.2: Knowledge management platform set up to contribute to regional/global actions on HBCD management.				
Output 4.2.1: Establishment of a knowledge hub on HBCD and the XPS/EPS foam sector to disseminate lessons learned on a national, regional and global scale				

<p>Activity 4.2.1.1: Knowledge management platform set up to contribute to regional/global actions on HBCD management</p>	<p>Presence of knowledge management platform online with appropriate content</p>	<p>Draft Stockholm and Basel BAT/BEP guidance and guidelines for HBCD are available on BRS website. No webinars or regional trainings conducted.</p>	<p>Midterm: Major content for knowledge platform developed. Alpha version of platform available. Webinar format developed Terminal: Knowledge management platform set up to contribute to regional/global actions on HBCD management.</p>	<p>Planned to be conducted in the 4th reporting period. The activity is planned to be conducted after establishment of the platform specified in Activity 2.2.1.4.</p>
<p>Activity 4.2.1.2 Establish partnerships for effective regional and international awareness raising and knowledge communication</p>	<p>Number of partnerships for awareness raising and knowledge communication</p>	<p>Initial contacts were established during PPG phase to the Norwegian project on plastic/polymer management in Asia (OPTOCE) and to IHPA which organizes POPs Forums in the EECA region</p>	<p>Midterm Partners for cooperation for awareness raising are evaluated Terminal Co-operations with at least 2 partners are established and common regional awareness activities and knowledge communication implemented</p>	<ul style="list-style-type: none"> ● Partners for cooperation for awareness raising are evaluated. ● Co-operations with at least 2 partners are established and common regional awareness activities and knowledge communication implemented. <p>As reported, 6 technical seminars have been conducted, including 3 international web-seminars that involved the topics of BEP/BEP demonstration of ESM, monitoring and data collection of the HBCD containing in-use boards and de-brominated and EPS/XPS recovery, supported by UNIDO and Bavaria state EPA. Project-related technical and academic activities, and project information management and cooperation to assist in publicity and promotion are also supported by project national and international experts.</p>
<p>Activity 4.2.1.3: Reach out and dissemination of lessons learned on HBCD management to national, regional</p>	<p>Numbers of webinars developed and conducted Numbers of publications in</p>	<p>Developing and transition economies only start to manage HBCD containing EPS/XPS which will grow the next 30</p>	<p>Midterm: Reach out mechanism and webinar concepts developed; Mechanisms and webinar arrangements designed in</p>	<ul style="list-style-type: none"> ● Compilation of training materials, reports and other knowledge products disseminated among platforms, including gender-specific information. <p>As reported, two sets of training materials are planned to be completed. One is about the ESM of HBCD waste, and the other is designed for the project demonstration enterprises regarding the risk of women's exposure to</p>

<p>and global stakeholders</p>	<p>international journals Number of presentations in conferences</p>	<p>years. No information on best practice in these countries available.</p>	<p>a way to maximise female participation;</p> <p>Compilation of training materials, reports and other knowledge products disseminated among platforms, including gender-specific information.</p> <p>Terminal: Information (including advice on gender-mainstreaming the HBD management) distributed in 2 webinars on country, regional and international level.</p> <p>Project outcomes published in at least 2 peer reviewed publications</p> <p>Project outcomes presented in at least 2 Conferences</p>	<p>hazardous chemicals and measures to improve the well-being of women working in the relevant industries. (2023)</p> <ul style="list-style-type: none"> ● Information (including advice on gender-mainstreaming the HBD management) distributed in two (2) webinars on country, regional and international level. Relevant information was distributed in the 6 technical seminars that have been conducted, including 3 international web-seminars that involved the topics of BEP/BEP demonstration of ESM, monitoring and data collection of the HBCD containing in-use boards and de-brominated and EPS/XPS recovery, supported by UNIDO and Bavaria state EPA. ● Project outcomes published in at least two (2) peer reviewed publications. ● Project outcomes presented in at least two (2) conferences. An abstract of the project was accepted and is going to be published on Dioxin 2023 conference. [See Annex 1] Support and assistance in writing academic articles for the project process, summarizing project results and experiences, carrying out corresponding knowledge management are provided by project international and national experts. <p>* Partially delayed due to Covid-19 Pandemic.</p> <p>* The activity of the Gender Performance Evaluation Project in HBCD Related Industries was proposed and was designed to promote the outcomes of the activity to national, regional and global stakeholders (expected to include the Turkey HBCD project).</p>
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<i>Component 5. Monitoring & Evaluation</i>				
Outcome 5.1 Effective monitoring and evaluation of project impact and sustainability implemented.				
Output 5.1.1: Periodic monitoring and evaluation implemented				
5.1.1.1 Establish Project Coordination Group 5.1.1.2 Establish the National Project Management Team 5.1.1.3 Recruit, a National Technical Advisor (NTA), international expert, policy experts, and technical experts in HBCD alternatives and waste management, evaluation, and program development 5.1.1.4 Establish local project management offices in target provinces 5.1.1.5 Hold management training classes for national and local project management staff	Availability of a project management office for the project duration. Existence of an operational National Project Management Team for the project duration Existence of an operational project steering group. Number of training workshop and person trained on contractual management and project management tools		Local project management offices established Training workshops held on contractual management, project management tools Steering group established with representatives from national and local stakeholder agencies National Project Management Team established	<ul style="list-style-type: none"> ● Local project management offices established. ● National Project Management Team established. <p>The project management team is based at the Convention Implementation Division III – Implementation of Stockholm Convention at FECO.</p> <p>TORs for project management staff, including the project international, national experts and consultant.</p> ● Training workshops held on contractual management, project management tools. <p>Orientation for national and local project management staff was held.</p> ● Steering group established with representatives from national and local stakeholder agencies. <p>Document on the establishment and operation of Steering group in Shandong Province, the demonstration province.</p> <p>[See Annex 1, the same attachment to Activity 1.1.4.3]</p>
Output 5.1.2 An M&E mechanism designed and implemented according to GEF M&E procedures				
5.1.2.1 Hold the Inception Workshop	<ul style="list-style-type: none"> ● Number of project 		Inception Workshop held	<ul style="list-style-type: none"> ● Inception Workshop held.

<p>5.1.2.2 Prepare Inception Report</p> <p>5.1.2.3 Measure impact indicators on an annual basis</p> <p>5.1.2.4 Prepare Annual Project Reports and Project Implementation Reviews</p> <p>5.1.2.5 Hold annual Project Coordination Group Meeting</p> <p>5.1.2.6 Carry out mid-term external evaluation</p> <p>5.1.2.7 Carry out final external evaluation</p> <p>5.1.2.8 Complete the Terminal Report</p> <p>5.1.2.9 Carry out annual project financial audits</p> <p>5.1.2.10 Carry out biannual visits to selected field sites</p>	<p>workshops (inception, evaluation) carried out</p> <ul style="list-style-type: none"> • Number of project management document developed (project work plan, project report, procurement plan) • Number of non-compliances identified and corrected • Availability of mid term and terminal evaluation reports • Technical and political guidance from the Steering group • Number of recommendations, lesson learned and best practices generated and considered 		<p>Detailed work plans prepared</p> <p>Data and information against indicators input into the MIS</p> <p>Non-compliances identified and corrected</p> <p>Technical and political guidance from the Steering group</p> <p>Experience summarized and recommendations raised</p>	<p>Held on September 3rd, 2021, with the inception workshop meeting minutes and the report prepared. [See Annex 1]</p> <ul style="list-style-type: none"> • Detailed work plans prepared. <p>Annual work plan, annual project report and the Project Implementation Reviews (PIR) were prepared accordingly.</p> <p>The project midterm evaluation is going to take place in the second half of 2023.</p> <p>External annual audits are planned in the second half of 2023.</p>
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III. Project Risk Management

1. Please indicate the overall project-level risks and the related risk management measures: (i) as identified in the CEO Endorsement document, and (ii) progress to-date. Please expand the table as needed.

Describe in tabular form the risks observed and priority mitigation activities undertaken during the reporting period in line with the project document. Note that risks, risk level and mitigations measures should be consistent with the ones identified in the CEO Endorsement/Approval document. Please also consider the project's ability to adopt the adaptive management approach in remediating any of the risks that had been sub-optimally rated (H, S) in the previous reporting cycle.

	(i) Risks at CEO stage	(i) Risk level FY 22	(i) Risk level FY 23	(i) Mitigation measures	(ii) Progress to-date	New defined risk ⁵
1	Reluctance of companies to undertake a conversion to HBCD alternatives.	Low	Low	In the PPG stage, all HBCD producer, EPS and XPS companies and industrial associations are informed of the deadline on the total ban of HBCD production and usage. The producers have been engaged to prepare for the deadline and come up with plan for halt production and production conversion to alternatives. The downstreaming EPS/XPS enterprises are taking adaptive measures too by trying the alternative FR, which brings a promising domestic market for the producers. MEE and the local authorities will continue to keep communication with the companies to ensure progress in setting up the production lines for alternatives. The prospect of the technical assistance being provided by the project will lessen the risk. The close involvement of responsible ministries advising companies on the benefits of getting involved in conversion activities in light of future regulation will mitigate the risk.	<ul style="list-style-type: none"> All HBCD producers have ceased the production of HBCD. To keep the business in order, they all sought to produce alternatives to HBCD or other products. The downstreaming EPS/XPS enterprises are using alternative FR, which brings a promising domestic market for the producers. MEE and the local authorities have continued to keep communication with the companies to ensure progress in setting up the production lines for alternatives. The prospect of the technical assistance being provided by the project will lessen the risk. The close involvement of responsible ministries advising companies on the benefits of participating in conversion activities in light of future regulation to control the risk. 	<input type="checkbox"/>
2	Lack of ideal and economical alternatives to HBCD in the production of EPS and XPS.	Low	Low	The project encouraged EPS and XPS enterprises to develop substitutes of HBCD during the exemption period and introduce international advanced alternative technologies. The project will organize functionality tests in order to select technically qualified alternatives	<ul style="list-style-type: none"> The price of alternatives and the operational cost of using the alternative are acceptable, 10-20% higher than the price of HBCD. Financial incentives are in place and have been awarded to those who have successfully phased in 	<input type="checkbox"/>

⁵ New risk added in reporting period. Check only if applicable.

				that will meet the quality requirements for concerned uses. Financial incentives will be awarded to those who successfully phase in alternatives to cover part of the incremental costs associated with the R&D, production, and distribution.	alternatives to cover part of the incremental costs associated with the R&D, production, and distribution. ● Strict implementation of the total legal ban on HBCD promotes halt of HBCD usage and conversion to the alternatives.	
3	Alternatives to HBCD and EPS/XPS using alternative FR not up to the required technical standards	Low	Low	Most companies have long experience in producing brominated FR. Also, China has standards for flammability and appropriate testing methodologies are known. Therefore, this risk seems rather low.	The responsible departments have tested the technical qualities of the alternative products. The project is supporting the modification of current standards that will ensure smooth transition to HBCD alternatives.	<input type="checkbox"/>
4	Delay/difficulties in demonstration of the environmental sound management (ESM) of HBCD and HBCD waste	Medium	Medium	The major activities for the waste management are scheduled in years 3, 4 and 5 of the project. However, assessment activities on the ESM of waste including lessons learned in other countries and selection and planning activities of technologies will be undertaken from the project onset.	<ul style="list-style-type: none"> ● Lessons learned in other countries and selection and planning activities of technologies are undertaken in this reporting period. ● Due to the time gap between the total ban of HBCD in China and the initiation of the ESM of HBCD waste projects, there is difficulty in collecting enough HBCD-containing wastes. ● Current mitigation measures are to coordinate to search for possible HBCD-containing EPS/XPS wastes from demolished buildings, and to consider lowering the required volume of HBCD wastes collection, based on market situation and if it is proved a lower volume of HBCD wastes acquired would not affect the EMS piloting results. 	<input type="checkbox"/>
5	Impact of climate change	Medium	Medium	A major risk related to climate change is flooding of production areas. An assessment during the PPG showed that 90% of the participating companies are located in the northern part of the Yangtze River where the weather is generally dry with low associated flooding occurrences. The local sudden destructive extreme climate rarely occurs, including relatively common climate disasters, drought and flood. Both disasters have early warning and mediation measures, which will not affect	The meteorological and emergency management authorities are strengthening the daily drill, organizing the disaster prevention and anti-disaster training, following the arrangement and deployment of the local disaster prevention headquarters, evacuating the personnel in time and ensuring the property safety as much as possible.	<input type="checkbox"/>

				the project. The mitigation measures include strengthening the daily drill, organizing the disaster prevention and anti-disaster training, following the arrangement and deployment of the local disaster prevention headquarters, evacuating the personnel in time and ensuring the property safety as much as possible.		
6	Current pandemic, particularly COVID-19, can impact industrial production and the larger economy as experienced in recent months	Medium	Low	Chinese central government took effective measures against the Coronavirus (COVID-19) as acknowledged by the WHO and carried out financial rescue plan for the private enterprises especially small businesses heavily affected by the virus. Furthermore, industrial production has already re-started in the country and the local governments issued guidelines on precautions, quarantine and medical treatments to protect the enterprises from economic losses in the global pandemic. Lessons learned from the management of other concerns of this nature will be useful.	<ul style="list-style-type: none"> ● China's economy is recovering slowly back to the pre- Covid-19 situation. Industrial production has already re-started in the country to mitigate economic losses. Industries and enterprises follow the guidelines on precaution, quarantine and medical treatment. ● Most Covid-19 related restrictions have been removed in China. The overall economy status gradually bounced back from the pandemic. 	<input type="checkbox"/>
7	Socio-economic risks, including manufacturers losing competitiveness on national and international market due to the cost of alternatives, reduced job and risk of closure of factories	Medium	Medium	Since, the production of HBCD will be phased out, the demands from EPS/XPS consumers will bring the market for alternative FRs. Almost all HBCD producers in China have conversion plans and therefore, job losses and closure of factories are not imminent.	<ul style="list-style-type: none"> ● The production capacity of alternatives to HBCD are rising, the demands from EPS/XPS consumers have brought the market for alternative FRs. ● Fierce competition currently occurred in FR production industry, due to overcapacity of HBCD alternatives production and cooling down of the real estate industry in China. However, it is expected that the real estate industry will warm up again in near future, so that the stockpile of insulation materials as well as FR could be digested. 	<input type="checkbox"/>

2. If the project received a **sub-optimal risk rating (H, S)** in the previous reporting period, please state the **actions taken** since then to mitigate the relevant risks and improve the related risk rating. Please also elaborate on reasons that may have impeded any of the sub-optimal risk ratings from improving in the current reporting cycle; please indicate actions planned for the next reporting cycle to remediate this.

N/A

3. Please indicate any implication of the **COVID-19** pandemic on the progress of the project.

While the workplan had to be amended to mitigate the impact of the COVID-19 pandemic and delay of some activities was unavoidable, it did not significantly influence the progress to the project Development Objectives (DOs). The production and use of HBCD had been phased out since December 12th, 2021 reflecting the high commitment of China to implement the Convention goal. China's economy is recovering back to the pre-Covid-19 situation. Industrial production has already re-started in the country to mitigate economic losses. Industries and enterprises follow the guidelines on precaution, quarantine and medical treatment.

Currently most Covid-19 related restrictions have been removed in China. The overall economy status gradually bounced back from the pandemic.

4. Please clarify if the project is facing delays and is expected to request an **extension**.

N/A

5. Please provide the **main findings and recommendations of completed MTR**, and elaborate on any actions taken towards the recommendations included in the report.

N/A

IV. Environmental and Social Safeguards (ESS)

1. As part of the requirements for **projects from GEF-6 onwards**, and based on the screening as per the UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), which category is the project?

- Category A project
- Category B project
- Category C project

(By selecting Category C, I confirm that the E&S risks of the project have not escalated to Category A or B).

Notes on new risks:

- *If new risks have been identified during implementation due to changes in, i.e. project design or context, these should also be listed in (ii) below.*
- *If these new/additional risks are related to Operational Safeguards # 2, 3, 5, 6, or 8, please consult with UNIDO GEF Coordination to discuss next steps.*
- *Please refer to the UNIDO [Environmental and Social Safeguards Policies and Procedures \(ESSPP\)](#) on how to report on E&S issues.*

Please expand the table as needed.

	E&S risk	Mitigation measures undertaken during the reporting period	Monitoring methods and procedures used in the reporting period
(i) Risks identified in ESMP at time of CEO	The working environment poses a potential	● Internal training on relevant topics was requested to be performed by the	● Conducted irregular site visits by the project team. ● The project team called

Endorsement	threat to technical staff (e.g. gas leakage, PCB oil spillage, electric shocks, etc.).	<p>demonstration enterprises.</p> <ul style="list-style-type: none"> ● Every demonstration enterprise under the project framework was demanded to submit the Environmental and Social Security Progress (ESSR) Report, which should address the hazardous potential at the working environment. 	<p>upon local Department of Ecology and Environment (DEE) to assist in monitoring.</p> <ul style="list-style-type: none"> ● Require all enterprises conduct Environment and Social Safeguard Monitoring every half year by the 3rd party company and the report is part of payment condition. ● The local authorities take quarterly routine inspection to the enterprises.
	The project, either through a direct execution and/or a contractual arrangement: (i) generate or cause generation of solid, liquid or gaseous waste/emissions; (ii) use, cause use of, or manage the use, storage or disposal of hazardous materials and chemicals, including pesticides; (iii) significantly consume or cause consumption of water (> 5,000 m ³ /day), energy, or other resources.	<ul style="list-style-type: none"> ● The project has required and supported the enterprises to stop generating HBCD and HBCD-containing waste. ● Require all enterprises supported by the GEF to submit ESMP, ESSR report and the report on ESM of HBCD and/or HBCD-containing waste. ● Require all enterprises to be supervised by local environmental authorities and/or third-party monitoring companies on hazardous materials and chemicals. 	<ul style="list-style-type: none"> ● The phase-out of HBCD has been verified by local authorities. ● The project team called upon local Department of Ecology and Environment (DEE) to assist in monitoring. ● Require all enterprises conduct Environment and Social Safeguard Monitoring every half year by the 3rd party company and the report is part of payment condition. ● The local authorities take quarterly routine inspection to the enterprises.
	The project poses risks and have potential negative impacts to the health, safety and security of the project-affected communities during its lifetime.	<ul style="list-style-type: none"> ● All enterprises selected are in the industrial part which is 10 km away from citizens. ● Notify the communities and publicize the policies. ● The environmental and social impact on neighboring communities is required to be evaluated and reflected in the ESMP and ESSR report. 	<ul style="list-style-type: none"> ● Carried out survey to identify the contaminated sites with precautionary principles.

(ii) New risks identified during project implementation (if not applicable, please insert 'NA' in each box)	N/A	N/A	N/A
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V. Stakeholder Engagement

1. Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes** regarding engagement of stakeholders in the project (based on the Stakeholder Engagement Plan or equivalent document submitted at CEO Endorsement/Approval).

The project has successfully engaged, in various degrees, the identified stakeholders in the implementation of the envisaged activities and has their full support and commitment.

Internationally, the project has continued its collaboration with UNIDO and Bavaria Environment Agency (LfU Bayerisches Landesamt für Umwelt). During the FY23 reporting period, in summary, one UNIDO project mission in China (July 2023), one virtual third-party review meeting, and three virtual regular project meetings were held. Four international conventions and workshops on HBCD relevant topics were participated by the project stakeholders.

Domestically, the project actively engaged with relevant central ministries and commissions as previously indicated in FY22. At local level, the project team partnered with the DEE in Shandong Province, Guangdong Province and the Municipality of Beijing.

Industrial enterprises and HBCD producers/users have participated in various consultative meetings and workshops on relevant activities including the close-down, conversion and piloting. Two site visits to the demonstration province and enterprises on the progress of the demonstration projects took place during the reporting period of FY23.

Several civil society organizations, the academia and public organizations have participated in various consultations and workshops as relevant to their mandate and function.

One challenge regarding the stakeholder engagement and interaction in FY23 was that the Covid-19 Pandemic and associated public health and travel restrictions in China restrained and delayed in-person or on-site interactions and activities, especially for those involving international stakeholders. Favorably, almost all Covid-19 restrictions have been lifted since 2023, in-person, on-site and international engagement and interactions between the stakeholders are resuming, which will be reflected and reported in the next reporting period.

2. Please provide any feedback submitted by national counterparts, GEF OFP, co-financiers, and other partners/stakeholders of the project (e.g. private sector, CSOs, NGOs, etc.).

The HBCD producers think very highly of UNIDO and FECO for providing timely help that ensured them a smooth technical transition to the greener industrial production. (Email received and relevant news coverage)

China Plastic Processing Industrial Association and China Flame Retardant Society thanked, in an interview, the GEF, UNIDO and FECO for bringing the development of alternative technology that accelerate the phase-out of hazardous chemicals.

3. Please provide any **relevant stakeholder consultation** documents.

- Inception Workshop Report [See Annex 1, the same attachment to Activity 5.1.2.1]
- 2022 Project Review Meeting Agenda [See Annex 2]
- 2023 UNIDO China Mission Agenda [See Annex 2]

A list of other minor meetings and consultation is attached in Annex 2.

VI. Gender Mainstreaming

1. Using the previous reporting period as a basis, please report on the **progress** achieved **on implementing gender-responsive measures** and **using gender-sensitive indicators**, as documented at CEO Endorsement/Approval (in the project results framework, gender action plan or equivalent),.

Baseline		Outcome Results	Activities that contribute to the results
Item Description	Content	Content	
Representations of female employees in the companies in general (i.e. the ratio of women among the total workforce)	37%	43% in HBCD and now HBCD alternatives manufacturing enterprises (90% at the central control and quality check positions), reported by the gender-mainstreaming subproject; 25% in EPS/XPS manufacturing enterprises;	Set the enterprises that have female managers or 40% female employees as prioritized condition in the selection of demonstration enterprises. Surveys on gender-mainstreaming were conducted at demonstration enterprises and other selected enterprises, with talks with the executives. Training materials and training sessions for the female employees in the manufacturing enterprises of HBCD and its substitutes, EPS/XPS enterprises using HBCD or its substitutes are planned and to be organized in the next reporting period
Gender awareness of the managers of the companies Low: not willing to hire females when compared with male candidates with similar backgrounds; Medium: recognizing the advantages of having females as both employees and decision makers; High: recognizing the necessity of ensuring gender parity in workplace, setting up schemes to actively promote such gender parity	Low in some, medium in others	Medium - High	Surveys on gender awareness were conducted at demonstration enterprises and other selected enterprises, with talks with the executives. Training materials on gender mainstreaming and health awareness of female are being drafted; relevant training sessions are going to be organized in the next reporting period.

Health awareness of female workers in the biohazards of POPs (HBCD in this case) Low: not familiar with females' vulnerabilities when exposed to POPs; Medium: harms of POPs on reproduction health understood; High: actively seek protective measures against exposure	Low: Female workers vaguely understood the hazards and female vulnerability (e.g. would transfer from production line roles to office and administrative roles after getting married (planning for pregnancy), but have limited understandings of its biohazards otherwise.	Medium - High	Training materials on gender mainstreaming and health awareness of female are being drafted; relevant training sessions are going to be organized in the next reporting period.
Representations of female decision-makers in companies (i.e. ratio of female decision-makers among the total number of managerial positions)	33%	38% and above as an average, and 29% in each company	Training materials on gender mainstreaming and health awareness of female are being drafted; relevant training sessions are going to be organized in the next reporting period. A subproject of Gender Performance Evaluation Project in HBCD Related Industries was proposed to reflect and promote the status of gender issue in HBCD relevant industries, which is going to be initiated in the next reporting period.
Scheme of ensuring the female to male ratio in the shortlist of candidates to be selected as 1) workshop managers, 2) middle to senior level leaders	None across all companies	Yes in most companies	
Whether an women's representative or a women's association is in place in the companies	Yes in 2 companies; None in the rest	Yes in most companies	
Whether organizations working with women to share their domestic tasks (help with care taking) and to promote their physical and psychological well-being are in place	Yes in some companies (e.g. Sunris has summer and winter camps for female employees' children during the school breaks)	Yes in most companies	

VII. Knowledge Management

1. Using the previous reporting period as a basis, please elaborate on any **knowledge management activities / products**, as documented at CEO Endorsement / Approval.

The knowledge management activities backed by knowledge management platforms / products are designed and planned as reported in the last reporting period of FY22.
All knowledge management activities were not initiated in past reporting period and are going to take place in the next one. The establishment of the knowledge platform is to be based on the final data and outcomes of the demonstration projects, which are all ongoing and not yet completed partly due to the Covid-19 pandemic.

2. Please list any **relevant knowledge management mechanisms / tools** that the project has generated.

Knowledge management mechanisms/tools will be generated in the next reporting period.

VIII. Implementation progress

1. Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes achieved/observed** with regards to project implementation.

The project has achieved significant GEB during the past 1st reporting period of 2022FY, compared to the initial baseline. The PDO of GEBs (18,000 tonnes/year of HBCD phased out) have been reached without flaw. With consistent capacity building efforts on supervision and enforcement of related policies, the possible illegal HBCD production and use will be controlled. The project has successfully implemented the strategies on the management of current existent and the future HBCD containing waste.

During this 2nd reporting period of 2023FY, all activities of Component 1 of the project document have all been initiated and are currently ongoing. Most outcomes on the policy and regulation are expected to be produced in 2023, which is addressed in details in Section II - Targeted Results and Progress to-Date.

As reported in the 1st reporting period of 2022FY, the devised activities of Component 2 were initiated the earliest starting from the initiation of the project among all the components. With the active participation of demonstration enterprises, on average the demonstration enterprises have completed over 50% of the overall progress of respective demonstration subprojects, with at least one EPS demonstration subprojects expected to be concluded by the end of 2023. The research on two HBCD alternatives has been initiated and is currently ongoing with initial outcomes expected to be produced in 2023. Research on the third HBCD alternative is currently in planning and is expected to be initiated in the next reporting period.

The technology assessment and pilot of ESM of HBCD waste were launched in this reporting period, with relevant experiments and analysis currently ongoing. The BAT/BEP reports on the ESM of HBCD waste are to be accomplished in the next reporting period. Other subordinate activities of Component 3 on HBCD identification and management have also been initiated and are ongoing.

As for Component 4, the activities related to gender mainstreaming was launched during this reporting period. Training materials are going to be compiled and training sessions are going to be organized in the next reporting period. The project publicity activities are in plan and are going to be launched in the next reporting period.

Routine monitoring and supervision activities (Component 5) are conducted regularly. Project midterm evaluation and auditing are scheduled in the 2nd half of 2023.

Challenges first lie in the gender activities and knowledge management components which is impacted by the lack of national priority on gender policies and government's censorship of public information to the foreign audience. Second, since the total ban on production, usage, import and export of HBCD in China has been implemented for one and half years, almost all HBCD waste including HBCD raw materials, HBCD-containing EPS beads, unused HBCD-containing EPS/XPS boards have been properly disposed and rarely exists. Besides, previous HBCD-containing EPS/XPS boards are currently in use in existing buildings and are not yet demolished. It is currently a challenge to collect extra amount of HBCD waste. The third is that the most work related to knowledge management platform establishment has not been initiated. The establishment of the knowledge platform is to be based on the final data and outcomes of the demonstration projects, which are all ongoing and not yet completed partly due to the Covid-19 pandemic.

2. Please briefly elaborate on any **minor amendments**⁶ to the approved project that may have been introduced during the implementation period or indicate as not applicable (NA).

Please tick each category for which a change has occurred and provide a description of the change in the related textbox. You may attach supporting documentation, as appropriate.

⁶ As described in Annex 9 of the *GEF Project and Program Cycle Policy Guidelines*, **minor amendments** are changes to the project design or implementation that do not have significant impact on the project objectives or scope, or an increase of the GEF project financing up to 5%.

<input type="checkbox"/>	Results Framework	N/A
<input type="checkbox"/>	Components and Cost	N/A
<input type="checkbox"/>	Institutional and Implementation Arrangements	N/A
<input type="checkbox"/>	Financial Management	N/A
<input type="checkbox"/>	Implementation Schedule	N/A
<input type="checkbox"/>	Executing Entity	N/A
<input type="checkbox"/>	Executing Entity Category	N/A
<input type="checkbox"/>	Minor Project Objective Change	N/A
<input type="checkbox"/>	Safeguards	N/A
<input type="checkbox"/>	Risk Analysis	N/A
<input type="checkbox"/>	Increase of GEF Project Financing Up to 5%	N/A
<input type="checkbox"/>	Co-Financing	N/A
<input checked="" type="checkbox"/>	Location of Project Activities	Changes in the participating industrial enterprises
<input type="checkbox"/>	Others	

3. Please provide progress related to the **financial implementation** of the project.

According to the Delivery Report from UNIDO, the total disbursement from the initiation of the project to 30 June 2023 is USD \$9,529,700 (75.63% of total GEF grant). The third trench has not yet been applied for FY2024.

Total co-financing planned to be achieved is USD \$109,080,000 (111.37% of total promise to GEF).



PROJECT DELIVERY REPORT

Project:	180288 - IMPROVEMENT OF THE ENVIRONMENTAL PERFORMANCE OF THE FOAM SECTOR: PHASE OUT AND MANAGEMENT OF HBCD IN CHINA	Project Manager:	Carmela Centeno	Project Validity Status:	18.06.2019 - 31.10.2027 Implement		
Reporting Period:	22.04.2021 - 30.06.2023	Project Theme:	Energy and Environment	Country:	China		
Sponsor Nr.	Sponsor	Grant	Grant Description	Fund	Currency	Grant Status	Grant Validity
400150	GEF - Global Environment Facility	2000004277	GFCHI_180288	GF	USD	Authority to implement	22.04.2021 - 22.04.2026

	Description	Released Budget Current Year (a)	Obligations Current Year (b)	Disbursements Current Year (c)	Expenditures Current Year (d=b+c)	Total Agreement Budget (e)	Released Budget (f)	Obligations + Disbursements (g)	Funds Available* (h=f-g)	Support Cost (i)	Total Expenditures (j=g+i)
2000004277											
180288-1-01-01	Policy and Regulatory Framework	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
2100	Contractual Services	0.00	116,210.00	0.00	116,210.00	0.00	0.00	116,210.00	(116,210.00)	0.00	116,210.00
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10,458.90	10,458.90
180288-1-01-01	Total	0.00	116,210.00	0.00	116,210.00	0.00	0.00	116,210.00	(116,210.00)	10,458.90	126,668.90
180288-1-01-02	Promotion Technology Transfer	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
2100	Contractual Services	0.00	3,277,122.00	0.00	3,277,122.00	0.00	0.00	3,277,122.00	(3,277,122.00)	0.00	3,277,122.00
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	294,940.98	294,940.98
180288-1-01-02	Total	0.00	3,277,122.00	0.00	3,277,122.00	0.00	0.00	3,277,122.00	(3,277,122.00)	294,940.98	3,572,062.98
180288-1-01-03	ESM Implementation in EPS/XPS	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
2100	Contractual Services	0.00	911,086.40	0.00	911,086.40	0.00	0.00	911,086.40	(911,086.40)	0.00	911,086.40
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81,997.78	81,997.78
180288-1-01-03	Total	0.00	911,086.40	0.00	911,086.40	0.00	0.00	911,086.40	(911,086.40)	81,997.78	993,084.18
180288-1-01-04	Information Dissemination and Capacity	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
2100	Contractual Services	0.00	125,506.80	0.00	125,506.80	0.00	0.00	125,506.80	(125,506.80)	0.00	125,506.80
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11,295.61	11,295.61
180288-1-01-04	Total	0.00	125,506.80	0.00	125,506.80	0.00	0.00	125,506.80	(125,506.80)	11,295.61	136,802.41
180288-1-51-01	Project Management	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
2100	Contractual Services	0.00	120,858.40	0.00	120,858.40	0.00	0.00	120,858.40	(120,858.40)	0.00	120,858.40
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10,877.26	10,877.26
180288-1-51-01	Total	0.00	120,858.40	0.00	120,858.40	0.00	0.00	120,858.40	(120,858.40)	10,877.26	131,735.66
180288-1-51-02	Monitoring	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
2100	Contractual Services	0.00	27,890.40	0.00	27,890.40	0.00	0.00	27,890.40	(27,890.40)	0.00	27,890.40
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,510.14	2,510.14
180288-1-51-02	Total	0.00	27,890.40	0.00	27,890.40	0.00	0.00	27,890.40	(27,890.40)	2,510.14	30,400.54

	Description	Released Budget Current Year (a)	Obligations Current Year (b)	Disbursements Current Year (c)	Expenditures Current Year (d=b+c)	Total Agreement Budget (e)	Released Budget (f)	Obligations + Disbursements (g)	Funds Available* (h=f-g)	Support Cost (i)	Total Expenditures (j=g+i)
		USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
180288-1-53-01	Evaluation										
2100	Contractual Services	0.00	69,726.00	0.00	69,726.00	0.00	0.00	69,726.00	(69,726.00)	0.00	69,726.00
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6,275.34	6,275.34
180288-1-53-01	Total	0.00	69,726.00	0.00	69,726.00	0.00	0.00	69,726.00	(69,726.00)	6,275.34	76,001.34
2000004277	Total	0.00	4,648,400.00	0.00	4,648,400.00	0.00	0.00	4,648,400.00	(4,648,400.00)	418,356.01	5,066,756.01
180288	USD Total	0.00	4,648,400.00	0.00	4,648,400.00	0.00	0.00	4,648,400.00	(4,648,400.00)	418,356.01	5,066,756.01

* Does not include Unapproved Obligations

IX. Work Plan and Budget

1. Please provide **an updated project work plan and budget** for the remaining duration of the project, as per last approved project extension. Please expand/modify the table as needed.

Please fill in the below table or make a reference to a file, in case it is submitted as an annex to the report.

COMPONENT, Outcome, Output	Expenditures at Year 1	Expenditures at Year 2	Year 3				Year 4				Year 5				Total
			quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Component 1: Policy and regulatory framework															
Outcome 1.1: Policy and regulatory framework strengthened on the management and supervision of															
HBCD and HBCD-containing EPS/XPS polymer foam products in China															
<i>Output 1.1.1: National legislation, regulatory framework and technical specifications to ban the production, usage, import and export of HBCD used in EPS/XPS in China</i>	38000	59000	10500	16500	7500	0	17500	0	0	0	0	0	0	0	149000
<i>Output 1.1.2: Regulatory policies with focus on environmental quality standards and chemical limits</i>	13796	79704	25000	12000	0	0	10000	7000	0	0	0	0	0	0	147500

<i>Output 1.1.3: Frame for governmental alternative assessment established and flame retardant alternatives for HBCD and alternative insulation materials for HBCD-containing EPS/XPS foams evaluated</i>	0	104600	16700	15000	5000	0	12200	5000	0	0	0	0	0	0	158500
<i>Output 1.1.4: National managerial capacity, enforcement, supervision policies, monitoring methods of HBCD and HBCD-containing products strengthened to coordinate and monitor and establish problem-finding mechanism for the polymer foam production sector</i>	119103	437000	0	0	125600	99697	0	0	13600	10000	0	0	0	0	805000
Subtotal for Component 1	170899	680304	52200	43500	138100	99697	39700	12000	13600	10000	0	0	0	0	1260000
Component 2: Promotion of technology transfer and investment on the production of HBCD alternatives and application of alternatives to the XPS/EPS foam sector															
Outcome 2.1: Total phase out of the production of HBCD in China															

<i>Output 2.1.1: Production lines closed down or converted to HBCD alternatives</i>	238060	2461940	0	0	0	0	0	0	0	0	0	0	0	0	2700000
<i>Outcome 2.2: Prohibition of HBCD usage in the production of polymer foams or application of other alternatives through the promotion of BAT/BEP</i>															
<i>Output 2.2.1: Demonstration activities on at least 4 types of alternative materials for EPS/XPS foam manufacturing through technology transfer and research implemented</i>	319535	1180465	0	0	0	0	0	0	0	0	0	0	0	0	1500000
<i>Output 2.2.2 Replication activities on the best alternatives undertaken in at least 5 companies and outcomes promoted national wide</i>	0	501000	328000	0	0	0	270000	0	0	0	0	0	0	0	1099000
<i>Output 2.2.3: Promotion of venture capital investment and technology transfer on switching to HBCD-alternatives established .</i>	0	317300	98000	75000	92000	85000	30700	125000	0	0	138000	25000	45000	0	961000
Subtotal for Component 2	557595	4460705	426000	75000	92000	85000	300700	125000	0	0	138000	25000	45000	0	6330000

Component 3: Implementation of environmentally-sound management (ESM) of EPS/XPS foam wastes containing HBCD															
Outcome 3.1: ESM of HBCD-containing EPS/XPS foams implemented															
<i>Output 3.1.1: Build and periodically update National inventory and data base on HBCD stocks and waste</i>	0	72000	27500	27500	28000	28000	20000	20000	23500	23500	15000	15000	25000	25000	285000
<i>Output 3.1.2: Develop HBCD waste identification and management methods on HBCD and HBCD-containing wastes disposal</i>	27500	19500	26000	10000	0	0	15000	5500	15000	0	15000	9500	7000	0	133500

Output 3.1.3 BAT/BEP demonstration of environmentally sound management and disposal of HBCD waste including assessment, comparison and demonstration of different treatment technologies, including volume reduction, HBCD extraction, HBCD decomposition, disposal, circular economy approach for bromine and EPS/XPS recovery	0	332000	400000	465000	125000	46000	508500	67500	85000	435000	200000	265200	50800	0	2664000
Subtotal for Component 3	27500	423500	453500	502500	153000	74000	543500	93000	123500	458500	230000	289700	82800	25000	3480000
Component 4: Information dissemination, capacity building and knowledge management															
Outcome 4.1 Improved technical and regulatory capacity on the management of HBCD and HBCD-containing wastes															

<p><i>Output 4.1.1: Technical trainings for various stakeholders (enterprises, government staff, technicians, researchers etc.)designed and implemented to strengthen capacity on HBCD and the EXPS/EPS foam sector, in general</i></p>	23800	36609.5	0	0	25000	24990.5	0	0	17400	17400	0	0	17400	17400	162600
<p><i>Output 4.1.2: Awareness raising activities undertaken for various relevant stakeholders includingthe general public, NGOs, women and youth sector etc.</i></p>	0	40000	25000	15000	0	0	25000	15000	0	0	20000	10000	0	0	140000
<p><i>Outcome 4.2: Knowledge management platform set up to contribute to regional/global actions on HBCD management.</i></p>															
<p><i>Output 4.2.1: Establishment of a knowledge hub on HBCD and the XPS/EPS foam sector to disseminate lessons learned on a national, regional and global scale</i></p>	0	75000	17500	20000	20000	17500	17500	20000	20000	17500	17500	20000	20000	17500	242500

Subtotal for Component 4	23800	151609.5	67500	59990.5	20000	17500	59900	52400	20000	17500	37500	30000	37400	34900	630000
Component 5: Monitoring & Evaluation															
Outcome 5.1 Effective monitoring and evaluation of project impact and sustainability implemented															
<i>Output 5.1: Periodic monitoring and evaluation implemented</i>	730	30070	0	0	19500	19500	0	0	10200	10200	0	0	14900	14900	90200
<i>Output 5.1.2 Midterm and terminal evaluation report conducted</i>	10800	10800	0	33400	0	33400	0	5400	0	5400	0	40400	0	40400	99200
Subtotal for Component 5	11530	40870	0	33400	19500	52900	0	5400	10200	15600	0	40400	14900	55300	189400
Project total	791324	5756988.5	999200	714390.5	422600	329097	943800	287800	167300	501600	405500	385100	180100	115200	12000000
<i>Project Management cost</i>	60000	45000	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	600000
Project total including PM	851324	5801988.5	1029200	744390.5	452600	359097	973800	317800	197300	531600	435500	415100	210100	145200	12600000
Total by year	6.76%	47.12%	20.52%				16.04%				9.57%				100.00%

X. Synergies

1. Synergies achieved:

The effect of 19 completed and ongoing projects in the focal of areas of POPs and Chemicals and Waste funded by GEF in China lays a good foundation for the successful inception of the project. The outputs and results from these projects provided an integral framework of the proposed project regarding of capacity building, regulatory guarantee and technical support.

The development of the original NIP and updated NIP provides a good institutional capacity for the preparation and implementation of the proposed project with support of the UNIDO-GEF project "Building the Capacity of the People's Republic of China to Implement the Stockholm Convention on POPs and Develop a National Implementation Plan" (GEF ID 1412) and the UNIDO-GEF project "China's Compliance with the Stockholm Convention" (GEF ID 5624). In particular, the updated NIP has also developed a preliminary inventory of HBCD in China and identified prioritized action plans to reduce and eliminate the production and usage of HBCD, which are fully coordinated in the proposal project. In addition, since HBCD and PFOS are both new POPs with special exemptions that where they are still produced in China, experiences on World Bank-GEF Reduction and Phase-out of PFOS in Priority Sectors (GEF Project ID 9269) could be referred in the industrial chemical regulatory management mechanism of HBCD.

The completed and ongoing project funded by GEF provided technical support for the implementation of the proposed project. For instance, the technology transfer center, which was established by the UNIDO/GEF projects "Strengthening institutions, regulations and enforcement capacities for effective and efficient implementation of the National Implementation Plan (NIP) in China" (GEF ID 3263), will continuously provide service for identifying and evaluating of alternatives of HBCD in XPS and EPS sector. The cement co-processing technology, which was successfully demonstrated and validated in the UNIDO/GEF "Environmentally Sound Management and Disposal of Obsolete POPs Pesticides and Other POPs Wastes" (GEF ID 2926), will be used as a potential technology for HBCD containing waste disposal. The incineration technology and facilities built by the World Bank project "PCB Management and Disposal Demonstration" (GEF ID 2360) can be another option for the disposal of HBCD containing waste in the proposed project.

Coordination has been established with other initiatives during the inception phase, as those related to the XPS sector under the framework of the Montreal Protocol for the Protection of the Ozone Layer. Meanwhile, an initiative funded by Bavarian State Ministry, Germany is coordinated with the establishment of a knowledge hub on HBCD and the XPS/EPS foam sector to disseminate lessons learned on a national, regional and global scale. 2 workshops have been held in the inception phase.

Coordination with the Turkey HBCD project (GEF ID 10082) will be ensured. As the two projects share a common objective, knowledge exchange and sharing will ensure best use of resources and experiences. Coordination will also be established with other initiatives, as those related to the XPS sector under the framework of the Montreal Protocol for the Protection of the Ozone Layer. Meanwhile, an initiative funded by Bavarian State Ministry, Germany is coordinated with the output 4.3 of the project to establishment of a knowledge hub on HBCD and the XPS/EPS foam sector to disseminate lessons learned on a national, regional and global scale. The knowledge and experience gained from the Turkey HBCD and the current project will contribute greatly to these knowledge hubs.

3. Stories to be shared (Optional)

Please provide a brief summary of any especially interesting and impactful project results that are worth sharing with a larger audience, and/or investing communications time in. Please include links to any stories/videos available online.

XI. GEO LOCATION INFORMATION

The Location Name, Latitude and Longitude are required fields insofar as an Agency chooses to enter a project location under the set format. The Geo Name ID is required in instances where the location is not exact, such

as in the case of a city, as opposed to the exact site of a physical infrastructure. The Location & Activity Description fields are optional. Project longitude and latitude must follow the Decimal Degrees WGS84 format and Agencies are encouraged to use at least four decimal points for greater accuracy. Users may add as many locations as appropriate.

Web mapping applications such as [OpenStreetMap](#) or [GeoNames](#) use this format. Consider using a conversion tool as needed, such as: <https://coordinates-converter.com>

Please see the Geocoding User Guide by clicking [here](#)

Location Name	Latitude	Longitude	Geo Name ID	Location and Activity Description
Shandong Dongxin New Materials Technology Co., Ltd.	37.03	119.03		Pilot demonstration sites for closure of HBCD production and use of alternatives
Shandong Sunris New Materials Co., Ltd.	37.18	118.83		Pilot demonstration sites for closure of HBCD production and use of alternatives
Shouguang Yangbo Technology Co.	37.05	119.08		Pilot demonstration sites for closure of HBCD production
Liaoning Litian New Materials Co., Ltd.	40.73	120.77		Pilot demonstration sites for use of alternatives
Ningxia Baoli Jieneng Technology Co., Ltd.	38.71	106.29		Pilot demonstration sites for use of alternatives
Wuxi Xingda New Foam Plastic Material Co., Ltd	31.66	120.46		Pilot demonstration sites for use of alternatives
Hebei Wuzhou Kaiyuan New Material Co., Ltd.	38.36	117.62		Pilot demonstration sites for use of alternatives
Beijing Beipeng Building Materials Group Co., Ltd.	39.71	116.46		Pilot demonstration sites for use of alternatives
Beijing Hongqiangxinsheng	40.04	116.80		Pilot demonstration

Building Materials Co., Ltd.				sites for use of alternatives
Guangzhou Fudatec Insulation Materials Co, Ltd.	23.41	113.33		Pilot demonstration sites for use of alternatives
Beijing Cement Plant Co., Ltd.	40.17	116.21		Pilot facility for environmentally-sound management of HBCD wastes
Tianjin Binhaihejia Veolia Environmental Service Co., Ltd.	38.69	117.58		Pilot facility for environmentally-sound management of HBCD wastes
Wuhu Lvzhou Environment & Energy Co., Ltd.	31.41	118.36		Pilot facility for environmentally-sound management of HBCD wastes

Please provide any further geo-referenced information and map where the project interventions is taking place as appropriate.

EXPLANATORY NOTE

- Timing & duration:** Each report covers a twelve-month period, i.e. 1 July 2022 – 30 June 2023.
- Responsibility:** The responsibility for preparing the report lies with the project manager in consultation with the Division Chief and Director.
- Evaluation:** For the report to be used effectively as a tool for annual self-evaluation, project counterparts need to be fully involved. The (main) counterpart can provide any additional information considered essential, including a simple rating of project progress.
- Results-based management:** The annual project/programme progress reports are required by the RBM programme component focal points to obtain information on outcomes observed.

Global Environmental Objectives (GEOs) / Development Objectives (DOs) ratings	
Highly Satisfactory (HS)	Project is expected to achieve or exceed <u>all</u> its major global environmental objectives, and yield substantial global environmental benefits, without major shortcomings. The project can be presented as “good practice”.
Satisfactory (S)	Project is expected to <u>achieve most</u> of its <u>major</u> global environmental objectives, and yields satisfactory global environmental benefits, with only minor shortcomings.
Moderately Satisfactory (MS)	Project is expected to <u>achieve most</u> of its major <u>relevant</u> objectives but with either significant shortcomings or modes overall relevance. Project is expected not to achieve some of its major global environmental objectives or yield some of the expected global environmental benefits.
Moderately Unsatisfactory (MU)	Project is expected to achieve <u>some</u> of its major global environmental objectives with major shortcomings or is expected to <u>achieve only some</u> of its major global environmental objectives.
Unsatisfactory (U)	Project is expected <u>not</u> to achieve <u>most</u> of its major global environmental objectives or to yield any satisfactory global environmental benefits.
Highly Unsatisfactory (HU)	The project has failed to achieve, and is not expected to achieve, <u>any</u> of its major global environmental objectives with no worthwhile benefits.

Implementation Progress (IP)	
Highly Satisfactory (HS)	Implementation of <u>all</u> components is in substantial compliance with the original/formally revised implementation plan for the project. The project can be presented as “good practice”.
Satisfactory (S)	Implementation of <u>most</u> components is in substantial compliance with the original/formally revised plan except for only few that are subject to remedial action.
Moderately Satisfactory (MS)	Implementation of <u>some</u> components is in substantial compliance with the original/formally revised plan with some components requiring remedial action.
Moderately Unsatisfactory (MU)	Implementation of <u>some</u> components is <u>not</u> in substantial compliance with the original/formally revised plan with most components requiring remedial action.
Unsatisfactory (U)	Implementation of <u>most</u> components in <u>not</u> in substantial compliance with the original/formally revised plan.
Highly Unsatisfactory (HU)	Implementation of <u>none</u> of the components is in substantial compliance with the original/formally revised plan.

Risk ratings	
Risk ratings will assess the overall risk of factors internal or external to the project which may affect implementation or prospects for achieving project objectives. Risk of projects should be rated on the following scale:	
High Risk (H)	There is a probability of greater than 75% that assumptions may fail to hold or materialize, and/or the project may face high risks.
Substantial Risk (S)	There is a probability of between 51% and 75% that assumptions may fail to hold or materialize, and/or the project may face substantial risks.
Moderate Risk (M)	There is a probability of between 26% and 50% that assumptions may fail to hold or materialize, and/or the project may face only moderate risk.
Low Risk (L)	There is a probability of up to 25% that assumptions may fail to hold or materialize, and/or the project may face only low risks.