



Project Implementation Report

(1 July 2021 – 30 June 2022)

Project Title:	Demonstration of Mercury Reduction and Minimization in the Production of Vinyl Chloride Monomer in China
GEF ID:	6921
UNIDO ID:	140214
GEF Replenishment Cycle:	GEF-6
Country(ies):	China
Region:	SA - Southeast Asia
GEF Focal Area:	Chemicals and Waste (CW)
Integrated Approach Pilot (IAP) Programs¹:	Not applicable
Stand-alone / Child Project:	Stand alone
Implementing Department/Division:	ENV / MCM
Co-Implementing Agency:	Not applicable
Executing Agency(ies):	Foreign Environmental Cooperation Center (FECO), Ministry of Ecology and Environment, China
Project Type:	Full-Sized Project (FSP)
Project Duration:	60 months
Extension(s):	1
GEF Project Financing:	USD 16,200,000
Agency Fee:	USD 1,458,000
Co-financing Amount:	USD 100,400,000
Date of CEO Endorsement/Approval:	7/5/2017
UNIDO Approval Date:	7/11/2017
Actual Implementation Start:	10/4/2017
Cumulative disbursement as of 30 June 2022:	15,735,054
Mid-term Review (MTR) Date:	12/31/2021
Original Project Completion Date:	10/4/2022

¹ Only for GEF-6 projects, if applicable

Project Completion Date as reported in FY21:	10/4/2022
Current SAP Completion Date:	12/31/2025
Expected Project Completion Date:	12/31/2025
Expected Terminal Evaluation (TE) Date:	4/30/2026 <i>Insert expected/actual date of TE submission to the GEF</i>
Expected Financial Closure Date:	4/30/2027 <i>Insert a date <u>no later than</u> 12 months after the TE submission date</i>
UNIDO Project Manager²:	STUCKI, Jérôme

I. Brief description of project and status overview

Project Objective		
<p>The overall objective is to reduce risks of mercury on human health and the environment from industrial production of Vinyl Chloride Monomers (VCM) in China. The specific objective is to demonstrate mercury-free technology and promote BAT/BEPs to reduce mercury release and emission from existing VCM facilities. By conversion to low-mercury catalyst and mercury-free catalyst technology in VCM industrial production, China will reduce by the year 2020, mercury use per unit of product in VCM/PVC industry by 50% compared with referential year of 2010. This will result in reduction of about 360 metric tons of mercury use in VCM industries.</p>		
	Project Core Indicators	Expected at Endorsement/Approval stage
1	<p>Increase in phase-out, disposal and reduction of releases of POPs, ODS, mercury and other chemicals of global concern</p> <p>Reduction of 1,000 metric tons of Mercury</p>	360 metric tons

Baseline
<p>The Vinyl Chloride Monomer (VCM) project in China has been designed to adhere to the Minamata Convention (MC) objective of protecting human health and the environment from anthropogenic emissions and release of mercury and mercury containing compounds.</p> <p>After signing and ratifying in Oct 10, 2013 and August 2016 respectively, China identified the high mercury consumption and high risk of mercury pollution from the calcium carbide process (CCP) VCM industry as the key Chinese industry targeted for prevention and control of mercury pollution under the Minamata Convention.</p> <p>China is the only country in the world that uses calcium carbide-based VCM production to produce polyvinyl chloride (PVC). The VCM/PVC sector consumes more than half of the total mercury supply in the country, accounting for nearly 30% of the world's total mercury consumption.</p> <p>Under article five (5) of the Convention VCM was expected to be reduced by 50% in 2020 against 2010 use.</p>

² Person responsible for report content

However, VCM calcium carbide based process pose is still utilized in China.

China is transitioning to ethylene-dichloride (EDC) processes and encouraging large firms to invest in zero or low mercury-containing catalyst. Mercury waste in the PVC sector is also of primary environmental concern. To this effect, China has made efforts in prevention and control of mercury pollution in VCM industry and developed improved relevant policies and standards. To meet commitments made under the Minamata Convention, the project is enhancing regulatory, enforcement, BAT/BEP promotion, mercury recovery, contaminated site assessment and knowledge sharing.

Please refer to the explanatory note at the end of the document and select corresponding ratings for the current reporting period, i.e. FY22. Please also provide a short justification for the selected ratings for FY22.

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. FY21, in the last column.

Overall Ratings ⁴	FY22	FY21
Global Environmental Objectives (GEOs) / Development Objectives (DOs) Rating	<i>Satisfactory (S)</i>	<i>Satisfactory (S)</i>
<p><i>Using the progress rationale reported in section II, please briefly justify the selected FY22 GEOs/DOs ratings versus the GEOs/DOs ratings reported in FY21.</i></p> <p><i>There has been no change in the ratings between FY21 and FY22.</i></p>		
Implementation Progress (IP) Rating	<i>Satisfactory (S)</i>	<i>Satisfactory (S)</i>
<p><i>Using the progress rationale reported in section II, please briefly justify the selected FY22 IP ratings versus the IP ratings reported in FY21.</i></p> <p><i>Although COVID-19 outbreak and lockdowns have prevented some field visits/monitoring trips to the plants to take place, the implementation of activities in FY22 in on track per the revised work plan.</i></p>		
Overall Risk Rating	<i>Low Risk (L)</i>	<i>Low Risk (L)</i>
<p><i>Using the progress rationale reported in section II and III, please briefly justify the selected FY22 risk rating versus the risk ratings reported in FY21.</i></p> <p><i>The risk rating remains the same as in FY21. There has been no substantial change to the national context and to the relevant stakeholders.</i></p>		

II. Targeted results and progress to-date

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

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.

Project Strategy	KPIs/Indicators	Baseline	Target level	Progress in FY22
Component 1 – Strengthen institutional, regulatory, and enforcement (IRE) capacity in VCM production in China				
Outcome 1: Institutional, regulatory, and enforcement capacity to fulfil obligations concerning VCM production sector under the Minamata Convention.				
Output 1.1: National regulatory policy and regulatory frameworks developed to reduce and eliminate mercury use in industrial VCM production, with focus on mandatory policy to ban the use of high-mercury catalyst	Formulations or revisions of the regulations and policies in the VCM sector	Lack of effective regulations or policies to promote mercury pollution prevention, mercury-free and low mercury VCM production technologies and target on mercury – containing waste	9	90% of the activities under this output have been completed and target for this output has been achieved by the end of FY21. By midterm: - An interdepartmental coordination mechanism established - 9 regulations and policies revised and issued. - 9 policy recommendations proposed (2 adopted and 7 under discussion).
Output 1.2: National managerial capacity and enforcement capacity strengthened to coordinate and monitor the VCM production sector	Number of environmental management officials or staff (female/male) trained	Lack of specific training for related personnel	400	90% of the activities under this output have been completed and target for this output has been achieved by the end of FY21. By midterm: - Technical guidance on cleaner production in the VCM sector developed with the assistance of an international expert. - A mission to Japan undertaken by FECO in 2018. - About 4500 officers at central and local level trained to coordinate and monitor the VCM production centre. - In May 2022, FECO assisted Inner Mongolia province to hold an information exchange meeting on MC implementation that raised awareness on MC by explaining relevant requirements of the Convention in detail. - The project also provided awareness raising materials for Inner Mongolia, Liaoning and Shandong provinces.
Component 2 – Promote technology transfer and investment for the widespread application of BAT/BEP				
Outcome 2: Mercury emission and dioxin release reduced from VCM production through promotion of BAT/BEPs and if economical and technically feasible eliminate mercury				
Output 2.1: Public-Private Partnership (PPP) established to promote R&D, venture capital investment and technology transfer	Number of promotion workshops held on venture capital investment and technology transfer through PPP mechanism	Lack of sufficient capital and technology transfer in the PVC industry	2	By July 2020, it was realized that the PPP mechanism is unsuitable for mercury pollution control in PVC industry in China due to the national and provincial policies and technical and economic feasibility after research done by Renmin University and two workshops held. For instance, for the low mercury catalyst technology, from the perspective of domestic policy, because PVC industry is neither a public welfare industry nor a state-supported high-tech industry, it does not have the preconditions to introduce PPP mechanism according to China's regulation. For the mercury-free technology, although mercury-free catalyst can be included in the high-tech industry in terms of industrial characteristic, mercury-free technology is far from being mature. Currently, the cost for developing mercury-free technology is not clear, and its impact on production is uncertain, so the PPP mechanism can only be applied in the research and development (R & D) phase only

				for the mercury-free technology in the PVC industry.
Output 2.2: Environmental Technology Verification (ETV) methodology established to verify the performance of low-mercury and mercury-free alternatives by an expert panel	Number of the alternative VCM production technologies evaluated	Lack of experiences on the ETV implementation for the VCM alternative technologies	2	<p>By midterm, the project has completed the verification for low-mercury technologies.</p> <p>For mercury-free technologies, it is more challenging because of their unsatisfactory technical stability (such as unimproved conversion rate), limited cost efficiency, and difficulties to meet the requirements of national environmental policies.</p> <p>By the end of 2021, the mercury-free expert panel was established, including experts and representatives from PVC plants, who are recommended by relevant industrial associations based on the actual circumstances. The expert panel assists FECO to develop a technical evaluation and other core documents, such as the mercury-free evaluation indicators, and the mercury-free activity plan.</p>
Output 2.3: Demonstration of low-mercury BAT/BEPs in 4 coal-based VCM companies and of mercury-free alternatives in a coal-based VCM company	Cleaner production audits and technology modification following BAT/BEP principles implemented	Lack of mature coal based low-mercury & mercury-free VCM technologies	4 low-mercury & 1 mercury-free	<p>4 low-mercury pilot plants have finalized the pilot phases. In June 2022, FECO held the outcome verification meeting attended by experts to review the submitted reports. The 4 PVC plants have lowered the use of mercury per unit production; disseminated successful experience on technique and management to others VCM manufacturing enterprises; implemented a recording of mercury release and transfer; and assisted the project team to prepare the technical guidance.</p> <p>In order to prepare for the mercury-free catalysts and alternative technologies evaluation activity, and to develop the ToR and expert quantitative evaluation indicators, an information exchange meeting was held and attended by representatives from PVC plants, industrial associations, and R&D units. A lively discussion at the meeting focused on activity plan on mercury-free catalysts and alternative technologies evaluation, and key requirements from the MC.</p>
Output 2.4: Incentive program designed and implementation of major instruments (fiscal, monetary, venture capital, insurance etc.) to allow the private sector to access the technologies and experience gained from demonstrations	Number of enterprises implementing BAT/BEPs in the VCM sector	Lack of policy and economic incentive programs to promote mercury-free and low-mercury VCM production	2	The incentive mechanism has been implemented in combination with the pilot activity, promotion activity, and mercury-free evaluation and demonstration activities. The PVC plants participated in these activities received financial support from the project and at the same time, they provided co-financing as required. This ensures joint efforts, ownership and proper implementation of the activities at the PVC plants. The incentive mechanism, consisting of monetary benefit to and financial commitment from the private sector, strengthens the active participation of plants in the project.
Output 2.5: Replication of BAT/BEPs and of feasible mercury-free alternatives in 15 coal-based VCM companies nationwide	Number of enterprises implementing BAT/BEPs in the VCM sector	Most of the VCM production enterprises process with high-mercury catalyst technologies	15	The replication of low-mercury technologies have been achieved. The results from the 4 pilot plants have been replicated by 7 PVC enterprises which are now low-mercury promotion enterprises after carrying out technical upgrades, improving overall management systems to increase the efficiency of low-mercury catalyst use, and reducing mercury release and emission. The

				<p>mercury consumption of these plants is below < 49 g/t PVC.</p> <p>One low-mercury promotional plant has submitted the phase report. In February 2022, FECO held the outcome verification meeting attended by experts to review the submitted report.</p>
Component 3 – Promote the recovery of mercury from mercury-containing waste from VCM production				
Outcome 3: Promote the recovery of mercury from mercury-containing waste in VCM production process.				
Output 3.1: Development of a national inventory for high-mercury-containing waste	A national inventory of mercury-containing waste in the VCM sector	Lack of mercury flow information and mercury-containing waste inventory in the VCM sector	1	<p>By November 2021, PRTR sub-project has finalized the following activities:</p> <ul style="list-style-type: none"> - Conduct an international mercury PRTR study - Conduct a study on mercury prevention and control policy and management in China - Establish mercury PRTR guidelines in coal based PVC production sector. <p>In April 2022, FECO carried out the open bidding for the establishment of an Environmentally Sound Management (ESM) of Mercury-containing Wastes. The chosen bidder is expected to carry out the following tasks in FY23 and FY24:</p> <ol style="list-style-type: none"> (1) Develop PRTR technical guidance and carry out PRTR demonstration in all mercury catalyst manufacturers, 15 PVC production plants (whose total production capacity at least accounted for 40% of the whole PVC industry) and all mercury catalyst recycling plants; (2) Carry out Environmentally Sound Management (ESM) research on mercury-containing/contaminated wastes in PVC industry; (3) Conduct cleaner production audit in mercury catalyst recycling plants; (4) Carry out ESM training on mercury-containing wastes.
Output 3.2: Mercury recovery rate enhanced on mercury-containing waste nationwide	Recovery of 90% of the mercury from waste mercury catalyst and waste activated carbon	Lack of effective mercury management and properly guided mercury recovery practices	1	<p>By the end of June 2022, the preparation for a Request for Proposal from mercury containing waste recycling plants to undergo technical modification, including the selection criteria as well as technical requirements for the plants, has been finalized. Up to 3 mercury-containing waste recycling plants will receive financial and technical supports from the project to improve their waste disposal capacity and the average capacity utilization rate.</p> <p>Considering the integrity and continuity of the work, in April 2022, FECO signed an amendment with China National Cleaner Production Center (CNCPC) to carry out the clean production audit in waste mercury recycling plants to investigate the status quo of cleaner production in these plants, including the current measures to prevent and control mercury pollution in the recycling process.</p>
Component 4 – Contaminated site identification and risk reduction associated with VCM production				
Outcome 4: Appropriate strategies developed for identifying and assessing mercury-contaminated sites from VCM production				
Output 4.1: Inventory of mercury-contaminated sites developed from VCM production plants	Establishment of the national contaminated site	Lack of a national mercury-contaminated site inventory of the VCM industry	1	From March to May 2022, FECO held several meetings with experts to discuss and improve the Report on Investigation and Identification of Potential Mercury-contaminated Sites in the

	inventory of the VCM industry.			CCM-VCM Industry, which incorporates management ideas and strategies, schemes and suggestions for risk characterization, and control and mitigation of pollution.
Output 4.2: Preliminary risk assessment (level and scope) on typical mercury-contaminated sites from VCM production	EIA conducted in mercury-contaminated sites of VCM sector	Lack of the experience on the risk assessment of mercury-contaminated sites in the VCM sector.	2	Not applicable in FY22.
Output 4.3: Strategy proposal for the reduction of the health risk and environmental impact and remediation	Development of technical guidelines for mercury pollution sites in the VCM industry.	Lack of effective management of mercury-contaminated sites in the VCM sector.	1	Not applicable in FY22.
Component 5 – Information dissemination and awareness raising among stakeholders				
Outcome 5: Promotion of knowledge, experience and lesson sharing and environmental awareness raising among stakeholder groups				
Output 5.1: Training provided to disseminate project results (concerning component 1, 2, 3);	Training, workshops and other activities organized to exchange experience and knowledge gain from the project	Lack of effective stakeholder participation in the mercury pollution control actions	2	In September 2021, FECO has conducted field investigation in 5 PVC plants in Henan province on the use of mercury per unit production and technical modification progress, and provided technical support based on the successful cases of 4 pilot plants. FECO also met with the Environmental Administrative Department of Henan Province to exchange experiences and raise awareness on the requirements of the MC.
Output 5.2: Raise awareness among government, private and civil society stakeholder groups;	Number of stakeholders involved in the project activities	Lack of training and information dissemination on knowledge of mercury pollution and its negative effects on human health and the environment	2	- In May 2022, FECO assisted Inner Mongolia province to hold an information exchange meeting on MC implementation to raise awareness on MC by explaining relevant requirements of the Convention in detail. - The project also provided awareness raising materials for Inner Mongolia, Liaoning and Shandong provinces.

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.

	(i) Risks at CEO stage	(i) Risk level FY 21	(i) Risk level FY 22	(i) Mitigation measures	(ii) Progress to-date	New defined risk ⁵
1	Key agencies and stakeholders might not attach sufficient importance and allocate sufficient resources to mercury supervision	Low	Low	Focus on awareness raising for stakeholder as a priority.	All project activities have been supported by relevant stakeholders.	<input type="checkbox"/>
2	NGOs and enterprises might not be willing to	Low	Low	Raise public awareness and provide sufficient training	Through knowledge management and awareness raising, VCM production enterprises nationwide and at provincial levels have demonstrated knowledge on	<input type="checkbox"/>

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

	participate in outreach activities				the sound environmental management of PVC plants. Knowledge sharing materials are updated and published on the website of http://www.mercury.org.cn/	
3	Mercury catalyst producers might not be willing to recycle the mercury and transfer to low mercury catalyst production	Low	Low	A policy for extended mercury producer responsibility will be issued and enhanced monitoring will be implemented under the support of industry associates.	The Ministry of Industry and Information Technology has issued regulations requiring all PVC enterprises to use low mercury catalyst rather than high mercury catalyst, and now all PVC enterprises have adopted low mercury catalysts. The project team is preparing for an activity to support 2-3 waste catalyst recycling plants to conduct technology modification to promote environmentally sound disposal of mercury-containing wastes. Through technical modification and enhancing management capacity in waste catalyst recycling plants, this activity aims to improve the mercury recovery efficiency, reduce the emission and release of mercury to the environment, and reduce the dependence on primary mercury mines.	<input type="checkbox"/>
4	Delayed demonstration of mercury-free alternatives in VCM sector due to higher cost than expected and low efficiency.	Medium	Low	A policy for extended mercury producer responsibility will be issued and enhanced monitoring will be implemented under the support of industry associations.	There will be a mercury-free catalysts and alternative technologies evaluation activity participated by PVC plants. After the mercury-free technology evaluation, the project will carry out the mercury-free demonstration to verify the selected mercury-free technology in regards to 4 key points of the MC and to assess its potentials for promotion and replication in the whole industry.	<input type="checkbox"/>
5	Climate change might affect the implementation of project activities	Low	Low	Climate change scenarios will be taken into consideration for all selected facilities.	Although the calcium carbide method is energy intensive, with China's carbon peak and carbon emission reduction targets being carried out, China's chemical industry has issued relevant requirements and the PVC industry has taken relevant measures to promote climate change mitigation.	<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.

Not applicable

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

Activities under component 2, 3, and 4 (contaminated sites, environmentally sound management of mercury-containing wastes, and cleaner production audit) are ongoing. However, as China follows a "zero COVID" strategy, provincial lockdowns have prevented a large number of field research activities from taking place, slowing down the progress of these activities.

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

Not applicable. The project has been extended during the previous reporting period.

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

The midterm review was carried out by a team constituted by an international consultant (team leader) and a national consultant. Given the Covid19 pandemic and travel restriction, the field visits as well as interviews of national key partners and stakeholders were undertaken by the national consultant. UNIDO and the international consultants of the project exchanged through online communication means such Zoom or Skype. The assessment was also based on the in-depth review of project documentation and email communications. Based on the findings of the review and the discussions held, the evaluation came to the following findings.

Relevance: The project is in line with the national strategies of environmental protection in China. In particular, it is very relevant to China's 12th (2011 – 2015), 13th (2016 – 2020), and, 14th (2021 – 2025) Five-Year plans. These plans were/are set for the prevention and control of mercury pollution of Calcium Carbide Process Polyvinyl chloride (CCP PVC), to put an end to production methods of PVC that use a high mercury catalyst for acetylene', and to strictly prevent and control environmental risks management system for toxic and hazardous chemical substances, respectively. The project is consistent with the GEF6 the strategies on Chemicals and Waste: to develop the enabling conditions, tools, and environment to manage harmful chemicals and wastes; and to reduce the prevalence of harmful chemicals and waste and support the implementation of clean alternative technologies/substances.

Effectiveness: Assessment of this criteria was done at three levels: the achievement of outputs and outcomes and progress towards impact (based on the theory of change). The assessment of outputs and outcomes was based on the availability of their respective indicators. The project has performed very satisfactorily for the low mercury technology. At midterm, it has already achieved the targets of mercury reduction by 360 tons and halving mercury catalyst from 98 g to below 49 g per ton of VCM produced. On the other hand, due to technological challenges, it is behind schedule for the mercury free technology. The rating given to the five project outcomes which is directly linked to the extent of delivery of the corresponding outputs, are highly satisfactory, satisfactory, moderately satisfactory, moderately unsatisfactory and unsatisfactory respectively. Progress towards impact is considered quite satisfactory as at midterm three of the five intermediate states proposed by the evaluation for impact are already occurring.

Efficiency: The active involvement of key partners and stakeholders has contributed to an effective implementation of the project during the first two years. However, the restructuring of FECO that was accompanied by a change of the National Project Coordinator, project management changes at UNIDO level, and the COVID-19 pandemic, have disrupted this good start and caused much delays to project implementation. However, there is clear evidence that the project has been using the most efficient options to recruit national experts and international consultants as well as for the sub-contracting of service providers. The materialization of significant amount co-financing is also contributing to the cost effectiveness of the project.

Sustainability: While some financial risks that may jeopardize the project sustainability have been identified, risks regarding the socio-political, institutional and governance, and environmental dimensions are considered low.

Monitoring and evaluation: The monitoring and evaluation system is in place and the set of indicators in the project results framework are being used by the project team for adequate monitoring and evaluation of the implementation process. The planned annual tripartite review meetings have been held. While most of the expected reports such as the project implementation review reports and the annual progress reports (APR) for 2018 and 2019 have been timely submitted, APR for 2020 and most of the yearly financial reports have not been submitted.

Project management: In close collaboration with the interdepartmental coordination group, the efficient project management team, led by a dedicated national project coordinator, is effectively managing the project under the adequate supervision of UNIDO. However, some communication gap between the implementing and the executing agencies have been noted as from the outbreak of the COVID-19 pandemic.

The overall assessment is moderately satisfactory (the average score is 4 out of 6, where 6 is highly satisfactory, 1 is highly unsatisfactory).

From August 2021 until present, the following actions have taken place to implement the recommendations made by the evaluators:

- A three-year project extension has been requested and granted.

- The execution contract between UNIDO and FECO has been revised to take into account the project extension, the new payment schedule, and the reporting requirements to facilitate in time disbursement of funds.
- Formal and informal communication channels have been renewed and established between UNIDO and FECO project team. Regular email exchanges on the project progress and activities have been made.
- The international experts have provided technical inputs on the project deliverables, indicators, and data and have been informed of the project progress by UNIDO and FECO project team.
- FECO has recruited additional team members for strengthened supports to the project.

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).

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 Endorsement	Smoke emissions from the use of machines and dust production during the replacing and updating phase could result in annoyance to workers and pedestrians.	Dust suppression methods were employed as needed to avoid visible dust; effective smoke reduction methods were employed as needed to minimize the emission of smoke; personal protective equipment is required where needed.	In 2021-2022, 4 pilot enterprises and 7 promotional enterprises have carried out technical modification, enhancing their management of mercury. The 4 pilot enterprises have formulated a management system, based on their experiences on mercury use and control, which minimized the risk of smoke, noise and others.
	Noise generation from the use of machines and equipment during the replacing and updating phase posed hazard to workers and pedestrians.	Wearing personal protective equipment; including noise suppression capacity/function in the procurement of vehicles and equipment	The 7 promotional enterprises have carried out technical upgrade and improved overall management system that aligns with the MC requirements.
	Noise resulted from the use of fan, air compressor and pump during pilot demonstration phase could potentially impact on workers.	Installed noise reduction technology to meet the standards.	There was also a cooperation with local environmental protection bureaus (EPBs) to monitor national and local regulation requirements.
	Climate change might affect the mobility of mercury to the atmosphere and sea.	Ensure secure packaging of mercury-containing material during transportation and storage.	

(ii) New risks identified during project implementation (if not applicable, please insert 'NA' in each box)	NA	NA	NA
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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).

In FY22, relevant stakeholders have been continuously engaged in meetings, trainings, and reviewing of technical guidelines/reports to ensure their support and ownership of the deliverables as indicated in section II. The local EPBs, after receiving training on the MC, have collaborated with FECO to monitor the national and local regulation requirements.

However, COVID-19 and lockdowns have prevented some of the necessary national monitoring trips and field visits from taking place. UNIDO will organize a visit to China as soon as the Government allows.

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.).

After the Minamata Convention entered into force, an interdepartmental coordination mechanism involving 17 Ministries on mercury reduction in the VCM sector was established. Annually, a coordination meeting is held to report on the progress of the implementation of Minamata Convention in China. Progress of this GEF project is shared and so far, the National Operational Focal Points, the Ministry of Finance, National Bureau of Statistics, and Ministry of Industry and Information Technology have supported the project.

During the project implementation process, the relevant associations such as the China Petroleum and Chemical Industry Federation, the China Chlor-Alkali Industry Association, and China Chemical Industry Environmental Protection Association have supported the project.

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

- *Project Steering Committee minutes*
- *Aide Memoire*
- *Meeting Agenda, etc.*

In FY22, the below consultation activities were conducted. Details could be found in the Annexes.

- Annex 1: Agenda of the VCM 2021 Year-end meeting with UNIDO
- Annex 2: Meeting minutes of the VCM 2021 Year-end meeting with UNIDO
- Annex 3: Agenda of the online meeting with the GEF Secretariat on the progress of the project.
- Annex 4: Responses from the project team to the GEF Secretariat's questions

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),.

Recognizing that social and biological factors result in different level of exposure to mercury for women and children and its related impacts on their health in comparison to that of men, the project considers gender mainstreaming an integral part of its activities.

Detailed attention has been paid to make sure all activities are gender mainstreamed and to promote gender equality and empowerment of women in chemicals management. For example:

- Women represent a larger proportion in the FECO project team with a division/project female leader and female team members.
- In the sub-projects of pilot enterprises and promotional enterprises, it was made clear in all communications materials for the capacity building events in 19 key provinces that women are encouraged to participate. The training materials are gender mainstreamed. For example, 50% of the participants in the coordination meeting on work progress in major provinces about the “Detailed evaluation rules for the amount of mercury consumed per unit in calcium carbide based vinyl chloride monomer manufacturing process (for Trial Implementation)” held in Beijing in 2021 are women.
- Female leaders are present at the expert teams, industry associations and enterprises. For example, the director of the Department of Corporate Safety and Environmental Protection in Zhongtai Chemical Co. Ltd., and the president of China Chlor-alkali Industry Association are both women.

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.

Knowledge management and sharing is essential to involve relevant stakeholders in the project activities and to raise awareness about environmental and social concerns of mercury usage in industrial production. The project team has elaborated on the knowledge management approach for the project, which can be reflected by the following priorities:

1. The knowledge activities / products are embodied in R&D progress of mercury-free technology;
2. Share the experiences and knowledge to the whole PVC industry gained during the 4 pilot plants phases;
3. In terms of monitoring (NIP project), the project provided relevant technical training to enterprises across PVC industry as well as local EPBs; and,
4. Under the sub-project of capacity building in 19 key provinces, the project promoted knowledge on the Mercury Convention and improved public awareness on health benefits from mercury exposure.

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

- *online information exchange/sharing platforms*
- *relevant technical reports*
- *Link to project websites, videos, publications*
- *flyers, etc.*

For the FY 2022, knowledge management tools initiated by the project are listed below:

1. Online information exchange/sharing platforms including: website (<http://www.mercury.org.cn/>), Wechat account;

2. On-site investigation and guidance provided for PVC enterprises;
3. Information exchange and learning between the project team, PVC enterprises, and the EPBs.

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.

Progress:

Further to the recommendations from the mid-term evaluators, since July 2021 UNIDO as the implementing agency has taken necessary steps to address the key issues and challenges of the first half of the project. Specifically, UNIDO has revised the executing contract with FECO as well as the work plan for the remaining activities. Two international experts have received more regular updates on the project activities and at the same time, provided their technical inputs to the project key deliverables and overall project implementation direction. Exchanges between UNIDO and FECO project team have been more frequent at both formal and informal level. This is necessary and helpful, as visit to China and national partners has not been possible since 2019 and probably until the end of 2022.

Regarding the project progress, a large number of stakeholders have been involved and greatly supported the project activities. By mid-term, the project has achieved moderately satisfactory results. In FY22, activities under component 2, 3, and 4 have finalized or are ongoing per the revised work plan. Key achievements of FY22 include the followings:

- Output 1: Awareness raising events and materials have been organized and further distributed in Inner Mongolia, Liaoning, and Shandong provinces. Since the start of the project, about 4,500 government officers at the central and local levels were trained on the MC and to coordinate and monitor the VCM production plants.
- Output 2:
 - o A mercury-free expert panel has been setup with representatives from VCM plants and industrial associations. They have provided inputs to assist FECO in the development of key project documents, such as technical evaluation criteria, activity plan.
 - o The incentive mechanism, consisting of monetary benefit to and financial commitment from the private sector, has attracted interests and participation of the VCM plants in the project.
 - o Documents (ToRs, evaluation criteria) have been finalized for the evaluation of mercury-free catalysts and alternative technologies.
- Output 3:
 - o Documents (ToRs, evaluation criteria) have been finalized for a bidding and a request for proposal from the research institutes and VCM plants to join the project. That marked the start of the development of the PRTR technical guidance, ESM research, and technology replication/upgrade activities that will take place until FY24.
 - o Contract with the China National Cleaner Production Center has been amended to carry out the auditing of mercury-containing waste treatment plants.
- Output 4: Meetings, validation workshops, exchanges of information with the local government offices, such as the EPBs, and national experts has taken place on the Report on Investigation and Identification of Potential Mercury-Contaminated sites in the VCM Industry.
- Output 5: Field investigations on five VCM plants in Henan province on the use of mercury and technical modification progress have taken place. The plants have received technical supports from the national experts.

Challenges:

COVID-19 pandemic and China's "zero COVID" strategy have prevented frequent monitoring and plant visits from taking place, resulting in the delay of some activities.

Outcomes:

The project team has adapted its activities to mitigate the travel and in-person meeting restrictions. Meetings and trainings, whenever possible, have been made online. Sharing of information and training materials has

been made on the project website and through popular social media platforms in China.
 Despite COVID, the project has managed to uphold the interests and participation of the VCM plants and relevant local stakeholders to support and to provide their own inputs and contributions to the implementation and finalization of the activities.

2. Please briefly elaborate on any **minor amendments⁶ 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.

<input type="checkbox"/>	Results Framework	NA
<input type="checkbox"/>	Components and Cost	NA
<input type="checkbox"/>	Institutional and Implementation Arrangements	NA
<input type="checkbox"/>	Financial Management	NA
<input checked="" type="checkbox"/>	Implementation Schedule	The new project completion date is 31 December 2025.
<input type="checkbox"/>	Executing Entity	NA
<input type="checkbox"/>	Executing Entity Category	NA
<input type="checkbox"/>	Minor Project Objective Change	NA
<input type="checkbox"/>	Safeguards	NA
<input type="checkbox"/>	Risk Analysis	NA
<input type="checkbox"/>	Increase of GEF Project Financing Up to 5%	NA
<input type="checkbox"/>	Co-Financing	NA
<input type="checkbox"/>	Location of Project Activities	NA
<input type="checkbox"/>	Others	

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

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%.



PROJECT DELIVERY REPORT

Project:		140214 - DEMONSTRATION OF MERCURY REDUCTION AND MINIMIZATION IN THE PRODUCTION OF VINYL CHLORIDE MONOMER IN CHINA		Project Manager:	Jerome Stucki	Project Validity:	04.08.2014 - 31.12.2025
Reporting Period:	04.10.2017 - 30.06.2022	Project Theme:	Energy and Environment	Country:	China	Region:	Asia and Pacific
Sponsor Nr.:	400150	Grant:	2000003735	Fund:	GF	Grant Status:	Authority to Implement
Sponsor:	GEF - Global Environment Facility	Grant Description:	CHINA/MERC REDUCTION	Currency:	USD	Grant Validity:	04.10.2017 - 31.12.2025

	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)
2000003735											
140214-1-01-01	National regulatory policy developed	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	4,718.59	0.00	0.00	0.00	30,027.50	30,027.50	10,308.91	19,718.59	0.00	10,308.91
2100	Contractual Services	0.00	(82,000.00)	82,000.00	0.00	289,972.50	289,972.50	289,972.50	0.00	0.00	289,972.50
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27,025.34	27,025.34
140214-1-01-01	Total	4,718.59	(82,000.00)	82,000.00	0.00	320,000.00	320,000.00	300,281.41	19,718.59	27,025.34	327,306.75
140214-1-01-02	National managerial capacity strengthened	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	4,109.74	0.00	0.00	0.00	28,418.85	28,418.85	10,308.91	18,109.74	0.00	10,308.91
1500	Local travel	0.00	0.00	0.00	0.00	10,581.35	10,581.35	10,581.35	0.00	0.00	10,581.35
2100	Contractual Services	0.00	(28,500.00)	28,500.00	0.00	190,000.00	190,000.00	190,000.00	0.00	0.00	190,000.00
5100	Other Direct Costs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18,980.14	18,980.14
140214-1-01-02	Total	4,109.74	(28,500.00)	28,500.00	0.00	230,000.00	230,000.00	210,890.26	19,109.74	18,980.14	229,870.40
140214-1-02-01	PPP established to promote R&D	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	1,517.11	0.00	0.00	0.00	19,842.45	19,842.45	13,625.34	6,217.11	0.00	13,625.34
2100	Contractual Services	0.00	0.00	0.00	0.00	30,000.00	30,000.00	30,000.00	0.00	0.00	30,000.00
5100	Other Direct Costs	0.00	0.00	0.00	0.00	157.55	157.55	157.55	0.00	0.00	157.55
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3,940.44	3,940.44
140214-1-02-01	Total	1,517.11	0.00	0.00	0.00	50,000.00	50,000.00	43,782.89	6,217.11	3,940.44	47,723.33

	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)
140214-1-02-02	ETV methodology established	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	0.00	(316.92)	324.34	7.42	39,931.84	39,931.84	38,328.93	3,602.91	0.00	38,328.93
1500	Local travel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2100	Contractual Services	0.00	(27,000.00)	27,000.00	0.00	98,000.00	98,000.00	98,000.00	0.00	0.00	98,000.00
5100	Other Direct Costs	0.00	0.00	0.00	0.00	68.16	68.16	68.16	0.00	0.00	68.16
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11,915.74	11,915.74
140214-1-02-02	Total	0.00	(27,316.92)	27,324.34	7.42	136,000.00	136,000.00	132,397.09	3,602.91	11,915.74	144,312.83
140214-1-02-03	Demonstration of low-mercury BAT/BEPs	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	32,943.08	15,980.17	17,405.02	33,385.19	273,413.36	273,413.36	243,855.47	29,557.89	0.00	243,855.47
1500	Local travel	4,285.13	0.00	0.00	0.00	36,669.88	36,669.88	22,384.73	14,285.13	0.00	22,384.73
2100	Contractual Services	300,000.00	256,715.00	43,285.00	300,000.00	4,108,955.40	4,108,955.40	4,108,955.40	0.00	0.00	4,108,955.40
3500	International Meetings	0.00	0.00	0.00	0.00	24,000.00	24,000.00	0.00	24,000.00	0.00	0.00
5100	Other Direct Costs	0.00	0.00	307.56	307.56	18,981.38	18,981.38	4,135.52	14,825.86	0.00	4,135.52
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	393,959.74	393,959.74
140214-1-02-03	Total	337,228.21	272,695.17	60,997.58	333,692.75	4,460,000.00	4,460,000.00	4,377,331.12	82,668.88	393,959.74	4,771,290.86
140214-1-02-04	Incentive program designed	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	0.00	0.00	0.00	0.00	19,829.98	19,829.98	1,695.44	18,134.54	0.00	1,695.44
2100	Contractual Services	0.00	(22,000.00)	22,000.00	0.00	44,000.00	44,000.00	44,000.00	0.00	0.00	44,000.00
5100	Other Direct Costs	85.01	0.00	0.00	0.00	170.02	170.02	85.01	85.01	0.00	85.01
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4,120.26	4,120.26
140214-1-02-04	Total	85.01	(22,000.00)	22,000.00	0.00	64,000.00	64,000.00	45,780.45	18,219.55	4,120.26	49,900.71

	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)
140214-1-02-05	Replication of BAT/BEPs	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	23,567.66	10,448.24	5,538.53	15,986.77	198,935.23	198,935.23	101,354.34	97,580.89	0.00	101,354.34
1500	Local travel	0.00	0.00	0.00	0.00	25,000.00	25,000.00	5,357.94	19,642.06	0.00	5,357.94
2100	Contractual Services	1,047,528.72	(525,000.00)	1,572,500.00	1,047,500.00	5,845,057.44	5,845,057.44	5,845,028.72	28.72	0.00	5,845,028.72
5100	Other Direct Costs	0.00	0.00	0.00	0.00	1,007.33	1,007.33	1,007.33	0.00	0.00	1,007.33
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	535,747.39	535,747.39
140214-1-02-05	Total	1,071,096.38	(514,551.76)	1,578,038.53	1,063,486.77	6,070,000.00	6,070,000.00	5,952,748.33	117,251.67	535,747.39	6,488,495.72
140214-1-03-01	Development of a national inventory	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	34.30	0.00	0.00	0.00	31,535.02	31,535.02	31,500.72	34.30	0.00	31,500.72
1500	Local travel	0.00	0.00	0.00	0.00	29,965.70	29,965.70	24,302.81	5,662.89	0.00	24,302.81
2100	Contractual Services	0.00	(44,715.00)	44,715.00	0.00	1,170,000.00	1,170,000.00	1,170,000.00	0.00	0.00	1,170,000.00
3500	International Meetings	0.00	0.00	0.00	0.00	38,070.87	38,070.87	0.00	38,070.87	0.00	0.00
5100	Other Direct Costs	0.00	0.00	0.00	0.00	428.41	428.41	428.41	0.00	0.00	428.41
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	110,360.89	110,360.89
140214-1-03-01	Total	34.30	(44,715.00)	44,715.00	0.00	1,270,000.00	1,270,000.00	1,226,231.94	43,768.06	110,360.89	1,336,592.83
140214-1-03-02	Mercury recovery rate enhanced	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	20,000.00	11,442.00	7,721.56	19,163.56	80,000.00	80,000.00	62,666.92	17,333.08	0.00	62,666.92
1500	Local travel	4,148.49	0.00	0.00	0.00	28,116.67	28,116.67	11,968.18	16,148.49	0.00	11,968.18
2100	Contractual Services	0.00	0.00	0.00	0.00	1,010,000.00	1,010,000.00	1,010,000.00	0.00	0.00	1,010,000.00
4500	Equipment	0.00	0.00	0.00	0.00	933.33	933.33	933.33	0.00	0.00	933.33
5100	Other Direct Costs	2,056.24	0.00	0.00	0.00	10,950.00	10,950.00	2,893.78	8,056.24	0.00	2,893.78
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97,961.63	97,961.63
140214-1-03-02	Total	26,204.73	11,442.00	7,721.56	19,163.56	1,130,000.00	1,130,000.00	1,088,462.19	41,537.81	97,961.63	1,186,423.82
140214-1-04-01	Inventory of Hg-contaminated sites devel	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	0.00	0.00	0.00	0.00	24,849.22	24,849.22	15,890.23	8,758.99	0.00	15,890.23
1500	Local travel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2100	Contractual Services	0.00	0.00	0.00	0.00	275,000.00	275,000.00	275,000.00	0.00	0.00	275,000.00
5100	Other Direct Costs	76.71	0.00	0.00	0.00	350.78	350.78	274.07	76.71	0.00	274.07
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26,204.83	26,204.83
140214-1-04-01	Total	76.71	0.00	0.00	0.00	300,000.00	300,000.00	291,164.30	8,835.70	26,204.83	317,369.13
140214-1-04-02	Preliminary risk assessment conducted	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	4,000.00	0.00	0.00	0.00	34,679.99	34,679.99	15,890.23	18,789.76	0.00	15,890.23
1500	Local travel	0.00	0.00	0.00	0.00	4,969.23	4,969.23	4,969.23	0.00	0.00	4,969.23
2100	Contractual Services	0.00	0.00	0.00	0.00	760,000.00	760,000.00	760,000.00	0.00	0.00	760,000.00
5100	Other Direct Costs	76.71	0.00	0.00	0.00	350.78	350.78	274.07	76.71	0.00	274.07
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70,302.06	70,302.06
140214-1-04-02	Total	4,076.71	0.00	0.00	0.00	800,000.00	800,000.00	781,133.53	18,866.47	70,302.06	851,435.59
140214-1-04-03	Strategy proposal prepared	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	8,268.95	0.00	0.00	0.00	19,659.78	19,659.78	3,390.83	16,268.95	0.00	3,390.83
2100	Contractual Services	0.00	0.00	0.00	0.00	80,000.00	80,000.00	80,000.00	0.00	0.00	80,000.00
5100	Other Direct Costs	170.11	0.00	0.00	0.00	340.22	340.22	170.11	170.11	0.00	170.11
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7,520.50	7,520.50
140214-1-04-03	Total	8,439.06	0.00	0.00	0.00	100,000.00	100,000.00	83,560.94	16,439.06	7,520.50	91,081.44

	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=f+g)
140214-1-05-01	Training provided	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	2,184.56	0.00	0.00	0.00	26,127.88	26,127.88	17,943.32	8,184.56	0.00	17,943.32
1700	Nat.Consult./Staff	0.00	0.00	0.00	0.00	2.90	2.90	2.90	0.00	0.00	2.90
2100	Contractual Services	0.00	0.00	0.00	0.00	55,000.00	55,000.00	55,000.00	0.00	0.00	55,000.00
3500	International Meetings	0.00	0.00	0.00	0.00	16,967.92	16,967.92	0.00	16,967.92	0.00	0.00
5100	Other Direct Costs	0.00	0.00	0.00	0.00	1,037.34	1,037.34	1,037.34	0.00	0.00	1,037.34
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6,658.39	6,658.39
140214-1-05-01	Total	2,184.56	0.00	0.00	0.00	99,136.04	99,136.04	73,983.56	25,152.48	6,658.39	80,641.95
140214-1-05-02	Awareness raised	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	1,133.95	0.00	0.00	0.00	20,433.00	20,433.00	19,299.05	1,133.95	0.00	19,299.05
1700	Nat.Consult./Staff	0.00	0.00	0.00	0.00	2.32	2.32	2.32	0.00	0.00	2.32
2100	Contractual Services	0.00	0.00	0.00	0.00	80,000.00	80,000.00	80,000.00	0.00	0.00	80,000.00
5100	Other Direct Costs	0.00	0.00	0.00	0.00	428.64	428.64	428.64	0.00	0.00	428.64
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8,975.66	8,975.66
140214-1-05-02	Total	1,133.95	0.00	0.00	0.00	100,863.96	100,863.96	99,730.01	1,133.95	8,975.66	108,705.67
140214-1-51-01	Project Management Costs	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
2100	Contractual Services	150,000.00	150,000.00	0.00	150,000.00	778,294.92	778,294.92	770,000.00	8,294.92	0.00	770,000.00
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69,300.00	69,300.00
140214-1-51-01	Total	150,000.00	150,000.00	0.00	150,000.00	778,294.92	778,294.92	770,000.00	8,294.92	69,300.00	839,300.00
140214-1-53-01	Periodic monitoring	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1500	Local travel	0.00	0.00	0.00	0.00	9,205.08	9,205.08	9,205.08	0.00	0.00	9,205.08
2100	Contractual Services	2,500.00	2,500.00	0.00	2,500.00	202,500.00	202,500.00	202,500.00	0.00	0.00	202,500.00
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19,053.47	19,053.47
140214-1-53-01	Total	2,500.00	2,500.00	0.00	2,500.00	211,705.08	211,705.08	211,705.08	0.00	19,053.47	230,758.55

* 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.

Outputs by Project Component	2022 (Year5)				2023 (Year6)				2024 (Year7)				2025 (Year8)				GEF Grant Budget Available (US\$)
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Output 1.1: Develop national supervision policy and framework to reduce or eliminate the consumption of mercury in VCM production, especially the compulsory policy on prohibition the use of high-level mercury catalyst	0	0	5,000	10,000	10,000	20,000	30,000	20,000	2,500	5,000	5,000	5,000	12,500	25,000	20,000	25,000	195,000
Output 1.2: Strengthen national management and law enforcement capacity to coordinate and monitor VCM manufacturing enterprises	0	0	2,000	4,000	6,000	7,000	7,000	10,000	5,000	6,000	4,000	5,000	9,000	11,000	9,000	5,000	90,000
Output 2.1 Establish public private partnership (PPP) mechanism, promote R&D, venture capital investment and technology transfer;	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Output 2.2: Environmental Technology Verification (ETV) methodology established to verify the performance of low-mercury and mercury-free alternatives by an expert panel established;	0	0	0	0	0	0	47,000	0	0	0	0	0	0	0	0	0	47,000
Output 2.3. Demonstration low mercury BAT/BEPs in 4 coal-based VCM companies and of mercury-free alternatives in a coal-based VCM company;	0	0	6,000	9,000	18,000	13,000	12,000	20,000	17,000	16,000	18,000	13,000	27,000	29,000	37,000	18,000	253,000
Output 2.4. Incentive program designed and implementation of major green instruments (fiscal, monetary, venture capital, insurance etc.) to allow the private sector to access the technologies and experience gained from demonstration;	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Output 2.5. Replication of BAT/BEPs and of feasible mercury-free alternatives in 15 coal-based VCM companies national wide;	0	0	0	320,000	0	0	0	0	0	1,764,000	0	0	0	0	0	0	2,084,000
Output 3.1: Establish an inventory of mercury wastes	0	0	20,000	30,000	60,000	50,000	60,000	100,000	50,000	50,000	40,000	50,000	85,000	106,000	73,000	56,000	830,000
Output 3.2: Improve the Hg- recovery rate of mercury wastes	0	0	20,000	40,000	60,000	50,000	60,000	40,000	50,000	79,000	40,000	45,000	80,000	50,000	55,000	65,000	734,000
Output 4.1. Establish the inventory of Hg-contaminated sites caused by VCM production	0	0	1,000	1,000	3,000	4,000	4,000	4,000	4,000	6,000	3,000	4,000	3,000	3,000	3,000	2,000	45,000
Output 4.2. Conduct the preliminary risk evaluation on typical Hg-contaminated sites caused by VCM production (degree and area of contamination);	0	0	20,000	20,000	65,000	50,000	80,000	40,000	55,000	39,000	40,000	45,000	82,000	98,000	86,000	40,000	760,000
Output 4.3. Make strategy to reduce the risk on health and environment, and remediation of the contaminated sites	0	0	2,000	4,000	4,000	7,000	8,000	7,000	5,000	7,000	8,000	5,000	4,000	6,000	8,000	5,000	80,000
Output 5.1: Training provided to disseminate project results (concerning component 1, 2, 3);	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Output 5.2: Awareness raised among government, private and civil society stakeholder groups.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Output 6.1: Periodic monitoring and evaluation;	0	0	10,000	10,000	16,000	9,000	12,000	10,000	15,000	13,000	14,000	11,500	19,000	24,000	13,000	18,000	194,500
Output 6.2 Mid-term and terminal evaluation report;	0	0	1,000	2,000	3,000	2,000	1,000	2,000	1,000	1,000	1,000	1,000	1,000	2,000	1,000	1,000	20,000

X. Synergies

1. Synergies achieved:

Describe potential synergies arising out of UNIDO internal cooperation and/or cooperation with (external) bilateral and multilateral projects/programmes, if applicable.

The Mercury Initiative Assessment project in China found that about 800-1200t mercury were emitted by the coal-fired PVC production sector during 2010-2014, accounting for more than 50% of total mercury use in China. Therefore, the VCM sector was selected as a priority sector for mercury use and emission reduction. The project have formed synergies through the below mentioned media:

1. Synergy achieved with MIA project was embodied in the learning of Checklist methodology and implementation of the sub-project of capacity building in 19 key provinces;
2. Synergy was gained from the NIP project;
3. Synergy was also gained from the China-Norway project on Mercury;
4. Exchanges of information and synergies guaranteed with World Bank project (Capacity Strengthening For Implementation Of Minamata Convention On Mercury in China).

3. Stories to be shared (Optional)

Not applicable.

EXPLANATORY NOTE

1. **Timing & duration:** Each report covers a twelve-month period, i.e. 1 July 2021 – 30 June 2022.
2. **Responsibility:** The responsibility for preparing the report lies with the project manager in consultation with the Division Chief and Director.
3. **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.
4. **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 is <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.

Annex 1: Agenda of the VCM 2021 Year-end meeting with UNIDO



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



VCM Year-end Meeting
Working coordination meeting

Date: December 9, 2021

Time: 9:30 am Vienna (16:30 pm Beijing time)

Meeting link: <https://zoom.us/j/92686475345?pwd=a1BmSHhkMkQ1RWExY1h1NjFNOFMvdz09>

Meeting ID: 926 8647 5345 | **Passcode:** VCM2021

TIME	ACTIVITY	RESPONSIBLE
09:30- 09:35 (16:30-16:35)	Welcome Remarks	Mr. Jerome Stucki Chief, MCM Division, UNIDO
09:35-09:40 (16:35-16:40)	Introduction of New Team Member(s)	Ms. Ziyang Zhao Chief of Division of Minamata Convention MEE/FECO
09:40-09:50 (16:40-16:50)	Project Status Update Progress/Challenges and Suggested Way Forward	Ms. Jini Yang Program Officer, MEE/FECO
09:50-10:00 (16:50-17:00)	Update on Future Disbursement Plans	Joint FECO-UNIDO Discussion
10:00-10:10 (17:00- 17:10)	Mercury related project concepts	Ms. Ziyang Zhao Chief of Division of Minamata Convention
10:10-10:25 (17:10- 17:25)	<i>Q & A session</i>	All Participants
End of Meeting		

VCM End of Year Meeting Minutes:

Date: December 9, 2021

Participants:

Mr. Jerome Stucki –MCM Division Chief
Ms. Zhao-MEE/FECO Minamata Division Chief
Mr. William Bill Carroll- International Expert
Mr. Tsukiji Makoto- International Expert
Ms. Jini Yang- MEE/FECO Program Officer
Mr. Alvin Tepo Togba- MCM Project Associate
Ms. Wu Jiao- MEE/FECO Project Associate

1. The meeting started with a brief introduction of the participants and welcoming the new team member onboard Ms. Wu Jiao.
2. The conversation centered around the tasks remaining under components of the VCM project, and a brainstorming of future tasks ahead in 2022:

Key Points from Project Update Presentation:

Three project components were presented on as below mentioned:

Component 2: The project component 2 comprises of two distinct parts, low Hg and Hg-free. Under the low mercury meaningful progress has been made in 4 demonstration plant with Hg usage is well below 43g/t in PVC processes. FECO hopes to complete this task by June 2022. In addition, the seven promotional plants are making progress gradually utilizing Hg lower than 49g/t PVC.

PPP mechanism was evaluated under this component, research and feasibility analysis have been finalized in 2020. Capacity building has been conducted in 19 key provinces of China

Cleaner production audit in PVC plants: this has been carried out by the CNCPC⁷ using site visits and literature review to investigate and analyze mercury reduction activities. The CNCPC has completed all field investigations with final tasks (deliverables) anticipated to be completed before June 2022.

Relating to the Mercury Free part of component 2, an expert panel is being set-up, a technical evaluation is also being conducted. Next is the PRTR, an individual expert has been contracted to conduct research and develop a technical PRTR guidance. PRTR is expected to be implemented in all 15 PVC plants, all Mercury catalyst manufactures and all catalyst recycling plants.

Component 3:

A Cleaner production audit in PVC plants cost 220,000 USD and the final tasks to be completed before June 2022;

Cleaner production audit in 2 Mercury catalyst recycling plants (costing 80,000 USD) will be developed and completed by late 2022.

ESM of Mercury Containing wastes: field investigations will be carried on selecting 15 PVC plants, 2-3 catalyst manufacturers and 2-3 waste catalyst recycling plants. Research will be conducted on Hg containing/contaminated wastes, analysis on waste characterization and prepare an estimated national inventory on mercury containing wastes. A comprehensive research of ESM on Mercury in PVC production plants will be done under this component.

After the research, a technical evaluation will be done to select mercury catalyst recycling plants requiring technical modification according to designed indicators. A technical guidance will be developed, and training conducted after the previous processes.

Component 4: Contaminated sites: Site visits has been made, information about mercury-contaminated sites in CCM-VCM industry collected and establishment of a national screening

⁷ China National Cleaner Production Center ,Chinese Academy of Environmental Science,

principles for contaminated sites. A national data base of Mercury-contaminated sites developed. The final data analysis and reporting is underway, and the final verification is expected to be carried out before June 2022.

Key project tasks ahead in 2022:

1. Conduct PRTR⁸ demonstration
2. Carry out Environmentally Sound Management of Mercury containing/contaminated sites
3. Develop the indicator system for mercury-free technologies evaluation, startup mercury-free technologies evaluation
4. Preliminary risk assessment on typical mercury contaminated sites for component 4.

Delights was express about the project new focus on the mercury free component. This is exactly where the project can make a huge impact.

Questions & Answers:

1. Under technology verification, in Sept 2021 an expert group meeting was organized to select these criteria. Was this work finalized? Have int'l experts been invited?

How are the technologies chosen and how are they being evaluated? I understand the goal is to find 10 candidate catalysts, try on a small scale and then upscale it. What's the rule/strategy you're using? The project execution team plans to conduct this small-scale demonstration and after 18 months proceed to testing. The data will need to be analyzed and inform decision for scale-up in future. The team don't mind which catalyst would be chosen (Au-based, Cu-based, a combination of both etc.) this will be determined upon the results.

2. During last visit made the project Intl experts, there has been a set of rules and proposed catalysts options made by CCAIA⁹ (explaining how the catalyst is to be chosen in the evaluation process) Do you have that list and will you be choosing?

The outcome from the CCAIA was found inapplicable to the whole industry. After site visits was made in the last year, it was found that although some plants test mercury free technologies, it was also found that the CCAIA previous analysis is more different. There it was discussed with the Association and the project decided to establish the evaluation indicator system (maybe a standard)and make an evaluation that is comparable. Therefore, the project decided not using directly the CCAIA result.

3. How will the evaluation process be developed, and will you share with us the process?

Yes, just last month we discussed it. After we have established an expert group for the whole mercury free activity then we will have an internal discussion with experts and develop an evaluation indicator system and share with UNIDO and the international experts.

4. After this 18-month evaluation of 10 test units, then in 2023 you will commission one 10,000 tons units.

We hope that after this process, we could select one or more than one catalysts or plants to join us for the demonstration. Cu-based catalyst could be viable since it is cheaper than Au-based catalyst, however as of now this is difficult for us to decide since the decision must be backed by experiments. The earliest time for us is in the second half of 2023.

⁸ Pollutant Release and Transfer Register

⁹ China Chlor-Alkali Industry Association

5. Could you share any relevant PRTR document (inception report, evaluation etc)? Do we have a document of such so far? Yes all the result are in Chinese and later it will be translated and shared with you.
6. Two Million RMB will be used to support the testing of the mercury free technology or for another purpose? Based on the site visits, plants testing mercury free technology provided this information on investment costs of practice. This is currently founding 10% of investment costs. 2 Million is the minimum cost for one unit (predicted cost). Those evaluation plants will also get different founding under the project.
7. The end of 2023 will be the end of the testing phase, you responded to Bill that you hope to scale up to 1-2 plants. Is there already a strategy for scaling up? To make a leap between testing to full scale application.
8. The demonstration should be no less than 10,000tonnes according to the project document, most of the PVC plants is much higher than this amount and at such they were asked to demonstrate at least 10,000 tons.
9. There will be a decision for scaling up in Mid-2023, what is the timeline for evaluation? The team hopes by the end of 2026 the results for the mercury demonstration will be available.
10. The expert panel needs to develop in addition to their evaluation the timeline and include all the processes involved to reach those milestones. A more detailed time should be developed.

The future disbursements plan, regarding the project.

The agreement b/w FECO and UNIDO on how to redistribute the remaining funds over the 3 year period. The suggestions was made to FECO and this just an arithmetic distribution over the longer period of time.

It will be important to finalize the contractual agreement by early next year. To have visibility on when to expect the deliverables and the co-related payments.

FECO expresses satisfaction with the proposed disbursement plan. Going forward, the plan will be given to the UNIDO procurement colleagues to work on the draft contractual agreement.

Jini, requests the contractual agreement of the project. Alvin to share with them the current agreement and when it's revised by UNIDO, it will be shared with the project teams and FECO.

New Concept:

Ms Zhao expresses the need for more time to adopt this concept into a PIF format. And adding some basic information. The schedule would need to be discussed accordingly. Counting backwards, at least 3months is needed to submit in advance to the GEF. The endorsement letter will need to be gotten from the month by next August. Before that, MEE internal procedure needs to be carried out. Prior to the above mentioned, currently the commitment letter is needed to and identification of the sustainable cities completed. Thus it is estimated that at least one year is need to complete all the preparation job.

The same applies to UNIDO, so it's advisable for both FECO and UNIDO to work in parallel. So from our side at UNIDO once we have a draft PIF we will already start our internal processes. Once we are also around June/July next year we will have more information from the GEF secretariat.

Once UNIDO have more information regarding this, we will keep your team updated as we jointly plan. GEF 7 ends in June and GEF 8 programming commenced. Initially the programs were to be put together in integrated programs and from the last version seen the Chemical and Wastes is not included. This makes it more likely that our concept is accepted because we don't need to consider

too much like the integrated project. For the time being aiming for the end of July would be good for the PIF and both teams can always exchange regarding. Having an already approved version from FECO in June/July would be good.

The earliest time to decide demonstration cities is next March and a month afterwards FECO can make it clearer in the PIF on what goals and targets can be evaluated under the project. Thus Ms. Zhao proposes that at least May 2022 a draft could be available. After that the team can submit internally to MEE and in parallel a version will be sent to UNIDO. A zero-version will be forwarded to UNIDO for comments in the meantime and not waiting until the final version is available before submitting.

FECO expresses the need for having an expert supporting the development of the New Project of Environmental Sound Management of Mercury Wastes covered under Minamata Convention in China, and hopes this activity could be supported by PVC funds (as the way supporting the mercury-waste international expert).

Follow-up actions:

1. Share with FECO the current contractual agreement
2. Initiate contacting procurement to revise the PEA¹⁰ and reflect disbursement redistribution
3. Jini to share relevant expert evaluation documentation after it has been translated to English
4. Both teams to continue working on PIF in line with Ms. Zhao proposition and aim for submission July if clarity is gotten from the GEF.

¹⁰ Project Execution agreement

Annex 3: Agenda of the online meeting with the GEF Secretariat on the progress of the project



Exchange on the Outcomes of VCM China Project

GEF ID: 6921

Date: March 10, 2022

Time: 9:00 Washington DC, 15:00 Vienna, 22:00 Beijing

Meeting Link: <https://zoom.us/j/97336587102?pwd=MUNlG80eHRBWUVnQlVBN0psYVA1dz09>

Meeting ID: 973 3658 7102 | Passcode: VCM2022

TIME	ACTIVITY	RESPONSIBLE
09:00-09:10	Round of introduction	All Participants
09:10-09:40	Update of Outcomes on VCM China project	Mr. Jerome Stucki Chief, MCM Division, UNIDO
9:40-10:00	<i>Q & A session / open discussion</i>	All Participants
End of Meeting		

Prospective Attendees

Name	Organization	Division	Title
Anil Sookdeo	GEF Secretariat	Programs Unit Head, Asia, Europe & Central Asia Regional teams	Senior Environmental Specialist
Evelyn Swain	GEF Secretariat	Head, Latin America and SIDS Regional team	Senior Environmental Specialist
Ibrahima Sow	GEF Secretariat	Africa Regional Coordinator, Chemical and Waste	Senior Environmental Specialist
Satoshi Yoshida	GEF Secretariat	Programs Unit	Senior Environmental Specialist
Yuki Shiga	GEF Secretariat	Programs Unit	Environmental Specialist
Jerome Stucki	UNIDO HQ	Materials and Chemical Management	Division Chief
Ziying Zhao	FECO	Minamata Convention MEE	Division Chief
Jini Yang	FECO	Minamata Convention MEE	Program Officer
William F. Carroll (Bill)	UNIDO Consultant	VCM Project Advisor	CTA
Tsukiji Makoto	UNIDO Consultant	VCM Project Expert	Mercury Waste Management Expert
Alvin Tepo Togba	UNIDO- HQ	Materials and Chemicals	Project Associate
Wu Jiao	FECO	Minamata Convention MEE	Project Associate
Kong Lingjin	FECO	Linguistics FECO MEE	Interpreter

Annex 4: Responses from the project team to the GEF Secretariat's questions

1. Clarification on the mercury being used for the catalyst and its quantity within the project:

There are 4 pilot plants and 7 promotional plants that participated in the VCM/PVC project. Based on the submitted report from these plants, the utilized mercury catalyst amounted to approximately 4,390 tons in 2020 and the expected mercury utilization in 2020 was about 175 - 285 tonnes (mercury chloride content ranging from 4% to 6.5%).

2. Clarification on the verification system for ESM of mercury wastes and quantitative data on the recycled/safely disposed mercury:

FECO has signed a contract in April 2022 with the Chinese Research Academy of Environmental Sciences (CRAES) & Tsinghua University to develop the ESM of mercury wastes. Specifically, an ESM technical guidance on mercury wastes in PVC industry, including the methodology and sampling to collect and verify the data, will be produced. Once the inception and progress reports are submitted by CARES and Tsinghua University, we will share them with GEF colleagues for information.

3. Clarification on the synergy with the World Bank project (Capacity Strengthening For Implementation Of Minamata Convention On Mercury in China):

The PMUs of both projects are coordinated under Ms. Zhao, Chief of the Minamata Convention Division from FECO. So the synergies between the two teams are guaranteed and have been taken into consideration. E.g., the initial outcomes from VCM project have served as the industrial base for the development of the National Implementation Plan of WB project. The WB project team has also considered the future implementation plan of VCM project when developing the suggestion chapter of the National Implementation Plan. However, there's a difference between the WB project and UNIDO project: while the VCM project focuses on the contaminated sites of the VCM sector, the WB project covers contaminated sites of the other sectors (excluding the VCM sector).

Additional inputs from the international experts:

We would look for and refer to existing verification systems for experiences and best practices which could be adjusted and applied for the ESM mercury waste management in China. It is important to reiterate that an accurate accounting of mercury is devilishly difficult because of mercury's chemical and physical properties. One threshold question that will get us much closer to a mass balance answer is to ask the catalyst manufacturers how much new mercury they are bringing into their production facilities. That will be a crude estimate of the shortfall between new production and recovery, and thus a crude estimate of what is entering the environment, modulated by growth in production volume.

Annex 5: Summary of expenditure

Actual expenditure from 2018-2021					
Year	2018	2019	2020	2021	Total
Expenditure(RMB)	¥5,027,380	¥2,620,556	¥3,953,245	¥4,421,065	¥16,022,246

Actual expenditure for different category from 2018-2021						
Category	Contract payment delivered	Meeting	Travel	Others	Total	Total expenditure (including MIA)
Expenditure (RMB)	¥14,107,888	¥53,680	¥108,934	¥1,751,744	¥16,022,246	¥16,912,958

Remarks:

1. After communication with UNIDO, a total of **¥ 890,711.86** (approximately \$130,000) from *Minamata Convention Initial Assessment in China (MIA) project* funds was used for the contract payment for the PVC key province capacity building sub-projects under the PVC project during 2019-2021. So the **actual total budget** for the PVC project is **\$15,130,000**, including \$15,000,000 from the original PVC project budget from FECO side, \$130,000 from the MIA project from FECO side.

2. Because the PVC project is still in progress, so far we **delivered part of the contracts payments**, which amounts to ¥14,107,888+ ¥890,712=¥14,998,600, but the total amount of contracts signed is **¥43,036,700**, please see the table listed below for detailed information.

Sub-contracts under the VCM project (2018-2022.08)				
No.	Contract		Contract amount (RMB)	Contract amount (USD)
1	4 pilot enterprises		¥21,280,000	\$3,400,000
2	7 promotional enterprises		\$9,600,000	\$1,500,000
3	19 provinces capacity building		¥6,200,000	\$950,000
4	PRTR		¥206,500	\$40,000
5	Cleaner product audit	PVC plants	¥1,300,000	\$220,000
		Waste mercury catalyst recycling plants	¥500,000	\$80,000
6	PPP mechanism		¥200,000	\$30,000
7	Contaminated site		¥1,150,000	\$200,000
8	Mercury-free screening guideline		¥307,400	\$49,000
9	Technical support		¥661,000	\$100,000
10	NTA		¥400,000	\$65,000
11	ESM of mercury-containing/contaminated Wastes		¥1,200,000	\$200,000
12	Financial audit		¥31,800	\$5,500
Total			¥43,036,700	\$6,839,500