GEF-8 REQUEST FOR CEO ENDORSEMENT/APPROVAL

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General Project Information

Project Title Strengthening Indonesia's Reduction and Elimination in the Distribution and Supply Chain of Mercury from National Health (SIRENE)	
Region Asia	GEF Project ID 11546
Country(ies) Indonesia	Type of Project FSP
GEF Agency(ies): UNDP	GEF Agency Project ID 9660
Project Executing Entity(s) Ministry of Environment (MoE)	Project Executing Type Government
GEF Focal Area (s) Chemicals and Waste	Submission Date 8/21/2025
Type of Trust Fund GET	Project Duration (Months) 60
GEF Project Grant: (a) 6,590,000.00	GEF Project Non-Grant: (b) 0.00
Agency Fee(s) Grant: (c) 626,050.00	Agency Fee(s) Non-Grant (d) 0.00
Total GEF Financing: (a+b+c+d) 7,216,050.00	Total Co-financing 35,309,883.00
PPG Amount: (e) 150,000.00	PPG Agency Fee(s): (f) 14,250.00
Total GEF Resources: (a+b+c+d+e+f) 7,380,300.00	
Project Tags CBIT: No NGI: No SGP: No Innovation: No Competitive Window: No	
Project Sector (CCM Only)	

Taxonomy

Focal Areas, Mercury, Non Ferrous Metals Production, Strengthen institutional capacity and decision-making, Influencing models, Transform policy and regulatory environments, Convene multi-stakeholder alliances, Demonstrate innovative approache, Deploy innovative financial instruments, Stakeholders, Financial intermediaries and market facilitators, Capital providers, SMEs, Large corporations, Individuals/Entrepreneurs, Private Sector, Beneficiaries, Local Communities, Community Based Organization, Non-Governmental Organization, Trade Unions and Workers Unions, Civil Society, Type of Engagement, Partnership, Information Dissemination, Consultation, Participation, Awareness Raising, Communications, Education, Public Campaigns, Behavior change, Capacity Development, Knowledge Generation, Targeted Research, Theory of change, Adaptive management, Capacity, Knowledge and Research, Learning, Innovation, Knowledge Exchange, Gender Equality, Women groups, Sex-disaggregated indicators, Gender-sensitive indicators, Gender Mainstreaming, Gender results areas, Participation and leadership, Access to benefits and services, Knowledge Generation and Exchange, Uninentional Persistent Organic Pollutants, Persistent Organic Pollutants, Chemicals and Waste, Waste Management, Hazardous Waste Management, Industrial Waste, eWaste, New Persistent Organic Pollutants, Plastics, Open Burning, Best Available Technology / Best Environmental Practices

Rio Markers

Climate Change Mitigation	Climate Change Adaptation	Biodiversity	Land Degradation
Significant Objective 1	No Contribution 0	No Contribution 0	No Contribution 0

Project Summary

Provide a brief summary description of the project, including: (i) what is the problem and issues to be addressed? (ii) what are the project objectives, and if the project is intended to be transformative, how will this be achieved? iii), how will this be achieved (approach to deliver on objectives), and (iv) what are the GEBs and/or adaptation benefits, and other key expected results. The purpose of the summary is to provide a short, coherent summary for readers. (max. 250 words, approximately 1/2 page)

Indonesia generates a significant amount of medical waste, estimated at 376,089 tonnes/day from healthcare facilities[1][1]. Waste management is regulated under various regulations but implementation varies widely. In addition, many medical instruments still contain mercury. While the health sector has made significant progress in phasing out mercury-containing medical devices (MCMDs) this progress has not been matched by the provision of appropriate storage, transportation and final disposal facilities, primary due to the limited funding and access technologies for safe and effective treatment of MCMD waste.

This project will support the government of Indonesia and key stakeholders in the healthcare sector into eliminate mercury from the distribution and supply chain of medical devices by strengthening policies and regulations, establishing a system to track the existing mercury-containing wastes, pilot Best Available Techniques and Best Environmental Practices (BAT/BEP) for disposal and establishing circular economy practices/mechanism for the sustainable replacement of MCMDs to prevent future buildup of e-waste from the alternatives phased-in.

The project will dispose of 20 metric tons of mercury and avoid emissions of 20 g TEQ/year of UPOPs. 100 mt of POP-contaminated plastics will be collected and safely disposed of. 20,000 tons of recyclable plastic and metals material will be collected and recycled. 100,000 people directly involved in these supply chains (50,000 female and 50,000 male) will benefit from this initiative. The Project contributes to the Kunming Montreal Global Biodiversity Framework (GBF) Target 7 (Reduce Pollution to Levels That Are Not Harmful to Biodiversity) and Target 14 (Integrate Biodiversity in Decision-Making at Every Level) and Target 22 (Ensure Participation in Decision-Making and Access to Justice and Information Related to Biodiversity for all).

[1] Linda Fitrianingsih, & Mohamad Yaser. (2023). Analisis Pengelolaan Limbah Medis Padat Menurut Permenkes No. 7 Tahun 2019 Di Rumah Sakit Tahun 2022. Jurnal Ilmu Kesehatan Dan Gizi, 1(4), 48–61. https://doi.org/10.55606/jikg.v1i4.1705

Project Description Overview

Project Objective

This project will support the Government of Indonesia and key stakeholders in the healthcare sector in eliminating mercury from the distribution and supply chain of medical devices. It will do so through strengthening policies and regulations, establishing a system to track, collect and safely store existing mercury-containing medical devices (MCMDs) for eventual disposal using BAT/BEP, and establishing a mechanism for the sustainable replacement of MCMDs. Additionally, the project will promote circular practices for mercury-free electronic medical devices to prevent future buildup of e-waste from the healthcare sector.

Project Components

1. Policy and regulatory frameworks strengthened to support the phase-out of mercury containing medical devices (MCMDs) in the health sector

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
940,000.00	5,036,614.00

Outcome:

1.1: Regulations/ policies developed or strengthened, proposed and/or operationalized to prohibit the use of MCMDs in health care facilities.

1.2: Sensitive and Inclusive Capacity Building activities carried out for government staff (both national and sub-national) to enhance policy enforcement and oversight.

Output:

1.1.1: Regulatory and policy frameworks proposed for total phase out the use of mercury-containing medical devices.

1.1.2: Gender sensitive regulatory and policy framework concerning mercury collection, distribution, temporary storage, and disposal developed/strengthened.

1.2.1: Coordination and cooperation mechanisms between central and local governments established and strengthened.

1.2.2: Phase-out of use of MCMDs oversight and Hg elimination commitments enforced for health facilities.

1.2.3: All levels of Governmental institutions in charge of the regulatory systems for mercury collection, distribution, and storage capacitated in new rules and regulations.

1.2.4: Inventories of stocks of Hg wastes and MCMDs are updated and assessed and real situation of mercury use, collection and storage in Health Care Facilities (HCF) are known.

2. Technical and institutional capacities of private sector stakeholders enhanced on MCMDs phase-out and environmentally sound mercury-containing medical waste management improved

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
1,169,900.00	3,804,251.00

Outcome:

2.1: MCMDs and their wastes are collected, stabilized (solidified) and disposed of in environmentally sound manner, in accordance with national regulations, international guidelines and Best Environmental Practices (BEP) and based on Gender sensitive principles.

Output:

2.1.1: Technical guidance/guidelines on mercury, MCMDs and their wastes for collection, distribution, and temporary safe storage are developed and established.

2.1.2: Health facility management capacities to adopt mercury-free medical devises are strengthened through gender-sensitive capacity building.

2.1.3: Pilot plant for temporary storage from medical devices containing mercury established.

2.1.4: Gender and Social Inclusive (GESI) awareness programme on MCMDs replacement, collection and disposal to health facilities is created and implemented.

3. Circular models are developed and piloted to promote and sustain the large scale replacement to mercury-free alternatives for MCMDs

Component Type	Trust Fund
Investment	GET
GEF Project Financing ($)	Co-financing ($)
3,634,090.00	18,852,671.00

Outcome:

3.1: Technical guidelines developed on lifecycle management of mercury-free alternatives

3.2: Mercury-free medical devices piloted in selected health care facilities, collection and recycling guidelines developed for end-of-life products and disposal technologies/strategies piloted taking into consideration gender and social inclusive approaches.

3.3: Financing mechanisms to support replication and scale up of MCMDs replacement in collaboration with local fund providers/banks assessed.

Output:

3.1.1: Circular models for mercury-free medical devices (MFMDs) to support MCMDs accelerated replacement assessed.

3.1.2: Green and gender-sensitive Procurement and Technical Guidelines for circular management of mercury-free medical devices developed.

3.2.1: Medical devices manufacturers, distributors, and suppliers had incorporated circular economy principles on disposal of Hg-based and electronic-based devices in their CSRs and/or other relevant internal practices, Policies, or strategies.

3.2.2: One (1) pilot at the laboratory scale for mercury stabilization and solidification technology are implemented.

3.2.3: Hg stabilization and solidification strategies and solutions upscaled to four (4) locations in partnership with Public-Private selected institutions.

3.3.1: Development of gender-sensitive financing mechanisms that explored in collaboration with local fund providers/banks and new/revamped finance solutions proposed.

4: Project results monitored, documented, and shared

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
334,500.00	1,735,295.00

Outcome:

4.1: Monitoring and evaluation activities carried out as per GEF requirements.

4.2: Learning and knowledge sharing activities carried out and knowledge products developed and shared (including lessons-learned from the perspective of gender-equality and social inclusion implementation).

Output:

4.1.1: Social and Environmental Screening Procedure (SESP) periodically reviewed and updated.

4.1.2: Gender Action Plan and awareness raising activities on collection, transport, storage and disposal of mercury and mercury waste.

4.1.3: Periodic monitoring, and reporting, Project Implementation Reports (PIR), Mid-Term Review and Terminal Evaluation.

4.2.1: Lessons-learned and best practices for knowledge management are collected and shared at national and international levels.

M&E

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
197,700.00	3,523,487.00

Outcome:

4.3. Robust monitoring and evaluation mechanism developed and implemented

Output:

4.3.1. Social and Environmental Standards (SES) and risk management instruments applied throughout project cycle.

Component Balances

Project Components	GEF Project Financing ($)	Co-financing ($)
1. Policy and regulatory frameworks strengthened to support the phase-out of mercury containing medical devices (MCMDs) in the health sector	940,000.00	5,036,614.00
2. Technical and institutional capacities of private sector stakeholders enhanced on MCMDs phase-out and environmentally sound mercury-containing medical waste management improved	1,169,900.00	3,804,251.00
3. Circular models are developed and piloted to promote and sustain the large scale replacement to mercury-free alternatives for MCMDs	3,634,090.00	18,852,671.00
4: Project results monitored, documented, and shared	334,500.00	1,735,295.00
M&E	197,700.00	3,523,487.00
Subtotal	**6,276,190.00**	**32,952,318.00**
Project Management Cost	313,810.00	2,357,565.00
Total Project Cost ($)	**6,590,000.00**	**35,309,883.00**

Please provide Justification

PROJECT OUTLINE

A. PROJECT RATIONALE

Describe the current situation: the global environmental problems and/or climate vulnerabilities that the project will address, the key elements of the system, and underlying drivers of environmental change in the project context, such as population growth, economic development, climate change, sociocultural and political factors, including conflicts, or technological changes. Describe the objective of the project, and the justification for it. (Approximately 3-5 pages) see guidance here

Global and Local Environmental Problem(s)

Mercury (Hg) persists in the environment for long periods by cycling back and forth between the air and soil. It is a global pollutant able to travel over long distance via air and water, leading to both local and global mercury contamination. In the atmosphere, it can stay up there up to 2 years, and being transported and deposited around the world. As a heavy metal it is highly volatile and liquid at room temperature, bio-accumulative and harmful to health and the environment. It has many adverse effects on the brain, reproduction, respiratory and immune systems, and it is a highly potent neurotoxin that impacts the function and development of the central nervous system in both people and wildlife. Exposure to mercury is particularly dangerous for pregnant and breastfeeding women, as well as children, since mercury is most harmful in the early stages of development.

Medical waste and hospitals wastewater contribute significantly in amounts to the anthropogenic mercury emissions to the environment. Specifically, medical waste incinerators are regarded as considerable source of mercury. Many instruments used in hospitals, health care facilities and laboratories contain mercury. Source of mercury in medical facilities include thermometers (fever and industrial), sphygmomanometers (blood pressure monitors), dental amalgam, medical batteries, electrical equipment, thermostat probes in gas appliances, pressure gauges, gastrointestinal tubes, lamps (fluorescent, high-intensity discharge (HID) and ultraviolet), cleaners and degreasers, laboratory chemicals (fixatives, stains, reagents, preservatives) and pharmaceutical products. The use of mercury-containing equipment devices could release mercury into the environment due to the breakage and leakage of the mercury-containing medical devices (MCMDs), or in the case of dental care, evaporates when it was being formed or casted as dental fillings.

Indonesia generates a significant amount of medical waste, estimated at 376,089 tonnes/day from healthcare facilities[1][2]. Waste management is regulated under several regulations, including Ministry of Health (MoH) Regulation No. 7 of 2019, Regulation No. 2 of 2023, and the Ministry of Environment's (MoE) Regulation No 56 of 2015. However, compliance with these regulations is inconsistent across healthcare facilities.

According to Government Regulation No. 6 (2013) issued by the Ministry of Trade, hospitals are evaluated using a coded rating system: black (no waste management efforts), red (non-compliant environmental management), blue (compliant environmental management), and green/gold (exceeding compliance requirements). An assessment of 121 hospitals revealed that (eight) were rated black, 70 red, and 43 blue, indicating widespread non-compliance with government regulations. Nevertheless, this monitoring initiative is expected to encourage hospitals to improve their environmental management practices in the future.[2][3]

In the health sector, the use and procurement of mercury-containing medical devices in all health care facilities has been prohibited since 2020 for mercury elimination, in accordance with Minister of Health Regulation Number 41 of 2019. The Ministry of Environment has also issued Minister of Environment Regulation Number P.27/Menlhk/Setjen/Kum.1/12/2020 to regulate the collection, temporary storage,

transportation, storage at storage depots, treatment and/or export of the discarded mercury-containing medical devices. So far, MCMDs that is no longer used is still stored in a special temporary storage in the healthcare facilities to be further withdrawn to storage depots which will be provided in each province. However, the regulation does not yet provide BAT/BEP related Mercury end-processing technology. Moreover, this technology is also not yet available in Indonesia. The Government of Indonesia needs to develop BAT/BEP for mercury end-of-life management.

In the other hand, the healthcare sector has shown significant progress to reduce MCMDs by avoiding the use of these devices at first hand, and while MCMDs have been collected and temporarily storing these unused MCMDs in the same healthcare facilities, the withdrawal by the MoE of these unused MCMDs to safe regional temporary storage facilities has stopped. It is recognized that the initial actions lack continuous collection efforts, and face challenges of provision of appropriate storage depot, lack of experience and effective transportation mode, and the final disposal facilities is pending due to the limited availability of sufficient technology to carry out the final processing of MCMDs.

The classification of Health care facilities in Indonesia follows the Government Regulation Number 47, Year 2016, that includes: individual healthcare practitioner practices, community health centers, clinics, hospitals, pharmacies, blood transfusion units, health laboratories, optical clinics, forensic medical facilities, and traditional healthcare facilities.

The management of mercury-containing medical waste involves a multi-stage process, as outlined by the Ministry of Environment (MoE)[3][4]. It starts with collecting waste from hospitals, clinics, and other sources. The collected waste is then placed in secure containers to prevent accidents during transportation. After collection, the waste is stored temporarily in a designated area until it is transported to a storage facility. During transportation, the waste is carried in secure containers on trucks equipped with safety features.

Once it arrives at the storage facility, the waste is expected to be stored in a secure area designed to protect the environment and public health. Next, the waste is transported to a treatment or export facility, where it undergoes specialized treatment to remove the harmful effects of mercury. Alternatively, the waste may be exported to a facility that meets international waste management standards. Throughout this process, the entities involved in the HCWM system must ensure proper planning and attention to detail ensuring the safe transportation of waste to its final destination. This process highlights the importance of safety, coordination, and responsibility in managing mercury-containing medical waste. Each stage is crucial in minimizing environmental impact and protecting human health.

Base on data surveyed from 39,061 healthcare facilities across 34 provinces in Indonesia, it is estimated that the potential baseline mercury (Hg) content originating from stored unused, unbroken thermometers (198,488 units) and sphygmomanometers (532,873 units), minding an average mercury content of 1.5 grams per thermometer and 65 grams per sphygmomanometer, is approximately 0.30 ton from Thermometer, 34.64 tons from sphygmomanometer, and 127.52 tons from dental amalgam, totaling 162.46 tons of mercury in unused, unbroken stoked MCMDs (see Table 1), highlighting a significant opportunity to fast track mercury elimination. In addition to the above unused, unbroken MCMDs contained in Table 1, broken MCMDs have also been also collected and being safely stored in healthcare facilities. Based on representative data obtained from the national consultant's study in developing the PIF, it is estimated that the breakage rate is 12% for mercury-containing thermometer and 13% for sphygmomanometer. Mercury content from broken and unbroken MCMDs stored at healthcare facilities totaling 166.90 tons Table 2 below shows the total units and quantities of mercury contents in MCMDs.

The amount of Mercury from MCMDs in Indonesia table

The amount of Mercury from MCMDs in Indonesia

Type of Health Care Facility	Number	Type of Medical Devices								
		Average Number		Estimated Number of Unit		Estimated Hg Content (Gr)		Estimated Hg Content (Ton)		
		Thermo-meter	Sphygmo-manometers	Thermo-meter	Sphygmo-manometers	Thermo-meter	Sphygmo-manometers	Thermo-meter	Sphygmo-manometers	Dental Amalgam
Hospital	31,55	25	60	78,875	189,300	118,312.,5	12,304,500	0,12	12,30	16.69
Clinics	172,61	3	3	51,783	51,783	776,74,5	3,365,895	0,08	3,37	48.83
Independent Doctor Practice Places	8,465	2	2	16,930	16,930	25,395	1,100,450	0,03	1,10	1.99
Puskesmas	10,180	5	27	50,900	274,860	76350	17,865,900	0,08	17,87	60.01
Total (Unbroken)	**39,061**	**35**	**92**	**198,488**	**532,873**	**297,732**	**34,636,745**	**0,30**	**34,64**	**127.52**
Total (Broken)				**23,819**	**69,273**	**35,729**	**4,502,745**	**0.04**	**4.50**	-
Grand Total				**222,307**	**602,146**	**333461**	**39,139,490**	**0.34**	**39.14**	**127.52**

Both unused, unbroken, as well as broken MCMDs will be addressed by the project, in undergoing safe and environmentally sound collection, transportation, stabilization, solidification and temporary storage at the safe storage facilities at an established waste management enterprise.

Finally, “unwanted” MCMDs in health service facilities that have already been replaced that eventually enters the healthcare waste system also need to be managed as mercury-containing medical waste to avoid negative impacts on the environment and human health.

Drivers of the Environmental Change

Indonesia ratified the Minamata Convention on Mercury through Law No. 11 of 2017 and officially became a Party to the Convention on December 8, 2017. Since then, the Government of Indonesia has taken several actions to address the Mercury-Containing Medical Measuring Devices (MCMDs) elimination target through issuance of law and regulations.

Under the National Action Plan (NAP), Ministry of Health (MoH) and the Ministry of Environment (MoE) are the focal points institutions for supporting actions related to managing mercury-containing medical devices. At certain degree, the MoH is also supported by Ministry of Home Affairs (MoHA) in this matter, while for hazardous wastes management, under Government Regulation (Peraturan Pemerinta PP, in Bahasa Indonesia) PP 22/2021 on Environment Protection, Organization and Management, the prominent institutions involved are MoE, Ministry of Transportation (MoTransp), and Ministry of Trade (MoT).

The Ministry of Health Regulation (Permenkes in Bahasa Indonesia) has also issued Ministerial Regulation Number 41, Year 2019, concerning the Phase-out and Withdrawal of Mercury-Containing Medical Devices in Healthcare Facilities with targeting by 31 December 2020 that 100% of health care facilities are not using MCMDs. It is mandatory that all the health facilities replacing the MCMDs with alternative devices which environmentally friendly. Under MoH Health Regulation Permenkes 41/2019, the institution responsible for eliminating mercury-containing medical devices is vested with ach respective healthcare facility, while withdrawal of the discarded mercury-containing medical devices is conducted by central or local government through MoH or local health in coordination with MoE or local environmental agency.

The Ministry of Environment (MOE) has also issued Ministerial Regulation Number 27/2020 concerning the Management of Mercury-Containing Medical Device Waste. This regulation covers the management of different types of mercury-based thermometers, mercury-based sphygmomanometers and dental amalgam with a mandatory phaseout deadline of no later than December 31, 2025. The regulation is a guideline for the implementation of the management of MCMDs including procedures for collection, temporary storage, transportation, storage at storage depots, treatment and/or export of the discarded MCMDs. Currently, unused MCMDs are still stored in a special temporary storage in healthcare facilities and are to be transferred to storage depots which will be provided in each province.

In light of the approaching phase-out of MCMDs, several policy, regulatory instruments and action plans were issued by the Government of Indonesia to ensure the introduction and appropriate application of MFMDs in medical facilities, and by the general public. However, many of these measures are only recommended measures rather than compulsory ones, which require a thorough review and assessment to identify gaps and overlaps, close loopholes and harmonize approaches and propose relevant mandatory by laws.

Under the above mentioned framework, MCMDs have gradually been replaced with mercury-free, digital-type medical devices. In order to ensure the availability of safe, beneficial, high-quality, and affordable medical devices, as well as to create a healthy living environment, the Directorate General of Pharmaceuticals and Medical Devices is responsible for revoking distribution permits and monitoring the circulation of MCMDs. Based on the Circular Letter of the Director General of Pharmaceuticals and Medical Devices Number: HK.02.02/V/0720/2018 concerning the Determination of the Validity Period of Distribution Permits and Circulation of Medical Devices Containing Mercury, the revocation of all distribution permits for medical devices containing mercury has been carried out by medical device distributors. It also addresses information from the public and stakeholders indicating that MCMDs are still found in circulation, being sold directly or through electronic catalogs.

However, efforts to interfere with the supply chain of mercury-free medical devices are also necessary to assure that properly standardized equipment are phased-in and that concepts circular economy are taken into consideration, , with involvement manufacturers and importers of medical devices, to avoid the future buildup of e-waste (and the potential unsound practices to manage this waste stream).

Therefore, a circular economy approach that emphasizes reducing waste, reusing resources, and recycling materials, which aligns with the goal of transitioning to mercury-free medical devices, by engaging all stakeholders, including producers and importers, the government can ensure a sustainable and environmentally friendly supply chain for healthcare equipment, ultimately supporting public health and environmental protection.

Project Justification

As reflected in Tables 1 and 2, the project will address the baseline mercury contents of 166.90 tons from the total quantities of unused, unbroken and broken MCMDs currently stored in healthcare facilities, as well as the dental amalgam, The project will undertake safe and environmentally sound process in the collection, packaging, transportation to four (4) regional temporary project storage sites, and then go through the stabilization and solidification process, will then be put in longer-term safe temporary storage at an established waste handling enterprise until such time matured technology(ies) for safe disposal. Through four (4) project components, the project will 1) improve regulatory measures and strengthen enforcement efforts, 2) build institutional, technical and management capacities of private sector stakeholders to facilitate mercury phase out and improve the sound environmental management of MCMDs. 3(With circular models developed and piloted, the project will promote and sustain the large scale replacement to mercury-free medical devices

(MFMDs), including addressing wastes generated with the production and use of MFMDs. Finally 4) project results will be monitored, documented and knowledge shared.

The project will generate Global Environmental Benefits (GEBs) that include: a) 20 metric tons of mercury reduced, b) 20 g TEQ/year of UPOPs emissions avoided, c) 100 mt of POP-containing plastic collected and disposed safely containing 5 tons of PBDEs which emissions will be avoided with avoided open burning, d).20,000 tons of recyclable plastic and metals material collected and recycled, e).10,000 metric tons of CO2e emissions avoided, and f): The reduction / elimination of 5% of the releases or emissions in 2022 is the baseline withing the total of 176,946 units of MCMDs that will go under non-incineration treatment and also due to the avoided open burning of healthcare related plastics.

100,000 people directly benefitted (50,000 female and 50,000 male): as per the targeted audience that GHG benefit from the project and will be selected in pilot sites and pilot units among 3,122 hospitals, 10,260 Primary Health Care (PHC) and more than 5,000 other health care facilities and the HCW collection and processing units/companies/institutions. In which at least 30% are expected to be women in line with national regulations related to gender inclusiveness in Indonesia.

The MCMDs to be targeted by SIRENE project are thermometers, blood pressure monitors, and dental amalgam. To encourage the use of mercury-free medical devices in public healthcare facilities, support from both the government and the private sector is essential. In this context, the government is represented by the Directorate General of Pharmaceuticals and Medical Devices (Ditjen Farmalkes) under the Ministry of Health. This Directorate General has the authority to formulate and implement policies related to the management of pharmaceuticals and medical devices.

This project will ultimately focus on all types of facilities, with greater emphasis to the ones that are estimated to generate more mercury-contained wastes from MCMDs: (i) hospitals, (ii) clinics, (iii) independent medical practices, and (iv) primary healthcare (puskesmas).

i) Hospitals registered with the Ministry of Health are managed by various institutions or organizations, including central government, local government, TNI/POLRI (Indonesian military and police), state-owned enterprises, and private entities. Based on the type of services provided, hospitals are categorized into General Hospitals (RSU – Rumah Sakit Umum) and Specialty Hospitals (RSK – Rumah Sakit Khusus). The number of hospitals in Indonesia as of 2023 consists of 2,636 General Hospitals (RSU) and 519 Specialty Hospitals (RSK). The breakdown of 3,155 hospitals, comprising 242 general hospitals owned by the central government, 849 general hospitals owned by local governments, 1,545 private general hospitals, and 519 specialty hospitals.

(ii) A clinic is a health service facility that provides basic and/or specialized medical services comprehensively. According to the Minister of Health's Circular Letter Number: HK.02.02/II/4392/2020 on Clinic Registration, the Ministry of Health has urged all clinics in Indonesia to register online through a website-based application at registrasifasyankes.kemkes.go.id. Based on the Ministry of Health's data as of December 2023, there are 17,261 **registered clinics** in Indonesia, owned by the government (ministries/agencies, military/police, and local governments) and private entities (community). The breakdown of registered clinics in Indonesia includes 1,950 government-owned clinics and 15,311 privately owned clinics. Based on the clinics' service capabilities, there are 14,564 primary clinics and 2,697 main clinics.

(iii) Independent Medical Practice Based on Law Number 17 of 2023 on Health, independent medical practice is one of the types of health care facilities (fasyankes). Independent medical practice includes Independent Doctor Practice Places (TPMD - Tempat Praktik Mandiri Dokter) and Independent Dental Doctor Practice Places (TPMDG - Tempat Praktik Mandiri Dokter Gigi). According to the Minister of Health's Circular Letter Number: HK.02.02/II/4406/2021 on

Registration of Independent Medical Practice Places, the Ministry of Health has urged doctors and dentists in Indonesia who practice independently to immediately register online through a website-based application at registrasifasyankes.kemkes.go.id. Based on data on the application as of December 2023, there were 12,411 registered independent medical practices, consisting of 8,465 TPMD and 3,946 TPMDG. The province with the highest number of registered Independent Doctor Practice Places (TPMD) is East Java Province, with 1,587 TPMD. The province with the highest number of registered Independent Dental Doctor Practice Places (TPMDG) is also East Java Province, with 1,365 TPMDG.

(iv) Puskesmas. The Minister of Health Regulation Number 43 of 2019 on Primary Healthcare states that a community health center (puskesmas) is a health service facility that provides community health services and primary individual health services, with a focus on promotional and preventive efforts in its working area. The number of puskesmas in Indonesia in 2023 is 10,180, consisting of 4,210 inpatient puskesmas and 5,970 outpatient puskesmas.

To ensure the provision of quality healthcare services, the Ministry of Health has established regulations and registration requirements for these facilities. This provides an insight into the current state of healthcare facilities in Indonesia, including the number and distribution of registered hospitals, clinics, and independent medical practices, as well as their ownership and service capabilities[4][5].

Key Challenges and Barriers

This project has identified four root problems and four barriers hindering the phase-out of mercury-containing medical thermometers and sphygmomanometers, as well as the adoption of mercury-free alternatives in healthcare facilities. These challenges have been pinpointed as key obstacles that must be addressed to ensure a seamless transition to mercury-free medical devices.

The root problems are categorized into:

(i) Limited institutional capacity – Indonesia has numerous regulatory frameworks and policies supporting mercury reduction and phase-out in the health sector. Nevertheless, the country lacks the capacity to enforce laws implementing these frameworks and policies, hindering the reduction and phase-out of mercury-containing medical devices (MCMDs). Weak supervision and control over MCMD distribution and supply chains, combined with inadequate coordination between central and local government health agencies, compound the problem.

(ii) Limited technical capacity – Indonesia has very limited experience in handling collected MCMDs. The country lacks norms and a regulatory framework for mercury transport and storage. Furthermore, Indonesia's capacity to transport and collect MCMDs from health facilities is limited.

(iii) Limited access to available and appropriate technology – The country has limited capacity to access available and appropriate technologies (BAT/BEP) that comply with the Minamata Convention. Furthermore, Indonesia lacks guidelines on proper handling and management of mercury-containing waste, as well as information on stockpiles of such waste.

(iv) Limited capacity to monitor – The country has weak monitoring and evaluation mechanisms to track project outputs and outcomes. Additionally, there is a lack of dissemination of lessons learned from the project.

The four barriers as follow:

(i) Limited political capacities – Indonesia's top management lacks sufficient support and oversight to manage domestic mercury circulation. Moreover, top management has an inadequate

understanding of mercury's dangers. The country also needs more community-based initiatives to raise public awareness about the health risks associated with mercury.

(ii) Geographical constraints – Geographical factors in Indonesia pose challenges to safe mercury and mercury waste handling. Furthermore, a lack of concern about mercury's dangers stems from a general lack of understanding and awareness about its risks.

(iii) Limited public knowledge – Participation from relevant stakeholders is limited, and the situation is made more challenging by insufficient support from top management.

(iv) Limited budget available – The project faces several challenges, including insufficient budget allocation, limited human resource capacity, and inadequate involvement of relevant stakeholders.

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[1] Linda Fitrianingsih, & Mohamad Yaser. (2023). Analisis Pengelolaan Limbah Medis Padat Menurut Permenkes No. 7 Tahun 2019 Di Rumah Sakit Tahun 2022. Jurnal Ilmu Kesehatan Dan Gizi, 1(4), 48–61. https://doi.org/10.55606/jikg.v1i4.1705

[2] WHO. Report on health-care waste management (HCWM) status in Countries of the South-East Asia Region

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[3] Siwi, W.P. (n.d.). Pengelolaan Limbah Alat Kesehatan Mengandung Merkuri. URL: https://sib3pop.menlhk.go.id/index.php/articles/view?slug=pengelolaan-limbah-alat-kesehatan-mengandung-merkuri

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B. PROJECT DESCRIPTION

This section asks for a theory of change as part of a joined-up description of the project as a whole. The project description is expected to cover the key elements of good project design in an integrated way. It is also expected to meet the GEF's policy requirements on gender, stakeholders, private sector, and knowledge management and learning (see section D). This section should be a narrative that reads like a joined-up story and not independent elements that answer the guiding questions contained in the guidance document. (Approximately 3-5 pages) see guidance here

Project Objective:

This project will support the Government of Indonesia and key stakeholders in the healthcare sector in eliminating mercury from the distribution and supply chain of medical devices. It will do so through strengthening policies and regulations, establishing a system to track, collect and safely store existing mercury-containing medical devices (MCMDs) for eventual disposal using BAT/BEP, and establishing a mechanism for the sustainable replacement of MCMDs. Additionally, the project will promote circular practices for mercury-free electronic medical devices to prevent future buildup of e-waste from the healthcare sector.

Project Description

The Project will directly work with 3,122 hospitals, 10,260 Primary Health Care (PHC) and more than 5,000 health care facilities located across Indonesia, in coordination with other ministries and agencies and relevant stakeholders, specially from the private sector, to perform actions that will lead to reaching the intended objective through:

Component 1: Policy and regulatory frameworks strengthened to support the phase-out of mercury containing medical devices (MCMDs) in the health sector

The Ministry of Environment has been actively working with local and regional authorities to encourage the establishment of provincial and district action plans to reduce and eliminate mercury. The project will engage with the Ministry of Health; Ministry of Energy and Mineral Resources; Ministry of Cooperative and Medium and Small Enterprises; Ministry of Villages; National Research and Innovation Agency (BRIN); Ministry of Women and Children Protection; Ministry of Industry, Ministry of Trade, Ministry of Finance, BAPPAENAS) to strengthen collaboration and the governance network around the distribution and supply chain of mercury containing medical devices (MCMD), together with intensive engagement activities on mercury pollution by central government. Through intensive contamination by mercury-containing devices, while promoting proper response to mercury spills and ensuring environmentally sound disposal of mercury waste.

This project will develop a capacity-building program for medical personnel, healthcare workers, and prospective medical/healthcare students at universities. This can be achieved by strengthening the implementation of health transformation on the fifth and sixth pillars, namely Health Human Resources and Health Technology.

Referring to the recommended actions outlined in Minamata Initial Assessment (MIA), in component 1, the project will perform activities meant to develop and establish gender-sensitive and gender-responsive regulatory and policy frameworks in regard with the total phase-out of MCMDs, regulatory frameworks concerning mercury collection, distribution, temporary storage, and disposal. It will strengthen the capacity of Indonesia at national and sub-national levels to enhance policy enforcement by strengthening coordination and cooperation, enforcing commitments, and ensuring inclusive processes in a gender and social inclusive manner, also addressing potential Social and Environmental Impacts of these frameworks using a Strategic Environmental and Social Assessment (SESA).

Under the coordination of the Ministry of Health (assisted by health institutions at the provincial and district levels), the project will facilitate and organize a gender-sensitive and gender-responsive strategy to totally phase-out of mercury-containing medical devices and provide assistance in the substitution by mercury-free medical devices. The Ministry of Health will issue recommendation to all health facilities which cover by Government Regulation Number 47 Year 2016 concerning Healthcare Facilities. Those including hospital of class A, B, C, and D and primary health care (PHC) and other health care facilities consisting of 3 levels, namely: main (that has specialized medical care), middle, and primary (a people-centered rather than disease-centered service that addresses the majority of a person's health needs throughout their lifetime including physical, mental and social well-being).

In the end, Healthcare Facilities are expected to commit not using mercury-containing medical devices and to establish schedules/roadmaps towards the replacement of baseline MCMDs for MFMDs, The Governance and Regulatory structure will also enhance compliance of health service institutions to meet agreed standard. Policies regarding oversight and supervision will be issued to strictly monitor the commitment of all health facilities.

This component will address the policy and regulatory barriers as it will systematically evaluate measures (including administrative, legal, financial and economic instruments, etc.) to phase-out the MCMDs and engage the manufacturing enterprises to promote the introduction and use of MFMDs in medical facilities and also to manage the waste from the MCMDs and MFMDs.

The project will develop and implement integrated approach consisting of policy and regulatory measures, quality standards, process, mechanism and associated capacities to meet the requirements of the Minamata Convention. Activities under this component will help strengthen regulatory and institutional baseline levels of effort under the National Plan and providing opportunity for integration between different public sector entities and broader consultation amongst private and public partners.

In addition, it is expected that the project to develop a capacity-building program for medical personnel, healthcare workers, and prospective medical/healthcare students at universities. Through

the training modules produced by the project from all 3 components, including GESI awareness program.

Collaboration between Ministries and Institution mechanism will be established by the project to jointly oversee the assessment and review of the policy, regulations, tools, action plans and guidelines required to improve the Regulatory Framework. In case of need to develop/update specific regulations/standards, and in coordination with appropriate private sector partners and other stakeholders such as civil society, the mechanism will provide the proper guidance to the project team on these activities.

The project will develop implementation action plan on policy and regulatory frameworks on chemical management and on the use of mercury-free products to update regulatory measures and strengthen management capacity. These activities will be accompanied by capacity-building programmes geared to relevant health workers in charge of the monitoring, supervision, regulation and enforcement of the phase-out of MCMDs. In addition, the Ministry of Health will develop collaboration mechanism with other international health institutions, such as WHO to ensure incorporation of international best practices, assessment of international standards and experiences on monitoring and management systems that can facilitate the smooth implementation of MFMDs in the medical facilities.

Finally, the project will also promote cooperation with relevant stakeholders to develop appropriate frameworks on green procurement standards and action plans to phase-in mercury-free medical devices at medical facilities, as well as to create mechanisms to support the long-term phase-out of mercury from the medical device production sector, and to cover any initial cost increases related to procurement of non-mercury devices by key medical facilities.

Component 2: Technical and institutional capacities of private sector stakeholders enhanced on MCMDs phase-out and environmentally sound mercury-containing medical waste management improved.

At present, all unused and broken MCMDs are still stored in the health facility units. The facility units have limited experience in handling collected MCMDs, and face challenges to comply with regulatory framework for mercury transport and storage, also lacking capacity to safely transport MCMDs from the health facility units to mercury storage. In addition, the geographical challenges unique to Indonesia which consists of thousands of islands and bring concerns due to a general lack of understanding and knowledge about the dangers of mercury are factors that hamper the collection and distribution of MCMDs and will be addressed within this component.

Prior to final stabilization and storage, the project will assist the Government of Indonesia to develop methods and techniques for transporting and collecting mercury originating from medical devices in safe temporary storage. The collection has a requirement to guarantee that the packaging is safe. The transportation needs a requirement of vehicle (ship) and permit to deliver mercury waste. Mercury collected from health care facilities requires good and safe handling. Indonesia has a unique geographical large area. There are many big and small islands. Besides culture, social and economic factors could influence the mercury handling styles, even though there is a guidance for it. The other aspect for consideration is how to transport the substance from one island to the other that requires suitable vessels (transport mode). The Government of Indonesia has to provide licensed ships (boats) able to deliver it (since not all ships have permits to transport hazardous waste) and hence, digital tools will also be used to support proper control over Hg stocks during these procedures.

The Project will ensure that any Social and Environmental identified risk is properly management throughout its components, and in particular under Component 2, it will assure that (i) the interim storage facilities at the selected enterprises (under the Component 2) will comply with the “Minamata Convention’s Guidelines on the environmentally sound interim storage of mercury”, (ii) A Spill Prevention and Management Plan will be developed and implemented at all demonstration sites for safe handling and disposal of mercury-containing

obsolete devices and safely cleanup of accidental mercury releases; and (iii) through the environmental audit of the interim storage facilities, will take into consideration flood and other natural disaster risks when locating and assessing available storage facilities to minimize the risk of any natural disaster-caused contamination.

A series of gender-sensitive activities will also be implemented in component 2, including: assess the situation of mercury use, collection, storage in Health Care Facilities (HCF), develop and strengthen the policy and regulatory framework in regard with mercury collection, distribution and temporary storage, develop and establish the technical guidance on the mercury collection, transportation and temporary safe storage, and asses potential to establish pilot mercury temporary storage from mercury-containing medical devices in at least four (4) regional areas.

The project will facilitate the engagement of the Implementing Partner with the National Research and Innovation Agency (BRIN), as the responsible institution in collaboration with the Ministry of Health, which will coordinate the collection, distribution, and implementation of safe techniques for mercury temporary storage. It will be assured that appropriate Best Available Techniques/ Best Environmental Practices (BAT/BEP) are applicable through the guidelines and guidance instruments. The scope of work will include designing an effective collection strategy, determining the appropriate type of transportation, and processing the permits, determining temporary storage locations, and providing safe temporary storage techniques for mercury, piloting their application in, at least, one (1) temporary storage site to be selected during project preparation.

Component 3: Circular models are developed and piloted to promote and sustain the large scale replacement to mercury-free alternatives for MCMDs.

The project will closely work with the National Research and Innovation Agency (BRIN) and, in addition with other relevant research institutions in Indonesia to develop, introduce and promote applicable non mercury technology to the health care facilities / hospitals. The project will implement an environmentally safe and traceable technology for temporary storage of collected mercury at national scale, (in line with Article 10, paragraph 4, of the Minamata Convention, in terms of “enhancing capacity-building for the environmentally sound interim storage of such mercury and mercury compounds”).

From the beginning the project will involve the private sector (including NGOs) in collecting, operating the stabilization/solidification equipment, and landfilling the stabilized and solidified mercury waste. Hence, the project will facilitate the government to work with the private sector that has the facilities to collect and store the mercury waste. In this respect, an arrangements/agreements framework will be prepared, as a memorandum of understanding (MOU) between the Ministry of Environment and relevant private sectors institutions.

The health sector has shown significant progress to reduce MCMD by not using these devices and temporarily storing these in Health Care Facilities. However, the progress has not been followed up by the provision of appropriate storage depot, transportation mode, and final disposal facilities. This is due to the limited availability of sufficient technology to carry out the final processing of MCMD.

A high-quality technology that guarantees preventing potential hazard to human health and the environment considering persistent characteristics of mercury is critical for the success introduction of the safe temporary storage facility as intermediary step would then be transported to the location of processing facilities, in which the mercury waste will be processed in the solidification/stabilization equipment. After that, the solidified mercury will be transferred (transported) to safe final storage.

The project will improve capacities of one (1) national laboratory by assisting with the introduction of a laboratory scale mercury stabilization and solidification technology. This activity will provide important knowledge/lessons/technology transfer capabilities to local partners and institutions for the scale up and strengthening of their capacities to operate larger scale mercury stabilization/solidification equipment/facilities to strengthen in at least 4 (four) regional areas, namely:

(1) Regional 1 covering Aceh, North Sumatera, West Sumatera, Riau, Riau Islands, West Kalimantan; (2) Regional 2 covering Bangka Belitung Islands, Jambi, Bengkulu, South Sumatra, Lampung, Banten, West Java, DKI Jakarta, DI Yogyakarta, Central Java; (3) Regional 3 covering Central Kalimantan, South Kalimantan, North Kalimantan, East Kalimantan, East Java, Bali, West Nusa Tenggara, East Nusa Tenggara; (4) Regional 4 covering South Sulawesi, Southeast Sulawesi, Central Sulawesi, West Sulawesi, Gorontalo, North Sulawesi, Maluku, North Maluku, West Papua, Central Papua, Mountainous Papua, Southern Papua, Southwest Papua, Papua. The project is expected to provide national-wide impacts through the presence of Regional Areas, and specific locations and partner will be selected either during project preparation phase or during the initial first year of implementation. The final safe storage needs for Indonesia will then be assessed and potential final disposal sites identified and recommended for the Government (either local or for export).

The Project will ensure that any Social and Environmental identified risk is properly management throughout its components, and in particular under Component 3 it will ensure that a Spill Prevention and Management Plan will be developed and implemented at all demonstration sites for safe handling and disposal of mercury-containing obsolete devices and safely cleanup of accidental mercury releases; facilities handling mercury (and its wastes) will take into consideration flood and other natural disaster risks when locating and assessing available storage facilities to minimize the risk of any natural disaster-caused contamination.

Component 4: Project results monitored, documented, and shared.

The Government of Indonesia monitoring and evaluation capacity concerning the achievement of project outputs and outcomes and lack of dissemination concerning the lessons (best practices) being learned from the project will be strengthened with this component.

To achieve optimum outcomes, the project will perform several activities consisting of assessing and applying Social and Environmental Screening Procedure (SESP) and enhancing gender-equality and social inclusion (GESI) to accelerate mercury reduction in health sectors, collecting lessons-learned and best practices for knowledge management at national and international communities, assuring effective and efficient project management in compliance with GEF and UNDP, implementing Gender Action Plan and awareness raising activities on collection, transport, storage and disposal of mercury and mercury waste.

Semi-annual, annual, mid-term and final monitoring and evaluation to detect obstacles and provide the necessary solutions will be strictly implemented to ensure the successful achievement of the output and outcome of the project.

Theory of Change (ToC)

To cope with the four (4) root problems and the four (4) barriers identified above, the project has 4 (four) components expected to achieve the objective focusing on:

(a) Strengthening policy and regulatory frameworks to support the phase-out of MCMDs.

(b) Enhancing technical and institutional capacity on MCMDs phase-out and mercury-containing medical waste management.

(c) Developing and piloting circular models to promote mercury-free alternatives for MCMDs.

(d) Monitoring, documenting, and sharing project results and best practices.

Most specifically, in order to implement the Component 3 “Developing and piloting circular models to promote mercury-free alternatives for MCMDs”, the GEF intervention will be critical to engage with CSOs, NGOs and local private sector partner sectors.

a) The engagement in Medical Devices sectors will be highly dependent of private sector as the proposed project activities will interlink a complex supply chain of alternatives and will also promote a circular chain to assure the proper disposal of both current obsolete devices, but also future phased-in electronic devices that are replacing MCMDs.

b) During project preparation phase (PPG phase), the Government of Indonesia will start screening these chains (work which will be continued during implementation) to identify the relevant private sector stakeholders that can benefit from the project.

c) Also, related to the private sector partners for the supply chain areas, there is a need to further engage with the stakeholders already working in the mercury temporary storage to strengthen operations and apply proper BAT/BEP. Hence, these stakeholders may also be supported towards scaling up operations for the solidification facilities, and for this, the Government of Indonesia has a short list of companies operating in the area of healthcare waste management which will be further screeded during PPG phase to assess their capacities to contribute with the project.

d) It is noted that the scope of mercury-related issues, it is acknowledged that a relatively large number of NGOs and CSOs do work on that area from several angles/sectors, and the Government of Indonesia is cognizant of the importance of their participation in public debate, but also as knowledge providers and potential replicators. The PPG phase will start to work on mapping these entities, while these will be formally engaged during implementation phase of the project through public calls, but also potentially as part of the Project Board consultative committee.

Also related to the Component 3 “Developing and piloting circular models to promote mercury-free alternatives for MCMDs”, the GEF intervention will support the Government of Indonesia in assisting/piloting activities in 4 (fours) regional areas that will be selected during PPG phase. The 4 (four) Regional Areas refer to the structure of Environmental Management in Indonesia. Indonesia is an archipelagic state consisting of large and small islands. The project will pay attention to the 4 (four) main groups of Islands (Sumatera, Kalimantan, Sulawesi, Maluku and Papua and Java, Bali and Nusa Tenggara) following the regional offices of environmental management in the country. This regional mechanism is expected to strengthen the process and progress of mercury reduction and phase-out.

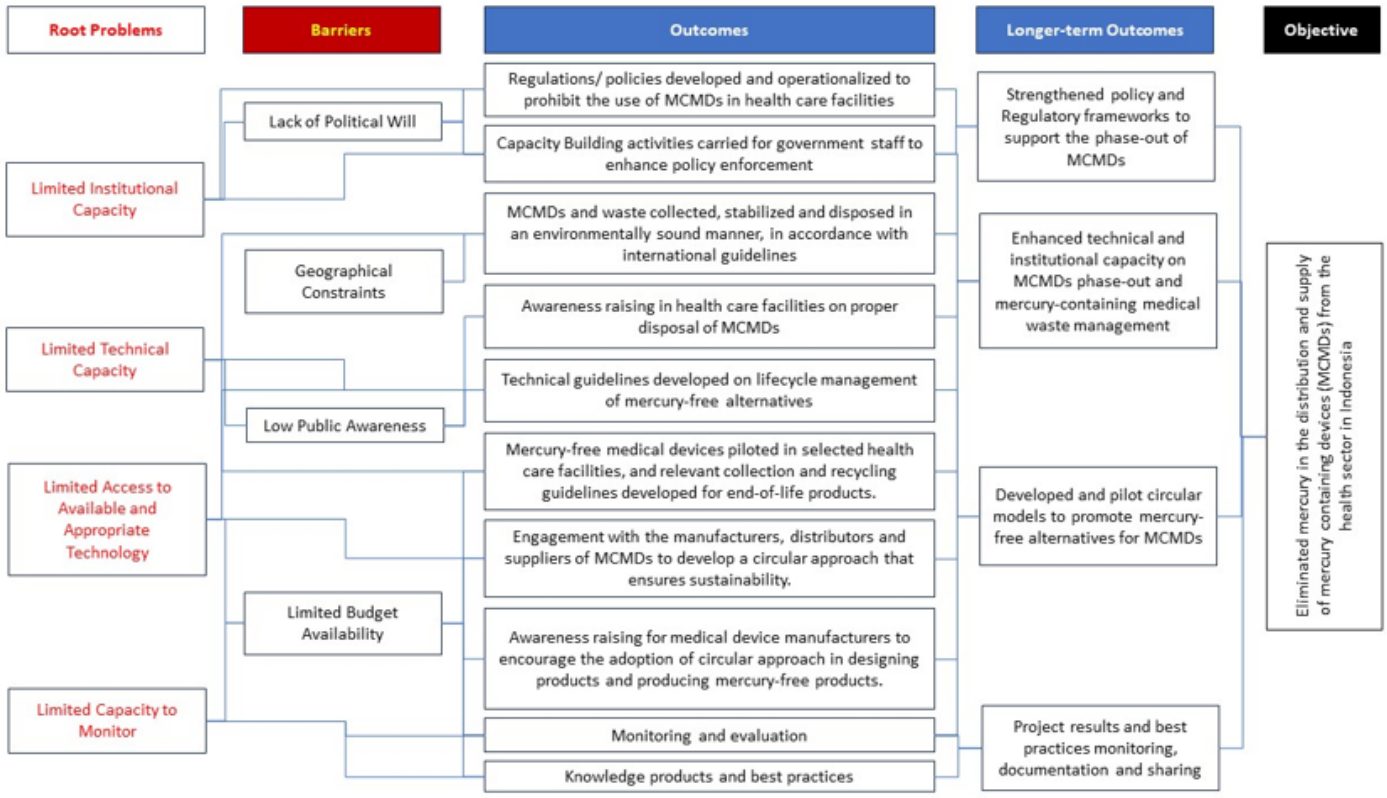

Figure 1 - Theory of Change

Expected Results

Project Component 1: Policy and regulatory frameworks strengthened to support the phase-out of mercury containing medical devices (MCMDs) in the health sector.

The project will close the gaps between the current regulatory system and the requirements of the Minamata Convention on Mercury on the phase-out of the production of MCMDs and link them with the end-user application of MFMDS and their wastes. Therefore, cooperation between the ministry, institution and private sector with gender inclusivity are necessary to jointly develop the necessary regulatory frameworks, action plans and guidelines, and identify appropriate private sector partners is required to phase out the MCMDs and enterprises and introduce MFMDs and their waste in medical facilities. Through close the gaps the project will also enhance the policy and regulatory framework of institutional capacities and technical capabilities of public and private stakeholders.

Outcome 1.1: Regulations/policies developed or strengthened, proposed and/or operationalized to prohibit the use of MCMDs in health care facilities.

The project will develop the capacity of national institutions, government agencies and private sector partners, to assess, plan, implement, support and monitor sustainable for total phase out the use of mercury-containing medical devices in health care facilities. It will do so by initially assessing the capacity of these project partners, developing plans for strengthening their capacity and subsequently implementing these.

- Reviewing and updating the current policy and regulations on operation to prohibit the use of MCMDs in health care facilities and introduce MFMDs and their waste in medical facilities with consideration of gender strategy.

- Reviewing and updating the current policy and regulations on MCMDs and their wastes for collection, distribution, and temporary safe storage with consideration of gender strategy.
- Developing conclusion and recommendation for implementing.

Output 1.1.1: Regulatory and policy frameworks proposed for total phase out the use of mercury-containing medical devices.

Activity 1.1.1: Establish an action plan to formulate proposals and training plan for the development and strengthening of regulatory and policy framework, and the strengthening of management and enforcement capacities to facilitate the total phase-out of mercury-containing medical devices. At least five (5) action oriented implementation plans will be developed.

Output 1.1.2: Gender sensitive regulatory and policy framework concerning mercury collection, distribution, temporary storage, and disposal developed/strengthened.

Activity 1.1.2: Review, develop and strengthen existing regulatory and policy framework concerning mercury collection, distribution, temporary storage, and disposal with a gender-sensitive and inclusive strategy. Develop conclusion and recommendations for implementation. At least four (4) policies and regulations will be developed or strengthened.

Outcome 1.2: Gender-sensitive and inclusive Capacity Building activities carried out for government staff (both national and sub-national) to enhance policy enforcement and oversight.

The project will build the capacity of all entities involved in/responsible for MCMDS and MFMDS and their waste in the 4 project priority sites. This capacity building plans will include the provision of training and workshops to increase capacity on how to i) coach all level government institution in adopting better practices; ii) monitor on-going practices and improve enforcement of local regulations and standards; iii) support policy and regulatory reform to make essential steps for implementation easier, faster and less costly; iv) improve cross sectoral coordination; and v) ensure that gender dimensions are incorporated in all health sector related support. It also to ensure better coordination and exchanges of experiences and lessons-learned between national, regency and sub-district level staff, the project will also provide joint training on it.

Output 1.2.1: Coordination and cooperation mechanisms between central and local governments established and strengthened.

The project will improve the coordination among entities, improve the capacity of entities for regional and local oversight of health care activities, and make the collection, distribution, temporary storage, disposal process easier and the issuing of environmental licenses and other permits simpler, clearer and more affordable so that they are accessible and well-functioning.

Four (4) cooperation mechanism from regional areas will be established to strengthen the phase-out of mercury-containing medical devices (MCMDs) in the health sector. Each district should have its own regulation that is to be harmonized with regional regulations and for which a guidance document will be developed to support the regulation's implementation.

Activity 1.2.1: Coordinate with relevant ministries between central and local governments to support the phase-out of mercury-containing medical devices (MCMDs) in the health sector. Cooperation mechanism established and strengthened to support the phase-out of mercury-containing medical devices (MCMDs) in the health sector.

Output 1.2.2: Phase-out of use of MCMDs oversight and Hg elimination commitments enforced for health facilities.

The project will support and oversee the phase-out the use of MCMDs and Hg elimination through signing and enforcing the phase-out commitments with 10,000 health facilities across Indonesia.

Activity 1.2.2: Secure MCMDs phase-out commitments with 10,000 health facilities across Indonesia and enforce commitments made on MCMDs phase-out and Hg elimination

Output 1.2.3: All levels of Governmental institutions in charge of the regulatory systems for mercury collection, distribution, and storage capacitated in new rules and regulations.

The project will assess and improve capacity of national, provincial, regency, sub-district (if any) level policies, plans, regulations, standards and measures and strengthen the regulatory systems for mercury collection, distribution, and storage. The policy and regulatory measures will be improved to further advance mercury phase-out in the health sector for all level government institutions.

Activity 1.2.3: Review and update existing policy and regulations at all level of governments institutions on MCMDs and their wastes for collection, distribution, and temporary safe storage. Conduct assessment, formulate conclusion and recommendations, with results disseminated, and training conducted to strengthen capacities of all entities involved in/responsible for MCMDs and MFMDs and their wastes at the four (4) priority regional areas.

Output 1.2.4: Inventories of stocks of Hg wastes and MCMDs are updated and assessed and real situation of mercury use, collection and storage in Health Care Facilities (HCF) are known.

The project will assess the real amount of MCMDs across Indonesia, not only at 4 regional areas. The data will be used as the baseline information for developing strategy, action plan of MCMDs collection and storage in Health Care Facilities (HCF). The data will be used as inventory by the Government of Indonesia and will be reported to Minamata Convention.

Activity 1.2.4: Develop method and mechanism to conduct the inventory; including schedule for collection and distribution on withdrawal of the MCMDs. Disseminate the mechanism to all health sector facilities across Indonesia (state or private health facility).

Project Component 2: Technical and institutional capacities of private sector stakeholders enhanced on MCMDs phase-out and environmentally sound mercury-containing medical waste management improved.

Project Component 2 aims to enable manufactures who previously produced MCMDs to soundly manage remaining mercury, stockpiled devices and/or contaminated areas on premises contributing to the phase-out of at least 20 metric tons of mercury.

The project will build capacity of the companies in the use of mercury-free alternative technologies as well as facilitating MCMDs phase-out and environmentally sound management of MCMD waste. The project will also support the company on necessary document permit preparation. This is important as private sector could continue their business with mercury-free products that will be accepted locally and internationally. The project will also work on establishing partnership with manufacturers and health facilities on MCMDs replacement.

For private sector stakeholder on MCMDs waste management, the project will engage with waste management/processing companies by developing SOP, and BAT/BEP for collection, transportation, temporary storage and disposal of MCMDs and sound management of waste produced by MFMDs, and wastes generated in the production of MFMDs.

Outcome 2.1: MCMDs and their wastes are collected, stabilized (solidified) and disposed of in environmentally sound manner, in accordance with national regulations, international guidelines and Best Environmental Practices (BEP) and based on Gender sensitive principles.

The project will develop a national BAT/BEP and Standard Operation Procedure (SOP) which refer to national (current regulations) and international guidelines for collecting, stabilizing and disposing

of related MCMDs that will be conducted at four (4) regional areas covering all the health facilities from provincial, regency to district level for state and private health facilities according to Permenkes No. 41 Tahun 2019. The BAT/BEP and SOP will also take into consideration gender equity and inclusive participation.

During preparation of the documents it will involve the assessment of available/current data from BORANG and ASPAK system developed by the Ministry of Health making it possible to conduct further data collection. The results of data collection will set up the project baseline in terms of the amount of MCMDs to be presented to the relevant government agencies, who in turn can use this data to inform the NAP process and reporting process for the Minamata Convention. Outcomes of the assessment will help the health facilities (state and private) and private sectors/enterprises in the priority sites, to identify by degree of the willingness, readiness and capacity of health facilities, private sector/enterprises among other selection criteria.

Output 2.1.1: Gender-sensitive technical guidance/guidelines on mercury, MCMDs and their wastes for collection, distribution, and temporary safe storage are developed and established.

The Government of Indonesia has issued the Mercury Elimination Policy in the Health Sector and the Status of Mercury Medical Device Recall in Indonesia on the management of mercury-containing medical device waste regulated under PermenLHK 27/2020 which is interrelated with Permenkes 41/2019. The implementation of mercury-based medical device waste management faces several obstacles and challenges, including the availability of budget on mercury-based medical device management; there are areas that have disadvantaged medical equipment; validation of mercury medical device data and information by regions; There is no final treatment technology to manage MCMD waste. The project will prepare guidelines for implementing the regulations and upcoming withdrawal of mercury-based medical equipment including expanding the scope of socialization to all types of health facilities; optimization of funding for transportation and waste management; handling and management of broken or damaged MCMDs and continuous monitoring and evaluation.

Activity 2.1.1.1: Develop at least three (3) national technical guidance/guidelines for collection, distribution and temporary storage. The technical guidance will cover the factor of air emissions from facilities handling mercury-containing waste, including air monitoring for mercury storage and processing facilities.

Activity 2.1.1.2: Facilitate approaches that improve coordination and increase collaboration (a) within the private sectors, (b) between private and public sectors. The focus will be on partnerships that can deliver solutions on collection, distribution, and temporary safe storage of MCMDs and their wastes. The project will focus on public-private partnerships (PPPs) that have a systemic impact, involving multiple players addressing issues at the district, regency, province or national level. In collaboration with these partners, the project aims to develop and establish a technical guidance/guidelines process for collection, distribution, and temporary safe storage. At least three (3) partnership mechanisms with Private sector will be established at the national level and at the local level for collection, distribution and temporary storage.

Activity 2.1.1.3: Provide on-going capacity building, technical assistance support to ensure the further development and strengthening of collaboration and partnerships for sustainable collaboration and partnership to address future waste produced.

Output 2.1.2: Health facility management capacities to adopt mercury-free medical devises are strengthened through gender-sensitive capacity building.

Health facility personnel in particular are required to be trained on aspect of proper packaging, collecting, distributing and temporary storage of the MCMDS by following the guidance, BAT/BEP developed from Output 2.1.1. In addition, to strengthen the capacity of health facility personnel, the project will map out of the plastic recycling chain, plastic recycling areas, recycled plastic supply routes, involved entities, population and gender of workers handling PBDE-containing plastics.

Through the mapping, entities identified as handling significant quantities of POPs and PBDE-containing plastics will be primary participants in capacity building activities under Component 3 to support their implementation of BAT/BEP in their POPs and PBDE-containing plastic processing. Furthermore, for reducing waste produced from MFMDs, the project will provide training on basic technical electromedical which will conducted through Training of Trainer (ToT) mechanism. With the training models developed and trainings conducted, at least 10,000 health facilities for primary healthcare (puskesmas) level will participate in the training and at least 50,000 persons will be trained at the four (4) regional areas (30,000 female and 20,000 male).

Activity 2.1.2.1. Develop at least five (5) national training modules on collecting, packaging, distributing and temporary safe storage of the MCMDs and their waste at primary healthcare (puskesmas) level, RSUD, RSU, private health sector, private clinic, etc. involving experts from association of health sector, universities, private sector, related Ministries. The complete package of training resources will be integrated as a curriculum in project's partner such as nursing schools, medical faculties to ensure long-term sustainability and to further build the capacity of future health workers.

Activity 2.1.2.2: Develop training module for managing plastic produced from MCMDs, MFMDs and other equipment from health facility; Develop Training of Trainer (TOT) module for technical electromedical; Developing relevant trainings model to staff and medical institutions and promote knowledge and experience sharing about the replacement of MCMDs

Activity 2.1.2.3: Conduct training at 4 regional areas on collection, distribution, temporary storage, and management of plastic waste and technical electromedical.

Activity 2.1.2.4: Develop relevant researches/investigation to technically support introduction and adoption of mercury-free alternatives in the health facilities.

Output 2.1.3: Pilot plant for temporary storage from medical devices containing mercury established.

The National Research and Innovation Agency (BRIN) has made a prototype design for elemental mercury storage and mercury-based medical devices. The prototype has been tested in the structural strength laboratory at BRIN. In addition to mercury containers, BRIN has also designed a prototype of warehouse for storing mercury medical devices, it also has a monitoring system to monitor the actual number of mercury-containing medical devices (SIPAMER). The SIPAMER system allows all medical devices to be labelled with a QR code to enable monitoring the location of mercury-containing medical devices during the mercury-based medical device waste management process. This prototype technology from BRIN will be further developed by the project to establish a pilot plant for mercury temporary storage.

The mercury storage will be operated and managed by a private sector entity where the land for stationing the storage will be located at a private sector's place. In-kind legal permit for establishing the pilot plant will be provided by private sectors.

Activity 2.1.3.1: Assess potential candidates for one (1) pilot plant for temporary storage with support of experts from association of health sectors, universities, private sectors, and related Ministries. Preparing the design and technical specifications which will cover the factor of air emission from facilities handling mercury-containing waste, including air monitoring for mercury storage and processing facilities and taking into consideration gender-sensitive dimensions with support of expert from National Standard Agency and other related experts.

Activity 2.1.3.2: Procuring equipment and spare-part for mercury storage, sign Memoranda of Understanding (MOU) in partnership with private sectors.

Activity 2.1.3.3 Conduct training/capacity building on the pilot plant for up-scaling to the four (4) regional areas with involvement of the private sectors. The project will partner with local manufacturers on up-scaling to the 4 regional areas.

Output 2.1.4: Gender and Social Inclusive (GESI) awareness programme on MCMDs replacement, collection and disposal to health facilities is created and implemented.

GESI awareness program aims at achieving gender equality and drive fundamental changes in behaviors, attitudes, and norms within health care staff across Indonesia through priorities in social and cultural change. The project will evaluate programs or projects implemented to determine how successful the project is in achieving gender equity and social inclusion on MCMDs replacement, collection and disposal from health facilities across Indonesia through activities at the 4 regional areas.

The project will identify critical gaps, challenges, and opportunities for increasing organizational gender equity and also to create gender action planning for Project Components 1, 2, 3 and 4. It will recommend ways of addressing these challenges and opportunities, suggesting improvements and innovations on MCMDs replacement, collection and disposal from health facilities.

Activity 2.1.4.1: Ensure gender equity and social inclusion planning dimensions are duly considered by government agencies and private sectors, facilitate and strengthen participation and influence of women in project activities.

Activity 2.1.4.2: Develop best practices and standards on gender equity and social inclusion, to facilitate identification and problem solving, on gender issues and to promote inclusive and fair decision-making process under the project.

Project Component 3: Circular models are developed and piloted to promote and sustain the large scale replacement to mercury-free alternatives for MCMDs.

This component accelerates the transition to mercury-free healthcare by developing and piloting circular economy (CE) models. It focuses on three key outcomes: establishing technical guidelines, piloting mercury-free devices, and assessing innovative financing mechanisms. By integrating these approaches, it creates a replicable framework for eliminating mercury in healthcare, supporting environmental stewardship and social responsibility.

Outcome 3.1: Technical guidelines developed on lifecycle management of mercury-free alternatives.

Outcome 3.1 focuses on developing technical that integrate CE principles and gender-sensitive approaches to address every stage of the device lifecycle—from design and procurement to use and end-of-life disposal. By establishing standardized criteria for eco-design, socially inclusive procurement, and safe recycling practices, the guidelines aim to reduce environmental harm, enhance healthcare safety, and promote equitable access to mercury-free technologies.

Output 3.1.1: Circular models for mercury-free medical devices (MFMDs) to support MCMDs accelerated replacement assessed.

The healthcare industry is a significant contributor to waste, generating large amounts of hazardous and non-hazardous substance, including medical devices. The medical device industry contributes to waste in three main ways. Recyclable devices are often thrown away with biological waste, rather than being properly recycled. Additionally, toxic chemicals are released when devices made from PVC (Polyvinyl chloride)-based devices and from Waste Electrical and Electronic Equipment (WEEE) are disposed of. Furthermore, the increasing use of single-use devices also adds to the waste

problem, exacerbating the environmental impact of the industry.[1][6] Medical waste management has traditionally followed a linear economy model, which has led to environmental and health challenges. Transitioning to a CE offers a sustainable solution by promoting waste reduction, reuse, recycling, and proper disposal.

The process is expected to begin at healthcare facilities, where MCMDs are inventoried and categorized into broken and unbroken devices. Broken MCMDs are sent directly to a hazardous waste temporary storage facility, while unbroken ones undergo primary and secondary wrapping before being temporarily stored at the facility and then transported to a provincial depot. From there, waste management companies handle transportation and processing, dismantle the MCMDs to recover hazardous substance like mercury, and stabilize any remaining residues for safe disposal. Recyclable materials, such as metals and plastics, are sent to recycling companies, where they are processed into raw materials for use in manufacturing, thereby supporting a circular economy. This systematic approach ensures safe handling, resource recovery, and environmental protection throughout the lifecycle of MCMDs.

The circular strategy will adhere to the Product Value vs Criticality Matrix principle. This framework facilitates the visualization of trade-offs among various circular strategies. The 'Product Value', represents the economic value of a functional product, ranging from high to low; and 'Criticality', which categorizes medical devices based on the risk level they pose to human health, determined by the nature of patient contact. Applying this matrix, devices such as thermometers and blood pressure monitors, that are focus of this project are classified as medium-value products with non-critical risk levels. Based on this classification, it is recommended that these medical devices are suitable candidates for recycling, aligning with CE principles[2][7].

A circular business model (CBM) for MFMDs is expected to emphasize sustainability by integrating design for recyclability, reuse, and closed-loop production across the device lifecycle. Manufacturers produce MFMDs with modular, recyclable materials and collaborate with distributors and suppliers to deliver devices to healthcare facilities. Non-functional or end-of-life devices are sent to maintenance facilities for repair or refurbishment; those beyond repair enter a waste management system where they are dismantled into hazardous and non-hazardous components. Non-hazardous substances are recycled into new production, while hazardous waste is processed and disposed of safely. The model promotes education and training for proper device management. This approach minimizes waste, reduces reliance on virgin materials, and balances economic and environmental goals. Further, this project will assess a suitable circular business model that suits the SIRENE project.

Activity 3.1.1.1: Develop and assess a withdrawal scheme for mercury-containing medical devices (MCMDs). This activity focuses on establishing a structured withdrawal scheme to phase out MCMDs while ensuring their safe management throughout the disposal process. A lifecycle management guidance document will be developed to systematize protocols for collecting obsolete MCMDs, dismantling them to isolate hazardous components elemental mercury (Hg^0), and managing waste recovery. Key steps include: (1) collection and dismantling, where safe protocols will be established for gathering devices and separating mercury and other toxic materials; (2) hazardous waste management, which involves stabilizing and solidifying mercury waste to prevent environmental contamination; and (3) material recovery, where uncontaminated materials (e.g., plastics, metals) will be recycled and reintegrated into production cycles, either for new MFMDs or other products (upcycle/downcycle). This approach ensures compliance with environmental standards while supporting the transition to mercury-free healthcare systems.

Activity 3.1.1.2: Develop and assess a circular economy model for mercury-free medical devices (MFMDs). This model is a circular business model (CBM), as a continuation from withdrawal scheme of MCMDs. The proposed CBM is aimed to accelerate the replacement of MCMDs. The CBM will be developed in consultation with the Ministry of Health (MoH), Ministry of Environment (MoE), healthcare facilities, electromedical technicians (e.g., medical device maintenance staff), waste management and recycling companies, and medical device supply chain actors (manufacturers, distributors, suppliers) and CSOs on each regional site. It will be customized to align with Indonesia's healthcare infrastructure and regulatory framework, ensuring practicality, scalability, and effective implementation of circularity principles.

Output 3.1.2: Green and gender-sensitive Procurement and Technical Guidelines for circular management of mercury-free medical devices developed.

This output will facilitate stakeholder consultations to develop comprehensive Green and Gender-Sensitive Procurement and Technical Guidelines, supporting the circular management of mercury-free medical devices, and guiding the phased introduction of these devices in healthcare facilities. Based on this output, there are 2 identified activities:

Activity 3.1.2.1: Development of Green and Gender-Sensitive Procurement Guidelines. The Green and Gender-Sensitive Procurement Guidelines aim to establish clear criteria and processes for sourcing MFMDs that embody circular economy principles and promote gender equity. These guidelines encompass three key components: (i) Environmental Criteria, which outline standards for eco-design, such as recyclability; (ii) Social Criteria, which prioritize accessibility, affordability, and safety for marginalized groups, including women and rural communities; and (iii) Supplier Requirements, which set expectations for manufacturers, including take-back programs. Furthermore, the guidelines incorporate Gender Integration strategies to ensure women's participation in procurement decisions and support women-owned businesses.

Activity 3.1.2.2: Development of Technical Guidelines for Circular Management of MFMDs. To ensure the environmentally and socially responsible management of MFMDs, the project will develop Technical Guidelines for the sustainable management of targeted medical devices (e.g. thermometers and sphygmomanometers), from use to disposal. These guidelines will provide actionable protocols for every stage, starting with design and manufacturing. To make sure that circularity concept being implemented, the project require that the medical devices should meet requirements for durable, repairable, and recyclable devices. This project also emphasize the importance of gender-sensitive training for healthcare workers, equipping them with safety protocols and maintenance procedures that promote their health and safety. At the end-of-life stage, the suggested guidelines outline recycling and disposal strategies, such as take-back systems and material recovery, to minimize waste and maximize environmental benefits.

Outcome 3.2: Mercury-free medical devices piloted in selected health care facilities, collection and recycling guidelines developed for end-of-life products and disposal technologies/strategies piloted taking into consideration gender and social inclusive approaches.

Output 3.2.1: Medical devices manufacturers, distributors, and suppliers had incorporated circular economy principles on disposal of Hg-based and electronic-based devices in their CSRs and/or other relevant internal practices, Policies, or strategies.

The transition to a circular economy is critical for addressing the environmental and health risks posed by MCMDs and MFMDs. By prioritizing resource efficiency, waste reduction, and closed-loop systems, stakeholders across the medical device lifecycle, include manufacturers, distributors, and suppliers, these parties are responsible to support sustainability in medical device industries. This effort integrates circular principles such as designing for recyclability, refurbishing devices, and safely managing hazardous substance, while aligning with corporate social responsibility (CSR) goals and

regulatory requirements. CSR plays a pivotal role in mediating the relationship between green investment, green financing, and sustainable business performance. Investors are increasingly prioritizing companies that emphasize sustainability, driving demand for green financing and shifting investment patterns towards more sustainable industries[3][8].

Activity 3.2.1.1: Integration of circular economy principles into corporate practices and adoption of circular design and production practices. This activity focuses on integrating circular economy principles into corporate practices and manufacturing processes, ensuring the adoption of circular design and production practices. Key actions include:

· Redesigning Medical Devices and Operational Processes: Aligning product design and operational processes with circularity, using durable, repairable, and recyclable materials to extend devices lifespan[4][9] and reduce waste.

· Product Design for Circularity: Designing devices for easy disassembly, using materials that are durable, repairable, and recyclable. In addition to redesigning materials and durability, the project will also ensure compliance with the RoHS2 directive[5][10], which regulates the use of hazardous substances in electrical and electronic equipment. Ensuring adherence to the RoHS2 directive and POPs content limits for MFMDs, minimizing environmental footprints.

· Hazardous Material Management and Recycling Systems: Safely collecting and recycling 100 tonnes of POP-contaminated plastics (containing 5 tonnes of PBDEs) and 20,000 tonnes of recyclable plastics/metals over the 5-year project period.

Specialized waste management firms will handle recycling, conserving resources and preventing emissions from open burning. Furthermore, CSR programs will drive green financing and sustainable business performance, incentivizing investments in emissions reduction, and eco-friendly production.

Activity 3.2.1.2: CSR-Driven Education and Stakeholder Training for Sustainable MFMD Management. This activity supports distributors and suppliers in developing and implementing comprehensive education and training programs, integrated into CSR initiatives. The programs focus on promoting environmentally responsible handling, maintenance, and disposal practices for MFMDs, ensuring a safer and more sustainable ecosystem. Key actions as mentioned follow are aimed to enhance stakeholders' awareness and capacity for sustainable MFMD management, reducing environmental impacts and promoting a circular economy.

- Training Programs: Developing and providing gender-sensitive guidelines and training materials, targeting 100,000 beneficiaries (50% women, 50% men), including healthcare professionals biomedical technicians, and CSOs in 4 regional areas.

- Partnerships: Collaborating with at least one distributor and one supplier to pilot training programs in healthcare facilities, demonstrating practical application of circular economy principles, and also involving CSOs on each regional area.

- After-Sales Support: Leveraging CSR programs to provide maintenance services, ensure long-term device sustainability, and promote sustainable end-of-life management practices, collaborated with CSOs on each regional area.

Output 3.2.2: One (1) pilot at the laboratory scale for mercury stabilization and solidification technology are implemented.

The Government of Indonesia has some options to establish a national mercury reference laboratory which are P3KLL laboratory, BRIN, and PT. Waste International. Those labs are able to analyze mercury in environmental samples. While it currently lacks dedicated equipment for mercury stabilization and solidification, the laboratory has the potential to serve as a scalable pilot plant. This would enhance its capacity and support the development of similar facilities in four additional locations, leveraging existing infrastructure for broader impact.

The capability of this lab will be improved through this project. The project will provide important knowledge, lessons, and technology transfer capabilities to the designated laboratory and its potential local partner institutions for the scale up and strengthening of their capacities to operate larger scale mercury stabilization and solidification equipment/facilities to strengthen in four potential regional areas.

Activity 3.2.2: Upgrading Laboratory Infrastructure and Capabilities. This activity focuses on transforming the P3KLL laboratory into a pilot plant for mercury stabilization and solidification. Identified actions as follow:

- Technical training visit: The project will facilitate two training sessions in Japan and Australia. In Japan, participants will visit the Nomura Kohsan Itomuka Plant in Hokkaido to study stabilization and solidification process[6][11]. This technology converts mercury into stable mercury sulfide (HgS) via mechanical-chemical reactions. The HgS is further solidified with modified sulfur, producing a dense, durable, and environmentally resistant material suitable for safe disposal in landfills or underground mines. While in Australia, participants will observe operations at the BMT Australia Mercury Treatment Facility in Kwinana Beach, Western Australia. Operational since December 2019[7][12], this facility uses vacuum distillation to stabilize mercury into cinnabar.
- Infrastructure Enhancement: Establish a qualified laboratory equipped with advanced mercury stabilization and solidification technologies.
- Scalable Model Development: Building capacity to replicate the pilot in four additional locations, using lessons learned to strengthen national mercury waste management systems.

Output 3.2.3: Hg stabilization and solidification strategies and solutions upscaled to four (4) locations in partnership with Public-Private selected institutions.

Mercury (Hg) stabilization and solidification strategies and solutions will be upscaled in total four locations through partnerships between selected public and private institutions. The mercury processing technology developed in the previous stage (output 3.2.2) will be scaled up and applied in these four locations. The project will collaborate with BRIN to develop and implement effective Hg stabilization and solidification strategies.

Activity 3.2.3.1: Establishment of public-private partnerships and infrastructure scaling. This activity focuses on formalizing partnerships and deploying technology across four locations. Key components include:

- Partnership Frameworks: Drafting MoUs between the MoE and private entities, including PT Wastec International, to govern roles in mercury collection, stabilization, and landfill operation s[8][13].

- Site Selection and Infrastructure: Establishing facilities in four regional areas, namely Regional 1 represented in Medan, Regional 2 represented in Jakarta, Regional 3 represented in Surabaya and Regional 4 represented in Makassar. Those locations were selected for their strategic geographic coverage, existing infrastructure, and cost effective to serve neighboring cities.
- Technology Deployment: Scaling up stabilization/solidification methods (developed in Output 3.2.2) with technical support from the BRIN.

Activity 3.2.3.2: Operational implementation and capacity strengthening. This activity ensures the effective operationalization of mercury waste management systems. Main steps to achieve this target include:

- Private Sector Engagement by Involving CSOs and private institutions in: (i) Mercury Collection; (ii) Equipment Operation: Training staff to manage stabilization/solidification processes; (iii) Landfill Compliance: Ensuring stabilized mercury meets safety standards for disposal.
- Capacity Building: Conducting workshops for public and private stakeholders on technology operation, safety protocols, and regulatory compliance.
- Monitoring and Evaluation: Developing metrics with BRIN to track environmental impact, waste diversion rates, and operational efficiency across the four locations.

Outcome 3.3: Financing mechanisms to support replication and scale up of MCMDs replacement in collaboration with local fund providers/banks assessed. **This outcome focuses** This outcome focuses on establishing inclusive financing mechanisms that address systemic barriers and incentivize healthcare facilities to adopt safer technologies. This is to ensure the sustainable transition from MCMDs to MFMDs.

Output 3.3.1: Development of gender-sensitive financing mechanisms that explored in collaboration with local fund providers/banks and new/revamped finance solutions proposed.

The project will collaborate with local banks, microfinance institutions, and lenders to design and implement gender-sensitive financing mechanisms that prioritize women-led businesses/healthcare facilities and cooperatives in the healthcare and waste management sectors. These mechanisms will facilitate affordable and accessible loans for the procurement of mercury-free medical devices and related investments.

Activity 3.3.1: Design of Gender-Sensitive Financial Products. This activity involves collaborating with local banks, microfinance institutions, and green funds to design and offer tailored financial mechanisms, such as lower interest rates, subsidized loans, and gender-sensitive financial products, to incentivize healthcare facilities, particularly those led by women, to adopt circular economy practices, including the use of recyclable MFMDs and take-back programs. CSOs on each regional area will be involved on this process.

Project Component 4: Project results monitored, documented, and shared

Project Component 4 will strengthen the monitoring and evaluation capacity on the achievement of project results and ensure lessons learned and best practices are captured, documented and disseminated to facilitate knowledge sharing. To achieve optimum outcomes, the project will perform several activates consisting of assessing and applying Social and Environmental Screening Procedures and enhancing gender equality and social inclus9on (GESI) to accelerate MCMD replacement, sound management of mercury and waste, and adoption of MFMDs in the health sector.

Outcome 4.1: Monitoring and evaluation activities carried out as per GEF requirements.

Output 4.1.1: Assessed and applied Social and Environmental Screening Procedure (SESP).

In addition to a pre-SESP, a full SESP was developed at the PPG stage, the experience and knowledge gained at the SESP development stage will take into full account in the monitoring and application of the SESP and risks management during project implementation.

Activity 4.1.1: Conduct on-going monitoring of the risks identified in the SESP and undertake risks management, with support from the safeguard expert.

Output 4.1.2: Gender Action Plan and awareness raising activities on collection, transport, storage and disposal of mercury and mercury waste.

Activity 4.1.2: Conduct gender-sensitive training and implement Gender Action Plan and awareness-raising training activities on collection, distribution, transport, temporary storage and disposal of mercury and mercury waste, ensuring gender dimension and social inclusion.

Output 4.1.3: Periodic monitoring, and reporting, Project Implementation Reports (PIR), Mid-Term Review and Terminal Evaluation.

Activity 4.1.3: Develop gender-sensitive Monitoring and Evaluation (M&E) Plan for continuous and periodic progress review for each activity, drawing from the Project's M&E Plan. Perform all UNDP & GEF required monitoring activities ensuring timely submission of required reports with high quality standards.

Outcome 4.2: Learning and knowledge sharing activities carried out and knowledge products developed and shared (including lessons-learned from the perspective of gender-equality and social inclusion implementation).

Output 4.2.1: Lessons-learned and best practices for knowledge management are collected and shared at national and international levels.

Activity 4.2.1: Develop mechanism to capture lessons-learned and best practices, develop knowledge-sharing mechanism strategy and communication platform to promote exchange of knowledge and experience.

Through implementation of the project activities indicted above, to achieve the expected Project Outputs, Outcomes and the Project Objective, the Project also contributes to targets 7, 14 and 222 of the Kunming Montreal Global Biodiversity Framework (GBF):

Target 7 Reduce Pollution to Levels That Are Not Harmful to Biodiversity. The project results generated will include the reduction of

The project aims to achieve reduction of 20 metric tons of mercury from Indonesia's health sector, avoidance of 20 g TEQ/year of UPOPs emission, and avoidance of 20,000 metric tons of CO2e emissions, that are elements in taking actions towards achieving this target, i.e. Risks from pesticides and highly hazardous chemicals, and Reduce pollutions risks and negative impact of pollution. Furthermore, the project will result in 200 mt of POP-containing plastic being collected and disposed safely containing 5 tons of PBDEs, and20,000 tons of recyclable plastic and materials collected and recycled, complying with element of Preventing, reducing and working towards eliminating plastic pollution.

Target 14 Integrate Biodiversity in Decision-Making at Every Level.

The SIRENE Project will meet one of tis element of Policies, regulations, processes, strategies, assessments and national accounting, in that policies improved or established under this project, will also take into account of biodiversity by decision-makers. This project will also facilitate decision-making processes at All of government and sectors, in particular, the health sector.

Target 22 Ensure Participation in Decision-Making and Access to Justice and Information Related to Biodiversity for all.

The SIRENE Project encourages and promotes the full, equitable, inclusive, effective and gender-responsive representation and participation in decision-making, and access to justice and information related to environment and biodiversity by indigenous peoples and local communities through management measures to mitigate risks identified in the SESP, respecting their cultures and their rights over lands, territories, resources, and traditional knowledge, as well as by women and girls, children and youth, and persons with disabilities and ensure the full protection of environmental human rights defenders. The elements of this target: Participation of indigenous peoples and local communities, Access to justice and information, Rights of indigenous peoples and local communities over their cultures, lands, territories, resources and traditional knowledge, Rights of women and girls, children and youth, and persons with disabilities, and Full protection of environmental human rights defenders, are fully envisioned in the project activities of the SIRENE Project.

[1] Guzzo, D., Carvalho, M. M., Balkenende, R., & Mascarenhas, J. (2020). Circular business models in the medical device industry: Paths towards sustainable healthcare. Resources, Conservation & Recycling, 160, 104904. https://doi.org/10.1016/j.resconrec.2020.104904

[2] Towards design strategies for circular medical products. Kane, G.M., Bakker, C.A., Balkenende, A.R., 2017. Towards design strategies for circular medical products. Resour. Conserv. Recycl. 0–1. https://doi.org/10.1016/j.resconrec.2017.07.030

[3] Ye, J.; Dela, E. The Effect of Green Investment and Green Financing on Sustainable Business Performance of Foreign Chemical Industries Operating in Indonesia: The Mediating Role of Corporate Social Responsibility. Sustainability 2023, 15, 11218. https://doi.org/10.3390/su151411218

[4] According to healthcare personnel at healthcare facilities, lifespan of MFMDs are shorter compared to MCMDs. For example, digital thermometers have an average lifespan of only 2-3 years, while digital blood pressure monitors last around 5 years. Assuming a one-year end-of-life period for MFMDs, the estimated annual waste generation from 39,061 healthcare facilities in Indonesia is approximately 731,361 units per year, comprising digital thermometers and blood pressure monitors

[5] The RoHS2 Directive, requires that a company eliminate the use of heavy metals and flame retardants that can have a negative impact on workers. In order to comply with RoHS2 Directive, a part must also certify that it does not contain more than trace amounts of all six 'banned' substances. This is especially important for printed circuit boards, which may use one of the two restricted substances as a flame retardant. URL: https://mcdcg.com/blog/rohsweee/comply-with-rohs2-directive/

[6] Mercury Technology Bulletin Series. Stabilization and Solidification of Mercury. URL: https://www.env.go.jp/en/chemi/mercury/mcm/mtbs-en-20_009.pdf

[7] BMT Asia - State-of-the-art mercury treatment facility opened URL: https://bmt-mercury.com/asia/blog/state-of-the-art-mercury-treatment-facility-opened/

[8] PT Wastec International is prioritized due to its proven track record in hazardous waste management, including mercury-contaminated waste from Indonesia's oil and gas sector.

Institutional Arrangement and Coordination with Ongoing Initiatives and Project.

Please describe the Institutional Arrangements for the execution of this project, including financial management and procurement. If possible, please summarize the flow of funds (diagram), accountabilities for project management and financial reporting (organogram), including audit, and staffing plans. (max. 500 words, approximately 1 page)

The **Implementing Partner (IP)** for this project is the Ministry of Environment (MoE or KLH). The Implementing Partner is the entity to which the UNDP Administrator has entrusted the implementation of UNDP assistance specified in this signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of outputs, as set forth in this document. The Implementing Partner is responsible for executing this project. Specific tasks include:

- Project planning, coordination, management, monitoring, evaluation and reporting. This includes providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used and generated by the project supports national systems.

- Overseeing the management of project risks as included in this project document and new risks that may emerge during project implementation.
- Procurement of goods and services, including human resources.
- Financial management, including overseeing financial expenditures against project budgets.
- Approving and signing the multiyear workplan.
- Approving and signing the combined delivery report at the end of the year; and,
- Signing the financial report or the funding authorization and certificate of expenditures.

UNDP: UNDP is accountable to the GEF for the implementation of this project. This includes overseeing project execution undertaken by the Implementing Partner to ensure that the project is being carried out in accordance with UNDP and GEF policies and procedures and the standards and provisions outlined in the Delegation of Authority (DOA) letter for this project. **The UNDP GEF Executive Coordinator, in consultation with UNDP Bureaus and the Implementing Partner, retains the right to revoke the project DOA, suspend or cancel this GEF project.** UNDP is responsible for the Project Assurance function in the project governance structure and presents to the Project Board and attends Project Board meetings as a non-voting member.

The project organization structure is applied for **National Implementation Modality (NIM) for National Project**

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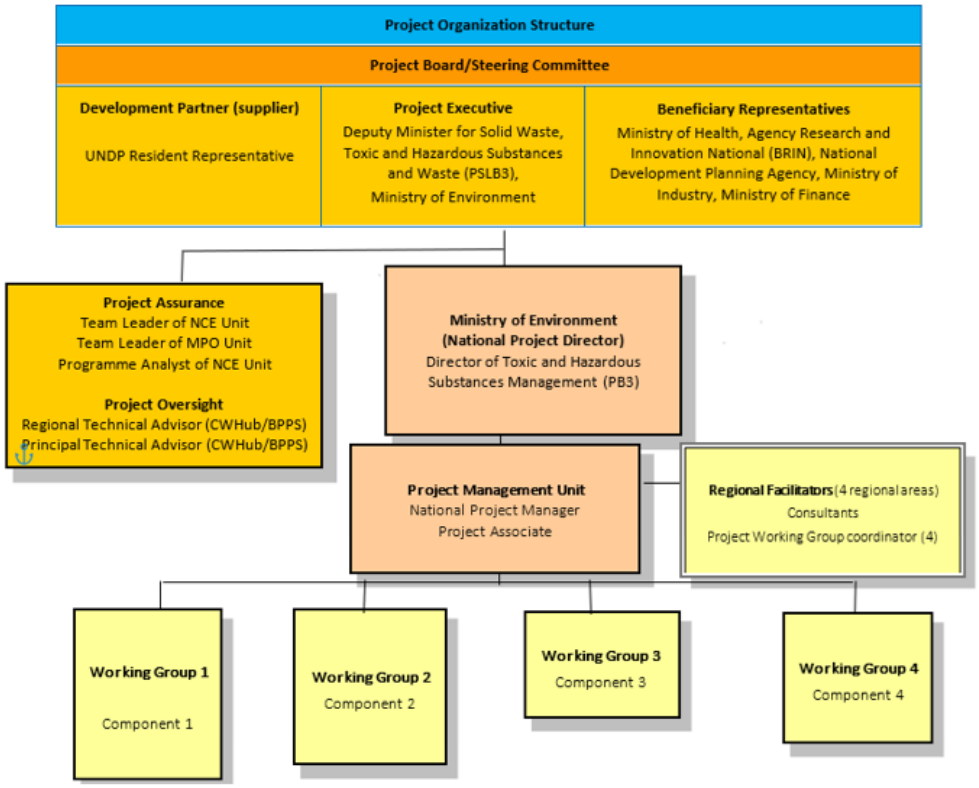
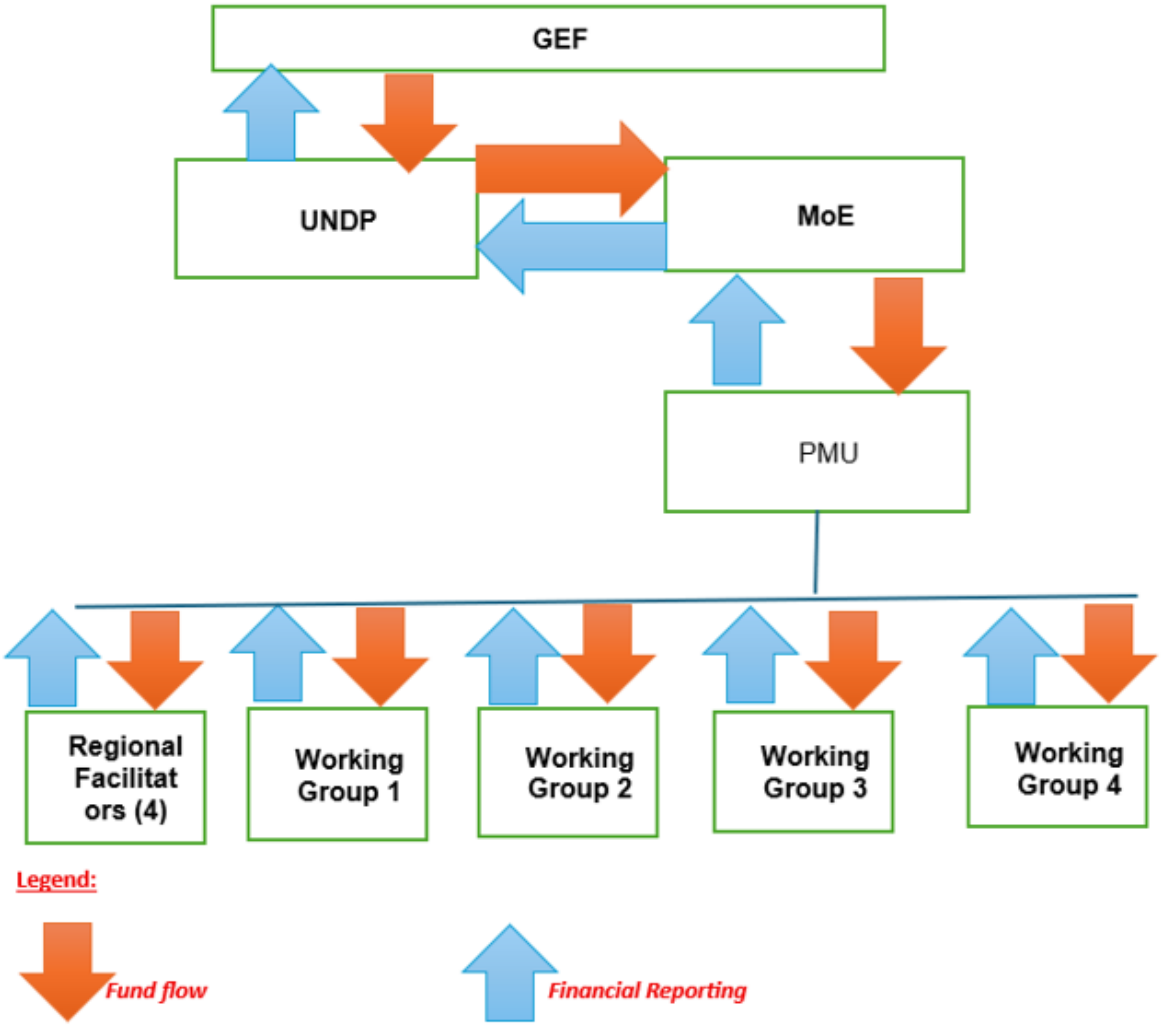


The Project Fund Flow: Diagram

The **Project Fund Flow: Diagram**



Roles and Responsibilities of the Project Organization Structure:

All UNDP projects must be governed by a multi-stakeholder board or committee established to review performance based on monitoring and evaluation, and implementation issues to ensure quality delivery of results. The Project Board (also called the Project Steering Committee) is the most senior, dedicated oversight body for a project. The two main (mandatory) roles of the project board are as follows:

1) High-level oversight of the execution of the project by the Implementing Partner (as explained in the 'Provide Oversight' section of the POPP). This is the primary function of the project board and includes annual (and as-needed) assessments of any major risks to the project, and decisions/agreements on any management actions or remedial measures to address them effectively. The Project Board reviews evidence of project performance based on monitoring, evaluation and reporting, including progress reports, evaluations, risk logs and the combined delivery report. The Project Board is responsible for taking corrective action as needed to ensure the project achieves the desired results.

2) Approval of strategic project execution decisions of the Implementing Partner with a view to assess and manage risks, monitor and ensure the overall achievement of projected results

and impacts and ensure long term sustainability of project execution decisions of the Implementing Partner (as explained in the 'Manage Change' section of the POPP).

Specific responsibilities of the Project Board include:

Consensus decision making:

- The project board provides overall guidance and direction to the project, ensuring it remains within any specified constraints, and providing overall oversight of the project implementation.

- Review project performance based on monitoring, evaluation and reporting, including progress reports, risk logs and the combined delivery report;

- The project board is responsible for making management decisions by consensus.

- In order to ensure UNDP's ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition.

- In case consensus cannot be reached within the Board, the UNDP representative on the board will mediate to find consensus and, if this cannot be found, will take the final decision to ensure project implementation is not unduly delayed.

Oversee project execution:

- Agree on project manager's tolerances as required, within the parameters outlined in the project document, and provide direction and advice for exceptional situations when the project manager's tolerances are exceeded.

- Appraise annual work plans prepared by the Implementing Partner for the Project; review combined delivery reports prior to certification by the implementing partner.

- Address any high-level project issues as raised by the project manager and project assurance;

- Advise on major and minor amendments to the project within the parameters set by UNDP and the donor and refer such proposed major and minor amendments to the UNDP BPPS Nature, Climate and Energy Executive Coordinator (and the GEF, as required by GEF policies);

- Provide high-level direction and recommendations to the project management unit to ensure that the agreed deliverables are produced satisfactorily and according to plans.

- Track and monitor co-financed activities and realisation of co-financing amounts of this project.

- Approve the Inception Report, GEF annual project implementation reports, mid-term review and terminal evaluation reports.

- Ensure commitment of human resources to support project implementation, arbitrating any issues within the project.

Risk Management:

- Provide guidance on evolving or materialized project risks and agree on possible mitigation and management actions to address specific risks.

- Review and update the project risk register and associated management plans based on the information prepared by the Implementing Partner. This includes risks related that can be directly managed by this project, as well as contextual risks that may affect project delivery or continued UNDP compliance and reputation but are outside of the control of the project. For example, social and environmental risks associated with co-financed activities or activities taking place in the project's area of influence that have implications for the project.

- Address project-level grievances.

Coordination:

- Ensure coordination between various donor and government-funded projects and programmes.

- Ensure coordination with various government agencies and their participation in project activities

Composition of the Project Board: The composition of the Project Board must include individuals assigned to the following three roles:

a. Project Executive: This is an individual who represents ownership of the project and chairs (or co-chairs) the Project Board. The Executive usually is the senior national counterpart for nationally implemented projects (typically from the same entity as the Implementing Partner), and it must be UNDP for projects that are direct implementation (DIM). In exceptional cases, two individuals from different entities can co-share this role and/or co-chair the Project Board. If the project executive co-chairs the project board with representatives of another category, it typically does so with a development partner representative. The Project Executive is. The Project Executive is the Deputy PSLB3 of MoE (KLH).

b. Beneficiary Representative: Individuals or groups representing the interests of those who will ultimately benefit from the project. Their primary function within the board is to ensure the realization of project results from the perspective of project beneficiaries. Civil society representative(s) will fulfil this role. The Beneficiary Representative role is held by a representative of the government or civil society. The Beneficiary Representative is: Ministry of Health (KEMENKES), National Research and Innovation Agency (BRIN), Ministry of Finance (KEMENKEU), National Development Planning Agency (BAPPENAS), Ministry of Industry (KEMENPERIN), and Ministry of Home Affairs (KEMENDAGRI).

c. Development Partner (Supplier): is an individual or group representing the interests of the parties concerned which provide funding and/or technical expertise to the project (designing, developing, facilitating, procuring, implementing). The Development Partner's primary function within the Board is to provide guidance regarding the technical feasibility of the project. The Development Partner's role must have the authority to commit or acquire supplier resources required. If necessary, more than one person may be required for this role. Typically, the

implementing partner, UNDP and/or donor(s) would be represented under this role. The Development Partner's is: The United Nations Development Programme (UNDP).

Project Assurance: Project assurance is the responsibility of each project board member; however, UNDP has a distinct assurance role for all UNDP projects in carrying out objective and independent project oversight and monitoring functions. UNDP performs quality assurance and supports the Project Board (and Project Management Unit) by carrying out objective and independent project oversight and monitoring functions, including compliance with the risk management and social and environmental standards of UNDP. The Project Board cannot delegate any of its quality assurance responsibilities to the Project Manager. Project assurance is totally independent of project execution.

A designated representative of UNDP playing the project assurance role is expected to attend all board meetings and support board processes as a non-voting representative. It should be noted that while in certain cases UNDP's project assurance role across the project may encompass activities happening at several levels (e.g. global, regional), at least one UNDP representative playing that function must, as part of their duties, specifically attend board meeting and provide board members with the required documentation required to perform their duties. The UNDP representative playing the main project assurance function is/are the **Monitoring and Evaluation Officers of the MPO/Country Office.**

Project Management – Execution of the Project:

Project Director: The Director of Toxic and Hazardous Substances Management (PB3), Ministry of Environment will serve as the National Director of the Project. Among the responsibilities of the Implementation Partner there are: the planning and general management of the activities of the Project, the presentation of reports and accounting, the supervision of the other parties responsible for the implementation and the administration and audit of the use of project resources. Therefore, the **National Project Director** is responsible to the Project Board for:

a) The project's management and results, the achievement of its objectives, the use of its resources and the application of the rules and procedures.

b) The custody and proper use of the project inputs, and will provide, in accordance with the instructions in this document, the necessary advice on its use.

c) The presentation of financial reports and responsible for the custody and appropriate use of project funds.

d) The supervision of the responsible parties (if applicable).

The following activities are responsibility of the National Director of the Project and cannot be delegated in any case: a) Signature of the Project Document and its respective revisions, b) Signature/Conformity of the Combined Statement of Expenses (CDR) and Financial Reports (FACE), c) Performance the opening and management of the project's bank account (if applicable).

The National Project Director may designate a Coordinator who will be responsible for project management. The Coordinator will report to the National Director for the coordination, management, planning and supervision of the work teams and preparation of reports.

Project Management Unit (PMU), consist of National Project Manager (NPM) and a project team. The Project Manager (PM) (also called project coordinator) is the senior most representative of the Project Management Unit (PMU) and is responsible for the overall day-to-day management of the project on behalf of the Implementing Partner, including the mobilization of all project inputs, supervision over project staff, responsible parties, consultants and sub-contractors. The project

manager typically presents key deliverables and documents to the board for their review and approval, including progress reports, annual work plans, adjustments to tolerance levels and risk registers.

A designated representative of the PMU is expected to attend all board meetings and support board processes as a non-voting representative. The primary PMU representative attending board meetings **is the Project Manager.**

The project will establish Working Group Coordinator (WGCs) and Regional Facilitators (RFs) ensure coordination among the stakeholders and are an opportunity to represent the voice of stakeholders on topics and the implementation of project activities in line with the agreed project plan and approach. In addition, the Working Group Coordinators (WGCs) will ensure the implementation of all project activities assigned to national consultants within their respective project component. Focus of the Working Groups and the Working Group Coordinators (Technical Associate) are indicated below.

Working Group (WG)	Scope of operation
WGC 1	
Policy and regulatory frameworks strengthened to support the phase-out of mercury containing medical devices (MCMDs) in the health sector.	• Policy, Regulation and Institutional Setup for MCMDs phasing out action in Indonesia related to medical waste management; circular model of replacement to mercury-free alternatives for MCMDs; to monitoring and sustainability of project results (collection, distribution, temporary storage, and disposal) with including gender strategy and inclusive. • Effective interdepartmental and interagency cooperation leads to greater certainty, predictability, transparency, efficiency and accountability of government action which promotes elimination of mercury at health sector and public confidence in government.
WGC 2	
Technical and institutional capacities of private sector stakeholders enhanced on MCMDs phase-out and environmentally sound mercury-containing medical waste management improved	• Training, public awareness and policy review of private sector capacities on environmentally sound mercury-containing medical waste management (collection, distribution, temporary storage, and disposal) with including gender mainstreaming. • Institutional development of private sector: strengthening the existing institutional setup. • Database and network enhancement for medical waste management. • MCMDs project pilots (Technical Assistant, Feasibility Study, and engineering assessment) • Capacity development and Institutional Arrangement to apply MFMDs processing and awareness raising on mercury impacts on human health, environment.
WGC 3	
Circular models are developed and piloted to promote and sustain the large-scale replacement to mercury-free alternatives for MCMDs	• Training, public awareness and policy review on promoting MFMDs base investment, capacity building, training for setting up circular models (collection, distribution, temporary storage, and disposal) with including gender mainstreaming. • Public-Private partnership for setting up circular models • Establishing 1 pilot plant and scale up at 4 regional areas. • Benefit sharing system on circular models to create large-scale replacement to mercury-free alternatives for MCMDs supply chain. • Tools that attract private sectors such as market-based mechanisms - green/fair market, supply chain, shariah certification, bonds, etc. • Corporate Social Responsibility for setting up alternative circular models.
WGC 4	
Project results monitored, documented, and shared	• Training, public awareness and policy review on promoting MFMDs base investment, capacity building, training for setting up circular models (collection, distribution, temporary storage, and disposal) with including gender mainstreaming. • Public-Private partnership for setting up circular models • Establishing 1 pilot plant and scale up at 4 regional areas. • Benefit sharing system on circular models to create large-scale replacement to mercury-free alternatives for MCMDs supply chain. • Tools that attract private sectors such as market-based mechanisms - green/fair market, supply chain, shariah certification, bonds, etc. • Corporate Social Responsibility for setting up alternative circular models.

Coordination and Partnerships of SIRENE with Other Relevant Projects

The success of the SIRENE project relies heavily on dynamic, strategic, and multi-sectoral partnerships involving government agencies, non-governmental organizations, and local communities. At the heart of the project's approach is the identification and engagement of key stakeholders to establish a collaborative network that can drive transformative change.

To this end, the Project will be implemented in close coordination with other relevant programs and initiatives across the country. This collaborative approach aims to:

1. **Optimize Resources** – by leveraging funding, technical expertise, and human resources, minimizing duplication of efforts, and enabling co-financing opportunities;
2. **Facilitate Knowledge and Experience Sharing** – to enhance the effectiveness and innovation of all involved initiatives through mutual learning and exchange of best practices;
3. **Align and Amplify Objectives** – by fostering synergy among projects with shared goals, thereby increasing their collective impact and scalability.

Specifically, the project will establish direct collaboration with the following initiatives in Indonesia:

Key partner projects for SIRENE project 34 -

Nu	Project/Program	Objectives/Focus	Synergy of SIRENE with the other projects
1.	**Health Governance Initiative (HEART)** project by UNDP Indonesia is supported by a diverse group of donors: a. Government of Indonesia b. Gavi, the Vaccine Alliance c. Australian Department of Foreign Affairs and Trade (DFAT) d. Government of Japan e. United Nations Development Programme (UNDP) f. Croda Foundation g. Aisyiyah Indonesia HEART is not a single project but a strategic program that bundles these different initiatives to holistically address challenges in health governance and help Indonesia achieve its health-related Sustainable Development Goals.	HEART Project aims to strengthen health governance and improve access to quality healthcare services, with a focus on achieving universal health coverage by (a) Addressing health inequities through capacity building, gender-sensitive approaches, and innovative solutions; (b) Collaborating with the Ministry of Health, Global Fund programs, UNAIDS, and UN Women; and Supporting genomic surveillance to detect and monitor pathogen variants, enhancing pandemic preparedness.	Please see below in each project under the coordination of HEART project.

	Key projects that are parts of HEART initiative are: a. SMILE. b. Biomedical and Genomic Science Initiative. c. Malaria Elimination Initiative. d. Climate Resilient Health Systems. e. Covid-19 Response and Beyond.		
2.	**Sistem Monitoring Inventaris Logistik Kesehatan secara Elektronik (SMILE):** The UNDP Indonesia's SMILE project has multiple donors and partners. The primary donors: a. Gavi, the Vaccine Alliance: Gavi provided financial support for the enhancement and expansion of the SMILE system, particularly for routine immunization and its role in the COVID-19 vaccination drive. b. The Government of Japan: Funding from the Government of Japan has been provided through the Japanese Supplementary Budget (JSB) to support the development and implementation of the SMILE initiative. c. The Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund): The Global Fund has provided significant funding to enhance the SMILE e-LMIS and expand its use to manage logistics for programs related to HIV/AIDS, Tuberculosis, and Malaria. d. The project is also part of the Access and Delivery Partnership (ADP) - led by UNDP - in collaboration with the World Health Organization (WHO), and other partners.	This is a flagship digital solution developed in partnership with the Ministry of Health. SMILE aims to improve the management of medical supplies, including vaccines, medicines for diseases like HIV/AIDS, Tuberculosis, and Malaria, and even medical waste. The system provides real-time data on stock levels, helps prevent shortages and overstocking, and has been scaled up to cover thousands of health facilities across Indonesia.	SMILE project has a direct and significant synergy with Indonesia's efforts to reduce mercury in the health sector, particularly through a specialized module known as ME-SMILE (Medical Waste in SMILE). While the GEF-funded project is called 'Strengthening Indonesia's Reduction and Elimination in the Distribution and Supply Chain of Mercury from National Health' (GEF SIRENE), a key component of the SMILE project directly addresses the tracking and management of medical waste, including mercury-containing devices. ME-SMILE is an extension of the broader SMILE application that focuses specifically on medical waste management. It provides a digital solution for tracking waste from its point of origin in a healthcare facility to its final disposal. This aligns perfectly with the goals of mercury reduction efforts. Here's how they work together: Tracking Mercury-Containing Devices: The GEF SIRENE project aims to eliminate mercury from the healthcare supply chain, which includes phasing out devices like mercury thermometers and sphygmomanometers. As these devices are replaced, they become hazardous waste that must be managed and disposed of safely. ME-

			SMILE provides the digital platform to monitor and track these items throughout the disposal process. Data and Accountability: A major challenge in managing hazardous waste is ensuring accountability. ME-SMILE provides a real-time, transparent system that records the generation, collection, and destruction of medical waste. This data is critical for monitoring compliance with national and international regulations, such as those of the Minamata Convention, which Indonesia has ratified. Safe Disposal and Inventory Management: By integrating with the SMILE system, healthcare facilities can better manage their inventory of medical supplies, which can include identifying mercury-containing devices that need to be phased out. The ME-SMILE module then provides the framework to properly dispose of them, ensuring they are not simply discarded but handled as hazardous waste to prevent environmental contamination. Strengthening Health Logistics: The core function of SMILE is to strengthen health supply chains. ME-SMILE extends this to waste management, creating a holistic system that covers a product's entire lifecycle—from ordering and distribution to use and eventual safe disposal. This seamless integration ensures that the efforts to reduce and eliminate mercury are supported by a robust, end-to-end digital logistics system. In short, while the GEF SIRENE project focuses on the policy, regulation, and physical removal of mercury-containing devices, the ME-SMILE module of the SMILE project provides

			the essential digital infrastructure to ensure that this process is tracked, managed, and executed with transparency and accountability.
3.	**Green Climate Fund: Climate-Resilient Healthcare Initiative**	A project implemented by UNDP in partnership with the Ministry of Health and WHO aiming to build a climate-resilient and low-carbon healthcare system in Indonesia, integrate early warning systems for climate-related diseases into the national health system, reduce greenhouse gas emissions from healthcare facilities, and align with Indonesia's broader environmental and health strategies.	SIRENE and Climate Resilient Healthcare Initiative projects are linked by a shared, overarching objective: to create a more sustainable and resilient healthcare system in Indonesia. Both projects are part of UNDP's broader efforts to help Indonesia achieve its Sustainable Development Goals (SDGs). They both contribute to building a healthcare system that is not only effective in treating illnesses but also environmentally responsible. While the GCF project focuses on climate change (adaptation and mitigation), and the SIRENE project focuses on a specific hazardous substance (mercury), both contribute to a 'greener' health sector. A key component of the GCF Climate Resilient Healthcare Initiative is mitigation, which aims to reduce greenhouse gas emissions from healthcare facilities. This involves promoting energy efficiency and sustainable practices. While not directly about mercury, this aligns with the spirit of the SIRENE project, which also seeks to make healthcare facilities more environmentally sound by eliminating hazardous materials and improving waste management.
4.	**Biomedical and Genomic Science Initiative**	The initiative focuses on precision medicine and genomic surveillance to improve disease detection and public health policy. Highlights include: (i) Establishing and equipping Whole Genome Sequencing Laboratories across Indonesia (17 labs operational, expanding to 29); (ii) Supporting evidence-based policymaking through genomic data; (iii) Enhancing capacity building in	Biomedical and Genomic Science Initiative is focused on disease surveillance, diagnosis, and precision medicine. It leverages advanced technologies like whole genome sequencing to understand the genetic makeup of pathogens (like viruses and bacteria) and to identify disease-related genes in humans. Its purpose is to improve the accuracy and speed of disease detection, inform public

		bioinformatics and public health infrastructure, particularly in Eastern Indonesia.	health policies, and enable more personalized medical treatments. Meanwhile, GEF SIRENE Project is a specific environmental and occupational health initiative. Its sole focus is to eliminate the use of mercury in the healthcare sector, specifically in medical devices like thermometers and sphygmomanometers, in line with the Minamata Convention on Mercury. The project aims to strengthen policies, manage the proper disposal of mercury-containing devices, and promote mercury-free alternatives.
5.	GEF Integrated Collaborative Approaches for Sustainable Tourism (iCOAST). The Government of Indonesia is expected to implement it as of 2026.	The project is to drive the transformation of Indonesia's tourism sector toward sustainability, the project will foster an enabling policy and regulatory environment that supports the adoption of low-carbon, low-chemical, zero-waste, and pollution-free technologies and practices. This will be complemented by the repurposing of financial flows and the introduction of innovative financial instruments and incentives to stimulate investment in sustainable tourism. At the same time, the project will strengthen the technical capacity, knowledge base, and access to alternative practices, technologies, and business models across the tourism value chain—empowering stakeholders to reduce environmental impacts while enhancing local employment opportunities. Finally, by facilitating global access to knowledge, best practices, and transformative partnerships, the project aims to scale and replicate successful interventions, amplifying their impact both nationally and internationally.	Both SIRENE and iCOAST are committed to addressing the root causes of unsustainable practices, particularly the continued use of toxic and hazardous chemicals. These projects aim to support Indonesia in fulfilling its obligations under key international environmental agreements, including the Minamata Convention on Mercury, the Stockholm Convention on Persistent Organic Pollutants (POPs), the United Nations Framework Convention on Climate Change (UNFCCC), and the Convention on Biological Diversity (UNCBD). Their interventions span both upstream and downstream levels, encompassing a range of activities designed to (i) Develop and strengthen regulatory frameworks; (ii) Promote the adoption of cleaner technologies; (iii) Facilitate access to sustainable financing mechanisms; (iv) Raise public awareness and stakeholder engagement. Through these integrated efforts, the projects seek to catalyse a systemic shift toward environmentally sound and socially inclusive practices within coastal and marine sectors.

6.	Global Environment Facility (GEF) Small Grants Programme (SGP)- 7 in Indonesia. The project is ongoing until 2026.	Seventh Operational Phase of the GEF SGP in Indonesia aims to build social, economic, and socio-ecological resilience through community-based activities for global environmental benefits and sustainable development. While not exclusively focused on wildlife-based ecotourism, such initiatives often encompass ecotourism components that involve local communities in conservation efforts and provide alternative livelihoods.	The GEF Small Grants Programme (SGP) in Indonesia plays a complementary and community-driven role in supporting the goals of the SIRENE project, particularly in reducing mercury use in the health sector. While the SIRENE project focuses on national-level policy reform, regulatory frameworks, and supply chain interventions to eliminate mercury-containing medical devices (MCMDs), the GEF SGP supports grassroots initiatives that align with these goals. Through its grants to local NGOs and community groups, SGP promotes: a. Awareness campaigns on the dangers of mercury in healthcare. b. Community-based monitoring and safe disposal practices. c. Pilot projects for mercury-free alternatives in rural health facilities. The Seventh Operational Phase of GEF SGP Indonesia explicitly supports activities that build socio-ecological resilience and contribute to global environmental benefits, including compliance with the Minamata Convention on Mercury. This aligns directly with SIRENE's objective to help Indonesia meet its treaty obligations by phasing out mercury in healthcare. SGP Indonesia has a strong track record in capacity building for local communities and NGOs. These efforts help: a. Strengthen local institutions to adopt mercury-free technologies.

			b. Facilitate knowledge exchange between communities and national stakeholders. c. Support innovative, scalable solutions that can be integrated into SIRENE's broader framework. SGP has potential to provide smaller grants (up to $50,000) to local actors. This dual approach ensures that mercury reduction efforts are inclusive, reaching both policy-makers and frontline health workers and communities.
7.	Fourth National Communication and Fourth Biennial Update Report to the United Nations Framework Convention on Climate Change (UNFCCC) NC4-BUR 4. GEF Project ID number: 10441, year 2021-2027	The project will contribute to the reduction of Indonesia's GHG emissions and the enhancement of GHG sinks and the increase of resilience by intervening at the root/underlying challenges to induce change.	Both projects have potential to contribute to Indonesia's climate commitments under the UNFCCC. SIRENE focuses on reducing mercury and promoting low-carbon, low-chemical, and zero-waste technologies in the health sector, NC4-BTR1 supports the development of national systems for accurate emissions reporting, mitigation tracking, and policy integration. SIRENE's demonstration of sustainable business models in healthcare may feed into NC4-BTR1's sectoral data, showcasing how mercury phase-out contributes to GHG mitigation and pollution reduction. These models can be used to illustrate co-benefits in climate reporting, especially in sectors not traditionally covered in national inventories. NC4-BTR1 identifies challenges in data capture and management, especially at the sub-national level. SIRENE's implementation across health facilities and local supply chains provides. Granular data on mercury use and emissions reductions.

			Opportunities to pilot sub-national reporting mechanisms that can be scaled through NC4-BTR1. This helps bridge the gap between national policy and local implementation, a key concern of the NC4-BTR1 evaluation. Both projects emphasize capacity building: SIRENE strengthens technical knowledge in mercury-free technologies and waste management. NC4-BTR1 builds institutional capacity for climate data systems and transparency. Joint training, knowledge products, and stakeholder engagement (e.g., workshops, forums) can be co-designed to maximize outreach and uptake, especially among local governments and health sector actors. SIRENE supports Indonesia's compliance with the Minamata Convention, while NC4-BTR1 integrates climate measures into national policies. Both projects promote cross-sectoral policy coherence and ensure that mercury reduction strategies are reflected in national climate planning and reporting frameworks.
8.	Indonesia's Hydrochlorofluorocarbon (HCFC) Phase-out Management Plan – Stage III (Indonesia HPMP-III) is the national strategy to meet the Montreal Protocol's goal of phasing out 100% of HCFCs by January 1, 2030, supported by the Multilateral Fund and led by the United Nations Development Programme (UNDP).	The plan focuses on actions such as upgrading HCFC recovery, recycling, and reclamation systems and demonstrating low-GWP (Global Warming Potential) alternatives in the servicing and manufacturing sectors to reduce dependence on HCFCs and minimize climate impact	The Hydrochlorofluorocarbons Phase-out Management Plan (HPMP) and the SIRENE project by UNDP Indonesia share a common strategic foundation in environmental protection, particularly through the elimination of harmful substances and the promotion of sustainable technologies. Both projects aim to reduce the use of substances that pose serious risks to human health and the environment: HPMP targets the phase-out of ozone-depleting substances (ODS) like HCFCs, which also have high global warming potential (GWP). SIRENE focuses on eliminating mercury-containing medical devices (MCMDs) and promoting low-

			chemical, low-carbon, and zero-waste technologies in the health sector. This alignment supports Indonesia's commitments under the Montreal Protocol (HPMP) and the Minamata Convention (SIRENE), reinforcing the country's broader environmental and climate goals. Both projects promote the adoption of cleaner technologies: HPMP supports technology transfer to replace HCFCs in refrigeration, air conditioning, and fire-fighting sectors. SIRENE facilitates the replacement of mercury-based medical devices with safer, mercury-free alternatives and promotes circular economy practices in healthcare. This shared emphasis on sustainable innovation and technical capacity building creates opportunities for cross-sectoral learning and joint implementation strategies. Both initiatives involve the development and enforcement of national regulations: HPMP has led to bans and import restrictions on HCFCs through ministerial decrees. SIRENE is working to strengthen regulations around mercury use and disposal in healthcare. These regulatory frameworks can be harmonized to promote integrated chemical management policies, especially in sectors where refrigerants and mercury may co-exist (e.g., hospital equipment, cold chain systems). While HPMP contributes to ozone layer recovery and GHG emission reductions, SIRENE contributes to pollution prevention, public health improvement, and climate mitigation through cleaner technologies. Together, they offer a compelling narrative of climate-health co-benefits, which can be leveraged in national reporting and donor engagement.

			Both projects involve monitoring systems, capacity building, and stakeholder engagement. There is potential to: Develop joint training modules for health and environmental professionals. Share data and lessons learned across sectors, and align with national transparency frameworks like the NC4-BTR1 for integrated reporting.

Will the GEF Agency play an execution role on this project?

If so, please describe that role here and the justification.

No, the GEF Agency will not play an execution role on this project.

Implementation Modality:

The project will be implemented through the National Implementation Modality (NIM), applied as per UNDP POPP, as required by GEF, which stipulates that UNDP provide no execution support. The Ministry of Environment (MoE), as GEF's EA, will serve as the Implementing Partner for the project. The project will be implemented over a period of five (5) years with Ministry of Environment acting as the GEF Executing Agency.

Risks to the Project Execution Modality

According to Law No. 1/2004 on State Treasury, and the Government Regulation No. 10/2011 on Procedures for Procurement of Foreign Loans and Grants, Funds from international cooperation projects, once received by the EA, cannot be transferred onward to another Ministry or Agency that would engage in the project implementation once it enters the ministry's treasury account. This limitation is also extended to IGOs, NGOs and CSOs. This is a significant constraint for the execution of multi-sectoral projects which require cross-ministerial collaboration and flexible allocation of resources, and depend on engaging with specialized IGOs and NGOs to deliver project results. The inability to reallocate funds to other government bodies or non-government partners constitute a real risk to delay, or even block, the implementation. (https://berkas.dpr.go.id/jdih/document/pp/1715.pdf).

In addition, any allocation or reallocation of grant funds must be recorded in the annual State Budget (APBN) and approved by Parliament. This budget revision process usually takes 18 months, and only initiates once per year. This also configure real risk of delays for project implementation in which multi-year budgets. Once foreign grant funds are integrated into the APBN, they are subject to national public financial management. There is also a risk that these funds could be absorbed into the general treasury, making them unavailable for project-specific use. As a rule, funds allocated in a particular budget year are intended for use within that year only.

UNDP will monitor the transfer of funds to the IP and the implementation performance to analyze constraints in engaging with executing partners as per Regulatory limitations. In case the risk becomes an issue, a mitigation plan that could include having UNDP to provide limited executing services to allow transfer of funds to happen smoothly. For this reason, the Executing Agency and

the GEF Operational Focal Point (OFP) had already flagged to UNDP that they might need support to execute the following services: (a) The recruitment of high-quality international technical experts and independent national experts using most update salary scales (that are limited by national regulations); (b) Undertake high value and complex procurement of goods and services through a competitive process; (c) engage with PMU staff given limitation in Governmental contractual modalities.

Segregation of duties and firewalls vis-à-vis UNDP representation on the project board:

As noted in the Minimum Fiduciary Standards for GEF Partner Agencies, in cases where a GEF Partner Agency (i.e. UNDP) carries out both implementation oversight and execution of a project, the GEF Partner Agency (i.e. UNDP) must separate its project implementation oversight and execution duties, and describe in the relevant project document a: 1) Satisfactory institutional arrangement for the separation of implementation oversight and executing functions in different departments of the GEF Partner Agency; and 2) Clear lines of responsibility, reporting and accountability within the GEF Partner Agency between the project implementation oversight and execution functions. **In this case, UNDP is only performing an implementation oversight role in the project vis-à-vis our role in the project board and in the project assurance function and therefore a full separation of project implementation oversight and execution duties has been assured.**

Also, please add a short explanation to describe cooperation with ongoing initiatives and projects, including potential for co-location and/or sharing of expertise/staffing (max. 500 words, approximately 1 page)

n/a

Core Indicators

Indicate expected results in each relevant indicator using methodologies indicated in the GEF-8 Results Measurement Framework Guidelines. There is no need to complete this table for climate adaptation projects financed solely through LDCF and SCCF.

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)	0	0	0	0
Expected metric tons of CO_2e (indirect)	10000	10000	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)				
Expected metric tons of CO_2e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)				
Expected metric tons of CO_2e (indirect)	10,000	10,000		

Anticipated start year of accounting				
Duration of accounting				

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)

Indicator 9 Chemicals of global concern and their waste reduced

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
25.00	25.00	0.00	0.00

Indicator 9.1 Solid and liquid Persistent Organic Pollutants (POPs) removed or disposed (POPs type)

POPs type	Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
Decabromodiphenyl ether (commercial mixture, c-decaBDE)	5.00	5.00		

Indicator 9.2 Quantity of mercury reduced (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
20.00	20.00		

Indicator 9.3 Hydrochloroflurocarbons (HCFC) Reduced/Phased out (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.4 Number of countries with legislation and policy implemented to control chemicals and waste (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 9.5 Number of low-chemical/non-chemical systems implemented, particularly in food production, manufacturing and cities (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 9.6 POPs/Mercury containing materials and products directly avoided

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
100.00	100.00		

Indicator 9.7 Highly Hazardous Pesticides eliminated

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.8 Avoided residual plastic waste

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
20,000.00	20,000.00		

Indicator 10 Persistent organic pollutants to air reduced

Grams of toxic equivalent gTEQ (Expected at PIF)	Grams of toxic equivalent gTEQ (Expected at CEO Endorsement)	Grams of toxic equivalent gTEQ (Achieved at MTR)	Grams of toxic equivalent gTEQ (Achieved at TE)
20.00	20.00		

Indicator 10.1 Number of countries with legislation and policy implemented to control emissions of POPs to air (Use this sub-indicator in addition to Core Indicator 10 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 10.2 Number of emission control technologies/practices implemented (Use this sub-indicator in addition to Core Indicator 10 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 11 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	50,000	50,000		
Male	50,000	50,000		
Total	**100,000**	**100,000**	0	**0**

Explain the methodological approach and underlying logic to justify target levels for Core and Sub-Indicators (max. 250 words, approximately 1/2 page)

Calculations are direct result of the achievement of the project's objective (at the end of implementation) and is calculate against the project lifecycle (5 years).

(a) 20 metric tons of mercury reduced from Indonesia's Health sector: calculated based on the following justifications:

- Average amount of mercury content at Sphygmomanometer which is 65 grams (the data retrieved from the development of PIF).
- Average amount of mercury content at thermometer which is 1.5 grams (the data retrieved from the development of PIF)
- Numbers of health facility in Indonesia, based on data from Ministry of Health in 2024 which covering hospitals, clinics, independent doctor practices and primary healthcare (Puskesmas).
- Estimated number of thermometers belong to the health facility, based on the data collected by Ministry of Health (2022).
- Estimated number of Sphygmomanometers belong to the health facility, based on the data collected by Ministry of Health (2022).

The amount of Mercury from MCMDs in Indonesia (Please refer to the table in CEO ER as this section doesn't support table format)

(b) 20 g TEQ/year of UPOPs emissions avoided: Calculation based on the following justifications:

- Data materials provided in Table 16.2 as reference for dismantling activities. Estimated Quantity of Materials Recycled Over a Five-Year Project Period (Please refer to the table in CEO ER as this section doesn't support table format)

- Data for dismantling activities and generated plastics from health care facilities that can be counted in UPOPs emission avoided, as provided. Calculation Basis for UPOPs Emissions Avoided (Please refer to the table in CEO ER as this section doesn't support table format)

- To calculate potential UPOPs emission, emission factors for source category 1c Medical Waste Incinerators was taken. EF = 40,000(µg TEQ/t MW incinerated).
- UPOPs avoided (g-TEQ/yr) = EF x Grand total of Annualized Waste Quantity

= 0.04 g TEQ/year x 24,915 t/year

= 997 g TEQ/year

(c) 100 mt of POP-containing plastic collected and disposed safely containing 5 tons of PBDEs which emissions will be avoided with avoided with avoided open burning. Calculation for justifications as follow

Quantification of POP-Plastic and PBDEs in Digital Thermometers and Blood Pressure Devices (5-Year Projection) (Please refer to the table in CEO ER as this section doesn't support table format)

(d) 20,000 tons of recyclable plastic and metals material collected and recycled. Calculation based on the following justifications. Recyclable Plastics and Metals In 5-Year Totals and Source Contributions (Please refer to the table in CEO ER as this section doesn't support table format)

(e) 10,000 metric tons of CO2e emissions avoided: Calculation based on the following justifications:

- CO2 emissions avoided calculation uses an estimate of the average amount of plastic waste transported by PT WASTEC International.
- Plastic waste transportation is carried out every 14 days.
- The average amount transported per trip is 0.3 tons. In one month (30 days), the estimated amount of waste transported is 0.65 tons.
- Therefore, in one year (360 days), there are 7.8 tons from one healthcare facility.
- Based on the data in Table 6.1, there are 39,061 healthcare facilities in Indonesia.
- Thus, the total amount generated across Indonesia is 24,659 tons per year.
- According to WHO , 85% of hospital waste falls into the recyclable category. Therefore, the amount of waste that can be avoided from open burning is 18,360 tons per year.
- This data is then used as the basis for calculating CO2e emissions avoided from this project. Calculation for CO2 emission mitigated for the project using following equation according to IPCC Tier 2 formula18. (Please refer to the picture in CEO ER as this section doesn't support picture format)

Steps of calculation as follow:

- SW_i = 18,360 tons
- dm_i = 95% (plastics are mostly dry)
- CF_i = 75% (typical for plastics like PE, PP, PVC)
- FCF_i = 100% (plastics are derived from fossil fuels)
- OF_i = 58% (IPCC default for open burning)
- 44/12 = 3.67 (conversion factor from C to CO_2)

Hence, total CO2e emissions avoided = 27,853 tCO_2e/year

(f) 100,000 people directly benefitted (50,000 female and 50,000 male): Calculation based on the following justifications:

The target beneficiaries are healthcare workers, comprising nurses, midwives, and sanitary staff. The estimated number of beneficiaries, through interactions, engagements in project activities, training sessions and awareness events, is as follows:

Estimated Number of Beneficiaries

Basis Calculation: 25,000 Health Care Facilities

Estimated Numbers: 100,000

Male: 50,000

Female: 50,000

(g) as per the targeted audience that GHG benefit from the project and will be selected in pilot sites and pilot units among 3,122 hospitals, 10,260 Primary Health Care (PHC) and more than 5,000 other health care facilities and the HCW collection and processing units/companies/institutions. In which at least 30% are expected to be women in line with national regulations related to gender inclusiveness in Indonesia.

Key Risks

	Rating	Explanation of risk and mitigation measures
CONTEXT		
Climate	Low	The project will engage with collection and transport service providers to support the safe collection, packaging, transport, temporary storage and eventually disposal of MCMDs, Hg wastes and POPs contaminated plastic, hence these services will lead to temporary increase of GHG emissions due to transport activities. However, the project will devise mechanism on undertake efficient use of transport modes to minimize GHG generation. The project also promote the reduction of GHG emissions (10,000 metric tons of CO2e emission reduction) from unsound waste and HG disposal practices, hence the net emissions will be monitored during project cycle.
Environmental and Social	Moderate	The Government of Indonesia has certain precautious measures to coordinate and anticipate the risks with relevant partners that have certain level of capacity. UNDP SES Policy is also being applied to identify risks and promote proper risk avoidance/mitigation actions, as identified in the SESP and will be implemented and monitored during project cycle.
Political and Governance	Moderate	The Government of Indonesia is implementing of government agencies and reallocation of state budget that may influence and impact project implementation, but it is unlikely to halt the project implementation in achieving its outcomes and outputs based on previous experiences with GEF projects in similar situation.
INNOVATION		
Institutional and Policy	Moderate	Indonesia is pursuing a 20-year development plan, spanning from 2005 to 2025. The plan is segmented into 5-year medium-term development plans called RPJMN (Rencana Pembangunan Jangka Menengah Nasional or Mid-term National Development Plan), each with a different set of development priorities (World Bank, 2023). Hence, despite of recent national elections and the change

		in power of ruling Party and the expectations around the follow up plan after 2025 and future elections that will occur during project lifecycle, it is considered that the Institutional and Policy related risk that could impact this project proposal is MODERATE, since the project serves to respond the country's commitment to the Minamata Convention, which is already well crystalized action within the institutional frameworks of the Ministries of Environment and Health.
Technological	Moderate	The National Research and Innovation Agency (BRIN) is committed to support the project in strengthening the progress of mercury reduction and temporary storage in medical devices and how to treat it in accordance with the Minamata Convention.
Financial and Business Model	Moderate	As per World Bank (2023) report, in July 2023 Indonesia regained upper-middle group according to the World Bank's income classification status after falling out in 2020 due to the impact of COVID-19 on the economy. With a post-pandemic recovery underway, poverty reduction has received a boost. As of March 2023, Indonesia's poverty rate was at 9.36 percent, after having risen to 10.2 percent in September 2020. Indonesia's economic growth is underpinned by a pick-up in private consumption and positive terms-of-trade. GDP growth is projected at 5.0 percent in 2023 and to an average of 4.9 percent over the medium term in 2024-2026. Hence, the project takes into consideration two (2) initial business model to support the financial sustainability of its actions: in one hand, support Government budgeting prioritization to fund the replacement of MCMDs by mercury-free devices under the usual procurement programmes for public healthcare units, while in the other hand, support private sector to identify BAT/BEP with better cost-effectiveness and identify financial mechanisms that can be used to upscale the structure of waste management of medical devices in the country. The current effort of the Government in state budget reallocation may present an unforeseen impact. However, as public healthcare facilities' operational budget are outside the state allocation, such possibility of negative impact is minimal.
EXECUTION		
Capacity	Moderate	Currently, the Implementing Partner (IP) or Executing Agency (EA) is involved in 6 on-going projects and 2 approved projects (some having significant delays and there are some known weaknesses of the IP in financial and procurement management from the assurance activities. As per GEF guidelines, at this PPG stage, the Implementing Partner and the GEF OFP have request project support services from UNDP. With the support of a Project Management Unit (PMU) being established for the day-to-day implementation of project activities, and the structure of four (4) Working Groups (staffed with one Working Group Coordinator and one Project Assistant) responsible for each of the four (4) project components, and one Regional Facilitator for each of the four (4) regional project locations, together with recruitment and procurement support provided by MoE, implementation capacities will not be limited. The IP will carry out its execution services.

Fiduciary	Moderate	The Government of Indonesia has limited financial capacity to fund the program. In addition, According to Law No. 1/2004 on State Treasury and Government Regulation No. 10/2011 on Procedures for Procurement of Foreign Loans and Grants, the fund cannot be transferred onward to another ministry or agency once it enters the ministry's treasury account. This is a significant constraint for multi-sectoral GEF projects which require cross-ministerial collaboration and flexible allocation of resources. The inability to reallocate funds to other government bodies or non-government partners severely hampers implementation. (Here is the link to the mentioned regulation: https://berkas.dpr.go.id/jdih/document/pp/1715.pdf). Any allocation or reallocation of grant funds must be recorded in the annual State Budget (APBN) and approved by Parliament. This budget revision process is lengthy—up to 18 months—and only takes place once per year. This results in considerable delays for projects that require timely disbursement or span multiple fiscal years. Once foreign grant funds are integrated into the APBN, they are subject to national public financial management rules, including taxation, annual budget cycles, and strict fiscal discipline. There is also a risk that these funds could be absorbed into the general treasury, making them unavailable for project-specific use. As a rule, funds allocated in a particular budget year are intended for use within that year only. UNDP will monitor the transfer of funds to the IP and the implementation performance to analyse constraints in engaging with executing partners as per Regulatory limitations. In case the risk becomes an issue, a mitigation plan that could include having UNDP to provide limited executing services to allow transfer of funds to happen smoothly.
Stakeholder	Low	Relevant stakeholders have strong commitment to strengthen the efforts of the Government of Indonesia.
Other	Low	Risks may contain threat, but these may invite opportunities to address the development challenges.
Overall Risk Rating	Moderate	

C. ALIGNMENT WITH GEF-8 PROGRAMMING STRATEGIES AND COUNTRY/REGIONAL PRIORITIES

Explain how the proposed interventions are aligned with GEF- 8 programming strategies and country and regional priorities, including how these country strategies and plans relate to the multilateral environmental agreements.

For projects aiming to generate biodiversity benefits (regardless of what the source of the resources is - i.e., BD, CC or LD), please identify which of the 23 targets of the Kunming-Montreal Global Biodiversity Framework the project contributes to and explain how.

Confirm if any country policies that might contradict with intended outcomes of the project have been identified, and how the project will address this. (max. 500 words, approximately 1 page)

This project is in accordance with Indonesia strategic priority and Minamata Convention. Article 11 of Minamata Convention on Mercury mandate; is considered in accordance with the guidelines developed under

the Basel Convention and in accordance with requirements that the Conference of the Parties shall adopt in an additional annex, in accordance with Article 27. The Ministry of Environment requests support to implement this article. In addition, the project is in line with Article 10, paragraph 4, of the Convention, in terms of enhancing capacity-building for the environmentally sound interim storage of such mercury and mercury compounds.

In line with GEF-Programming, as a main purpose this project intends to tackle environmental degradation originated by health sector using medical equipment containing mercury and in term of the strategy the project will promote a strong private sector engagement. GEF-8 Programming strategies seek to generate global environmental benefits through impactful outcomes. In this regard, the present project meets one of the eight Directions for GEF-8 Programming, namely Elimination of Harmful Chemicals from Supply Chain.

GEF-8 Programming strategies also emphasized Eliminating Harmful Chemicals from Supply Chains Integrated Program in which one of the major objectives is reducing emissions of GHGs. In this regard, the project will contribute to the reduction of GHGs emissions through environmentally sound management of mercury containing medical devices starting from collection, transportation, temporary storage, stabilization by solidification to final storage. In addition, because medical devices contain plastic components, managing mercury-containing medical equipment waste properly also reduces POPs emissions originating from plastic materials.

GEF-8 Programming strategies catalyze circular economy approaches to reduce plastic production, consumption, and disposal. The project will encourage the realization of a circular economy through implementation of circularity practices by designing for reuse, recycling, repair, remanufacture of digital based mercury-free medical device. In this regard, the project also will shifting medical device users' behavior and fostering markets for recycled material.

D. POLICY REQUIREMENTS

Gender Equality and Women's Empowerment

We confirm that gender dimensions relevant to the project have been addressed during Project Preparation as per GEF Policy and are clearly articulated in the Project Description (Section B).

Yes

1) Does the project expect to include any gender-responsive-measures to address gender gaps or promote gender equality and women's empowerment?

Yes

If the project expects to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment, please indicate in which results area(s) the project is expected to contribute to gender equality:

Closing gender gaps in access to and control over natural resources;

Improving women's participation and decision-making; and/or

Yes

Generating socio-economic benefits or services for women.

Yes

2) Does the project's results framework or logical framework include gender-sensitive indicators?

Yes

Stakeholder Engagement

We confirm that key stakeholders were consulted during Project Preparation as required per GEF policy, their relevant roles to project outcomes has been clearly articulated in the Project Description (Section B) and that a Stakeholder Engagement Plan has been developed before CEO endorsement.

Yes

Select what role civil society will play in the Project

Consulted only; Yes

Member of Advisory Body; Contractor;

Co-financier;

Member of project steering committee or equivalent decision-making body ;

Executor or co-executor;

Other (Please explain)

Private Sector

Will there be private sector engagement in the project?

Yes

And if so, has its role been described and justified in section B project description?

Yes

Environmental and Social Safeguards

We confirm that we have provided information regarding Environmental and Social risks associated with the proposed project or program, including risk screenings/ assessments and, if applicable, management plans or other measures to address identified risks and impacts (this information should be presented in Annex E).

Yes

Please provide overall Project/Program Risk Classification

Overall Project/Program Risk Classification

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate	Medium/Moderate		

E. OTHER REQUIREMENTS

Knowledge management

We confirm that an approach to Knowledge Management and Learning has been clearly described during Project Preparation in the Project Description and that these activities have been budgeted and an anticipated timeline for delivery of relevant outputs has been provided.

Yes

Socio-economic Benefits

We confirm that the project design has considered socio-economic benefits to be delivered by the project and these have been clearly described in the Project Description and will be monitored and reported on during project implementation (at MTR and TER).

Yes

ANNEX A: FINANCING TABLES

GEF Financing Table

Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	GEF Project Grant($)	Agency Fee($)	Total GEF Financing ($)
UNDP	GET	Indonesia	Chemicals and Waste	Mercury	Grant	6,590,000.00	626,050.00	7,216,050.00
Total GEF Resources ($)						**6,590,000.00**	**626,050.00**	**7,216,050.00**

Project Preparation Grant (PPG)

Was a Project Preparation Grant requested?

true

PPG Amount ($)

150000

PPG Agency Fee ($)

14250

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	PPG($)	Agency Fee($)	Total PPG Funding($)
UNDP	GET	Indonesia	Chemicals and Waste	Mercury	150,000.00	14,250.00	164,250.00
Total PPG Amount ($)					**150,000.00**	**14,250.00**	**164,250.00**

Please provide Justification

Sources of Funds for Country Star Allocation

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total($)
Total GEF Resources					**0.00**

Focal Area Elements

Programming Directions	Trust Fund	GEF Project Financing($)	Co-financing($)
CW-3	GET	6,590,000.00	35309883
Total Project Cost		**6,590,000.00**	**35,309,883.00**

Confirmed Co-financing for the project, by name and type

Please include evidence for each co-financing source for this project in the tab of the portal

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Recipient Country Government	Ministry of Environment	In-kind	Recurrent expenditures	1634925
Recipient Country Government	Ministry of Health	In-kind	Recurrent expenditures	1807291
Recipient Country Government	The National Research and Innovation Agency (BRIN)	In-kind	Recurrent expenditures	666667
Private Sector	Wastec International	Loans	Investment mobilized	14778000

Private Sector	Asosiasi Produsen Alat Kesehatan Indonesia	Loans	Investment mobilized	15423000
GEF Agency	United Nations Development Programme	In-kind	Recurrent expenditures	1000000
Total Co-financing				**35,309,883.00**

Please describe the investment mobilized portion of the co-financing

The investment mobilized is expected to reflect investments from manufacturers of medical devices required to undertake plant modifications/retrofit/technology uptake to convert the production of medical devices out of mercury to electronic equipment. as well as for the additional investments led by the Asosiasi Produsen Alat Kesehhtan Indonesia (ASPAKI) to devise and pilot circular models a to promote and sustain large scale replacement to mercury-fee alternative of MCMDs. The Manufactures taking part of pilot conversions will be identified and selected during the first year of project implementation and the project will solicit and monitor the realization of co-finance to enable their participation in the project activities.

ANNEX B: ENDORSEMENTS

GEF Agency(ies) Certification

GEF Agency Type	Date	Project Contact Person	Phone	Email
GEF Agency Coordinator	6/20/2025	Nancy Bennet		nancy.bennet@undp.org
Project Coordinator	6/20/2025	Anderson Alves		anderson.alves@undp.org

Record of Endorsement of GEF Operational Focal Point (s) on Behalf of the Government(s):

Please attach the Operational Focal Point endorsement letter(s) with this template.

Name of GEF OFP	Position	Ministry	Date (MM/DD/YYYY)
Laksmi Dhewanthi	Director General of Climate Change	Ministry of Environment	4/30/2024

ANNEX C: PROJECT RESULTS FRAMEWORK

Please indicate the page number in the Project Document where the project results and M&E frameworks can be found. Please also paste below the Project Results Framework from the Agency document.

The Project Results Framework is presented in pages 46-57 of the UNDP Project Document, under Section VII Project Results Framework

Contribution to the Sustainable Development Goal (s):

SDG 3: Good Health and Well-being
SDG 5: Gender Equality
SDG 9: Industry Innovation and Infrastructure
SDG 11: Sustainable Cities and Communities
SDG 12: Responsible Consumption and Production
SDG 13: Climate Action
SDG 17: Partnerships for the Goals

Intended Outcome as stated in the UNSDCF/Country [or Regional] Programme Results and Resource Framework:

UNDP CPD 2021-2025 Outcome 4: Stakeholders adopt innovative and integrated development solutions to accelerate advancement towards the Sustainable Development Goals.

Indicative UNDP CPD 2026-2030 Outcome 2: A lower carbon, climate resilient Indonesia succeeds advancing a just energy transition and the sustainable management of biodiversity and natural resources for the benefit and wellbeing of all.

Applicable Output(s) from the UNDP Strategic Plan: Natural resources protected and managed to enhance sustainable productivity and livelihoods **(**Signature Solution 4: Environment).

Project title and Quantum Project Number: Strengthening Indonesia's Reduction and Elimination in the Distribution and Supply Chain of Mercury from National Health (SIRENE), Award ID: 1382844, Project ID: 01004369

Objective and Outcome Indicators		Data Source	Baseline	Mid-term Target	End of Project Target	Data Collection Methods	Risks/Assumptions
Project Objective:	**This project will support the Government of Indonesia and key stakeholders in the healthcare sector in eliminating mercury from the distribution and supply chain of medical devices. It will do so through strengthening policies and regulations, establishing a system to track, collect and safely store existing mercury-containing medical devices (MCMDs) for eventual disposal using BAT/BEP, and establishing a mechanism for the sustainable replacement of MCMDs. Additionally, the project will promote circular practices for mercury-free electronic medical devices to prevent future buildup of e-waste from the healthcare sector.**						
	Mandatory Indicator 1: **Objective Indicator 1:** # direct project beneficiaries disaggregated by gender (individual people) 100,000 (50,000 female, 50,000 male)	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	0	50,000 (25,000 female, 25,000 male)	100,000 (50,000 female, 50,000 male))	Training and workshop reports	Risks Lack of interest of participants or unable to attract sufficient female health care workers Assumption: As majority of health care workers handling MCMDs are female, awareness-raising activities and efforts to identify and promotion participation

	Mandatory GEF Core Indicators 9.2 **Objective Indicator 2**: 20 metric tons of mercury reduced	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	Limited quantities of unused MCMDs has been packed and stored temporary at various health care facilities	10 metric tons of Mercury reduced	20 metric tons of Mercury reduced	Project progress report Project consultant report Site visits and monitoring report	Risks: Inaccurate inventories of MCMDs Assumption: Data from government reports has facilitated the calculation of quantities of MCMDs and mercury contents calculated based on unit of mercury contained in unit of MCMDs
	Objective Indicator 3: (a) 20 g TEQ/year of UPOPs emissions reduced; (b) 100 metric tons of POPs-containing plastic collected and disposed safely containing 5 tons of PBDEs emissions avoided with open burning (c) 10,000 metric tons of CO2e emissions avoided	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	Limited efforts in collection and sorting of contaminated plastics	(a) 10 g TEQ/year of UPOPs emissions reduced; (b) 50 metric tons of POPs-containing plastic collected and disposed safely containing 5 tons of PBDEs emissions avoided with open burning (c) 5,000 metric tons of CO2e emissions avoided	(a) 20 g TEQ/year of UPOPs emissions reduced; (b) 100 metric tons of POPs-containing plastic collected and disposed safely containing 5 tons of PBDEs emissions avoided with open burning (c) 10,000 metric tons of CO2e emissions avoided	Project progress report Project consultant report Site visits and monitoring report	Risks: Inaccurate data on current situation of contaminated plastic Assumption: During PPG phase, site visits and investigation have gathered some assurance of data
	Objective Indicator 4: 20,000 tons of recyclable plastic and metals collected and recycled	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	Limited efforts in collection, sorting and recycle of contaminated plastics	10,000 tons of recyclable plastic and metals collected and recycled;	20,000 tons of recyclable plastic and metals collected and recycled;	Project progress report Project consultant report Site visits and monitoring report	Risks: Inaccurate data on current situation of contaminated plastic Assumption: During PPG phase, site visits and investigation have gathered some assurance of data
Project component 1	**Policy and regulatory frameworks strengthened to support the phase-out of mercury containing medical devices (MCMDs) in the health sector**						

Project Outcome 1.1 Regulations/ policies developed or strengthened, proposed and/or operationalized to prohibit the use of MCMDs in health care facilities	**Outcome Indicator 1:** **At least five (5) policies and regulations reviewed** The capacity of national institutions, government agencies and private sector partners is still low to assess, plan, implement, support and monitor sustainable for total phase out the use of mercury-containing medical devices in health care facilities. It will do so by initially assessing the capacity of these project partners, developing plans for strengthening their capacity and subsequently implementing these.	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	Regulations/policies have been issued by 2 main Ministries which are Ministry of Environment and Ministry of Health. Involving other Ministries and Institution is need it.	Three (3) policies and regulations reviewed.	At least five (5) policies and regulations reviewed	Project progress report Project consultant report Site visits and monitoring report	Risks: Lengthy process for reading, review and enactment of policies, regulations and guidelines Assumption: The project will closely monitor progress of proposal for the development, revision and/or enhancing of policies, regulations and guidelines, working with the responsible ministries
	Output 1.1.1 to achieve Outcome 1.1: Regulatory and policy frameworks proposed for total phase out the use of mercury-containing medical devices.						
			No support for implementing Regulatory and policy frameworks for total phase out the use of mercury-containing medical devices among the ministries and institution.	Three (3) implementation action developed	At least five (5) implementation action developed.		There is lack of support for current Regulatory and policy frameworks for total phase out the use of mercury-containing medical devices.
	Output 1.1.2 to achieve Outcome 1.1: Gender-sensitive regulatory and policy framework concerning mercury collection, distribution, temporary storage, and disposal Developed/ strengthened.						
			There is no gender-sensitive stated on the current regulation and policy framework concerning mercury collection, distribution,	Two (2) policies and regulations developed or strengthened.	At least four (4) policies and regulations developed or strengthened		There is a lack of Gender-sensitive regulatory and policy framework concerning mercury collection, distribution,

			temporary storage, and disposal				temporary storage, and disposal Developed/ strengthened.
Project Outcome 1.2: Gender-sensitive and inclusive Capacity Building activities carried out for government staff (both national and sub-national) to enhance policy enforcement and oversight.	**Outcome Indicator 2:** **Capacity building at four (4) regional areas conducted**	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	No gender-sensitive and inclusive Capacity Building activities carried out for government staff (both national and sub-national) to enhance policy enforcement and oversight.	Capacity building at two (2) regional areas conducted.	Capacity building at four (4) regional areas conducted.	Project progress report Project consultant report Site visits and monitoring report	There is a lack of capacity of all entities involved in/responsible for MCMDS and MFMDS and their waste to ensure better coordination and exchanges of experiences and lessons-learned between national, regency and sub-district level staff.
	Outcome Indicator 3: **Inventories of stock of MCMDs and Hg waste at National Health Care Facilities (HCFs) completed** to facilitate collection, distribution and transport for temporary storage	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	At present, accurate information and quantities of MCMDs and Hg waste at HCFs are incomplete	Inventory process on MCMDs and HG waste at HCFs is completed with known quantities and locations to enable withdrawal to safe temporary storage	Inventory completed and withdrawal to safe temporary storage	Project progress report Project consultant report Site visits and monitoring report	
	Output 1.2.1 to achieve Outcome 1.2: Coordination and cooperation Mechanisms between central and local governments established and strengthened						
			No cooperation mechanisms between central and local governments.	Two (2) Cooperation mechanism to strengthen the phase-out of mercury containing medical devices (MCMDs) in the health sector is established.	Four (4) Cooperation mechanism to strengthen the phase-out of mercury containing medical devices (MCMDs) in the health sector is established.		The coordination among entities needs to be conducted and the capacity of entities for regional and local oversight of health care activities, and make the collection, distribution, temporary storage, disposal process easier and the issuing environmental licenses and other permits,

							simpler, clearer and more affordable so that they are accessible and well-functioning.
	Output 1.2.2 to achieve Outcome 1.2: Phase-out of use of MCMDs oversight and Hg elimination commitments enforced for health facilities						
			No oversight and commitment on the phase-out of use of MCMDs and Hg elimination with health facilities across Indonesia.	Two (2) Commitments on enforcing of MCMDs oversight and Hg elimination for health sector facilities is signed	Four (4) Commitments on enforcing of MCMDs oversight and Hg elimination for health sector facilities is signed		There is no oversight and commitment on the phase-out of use of MCMDs and Hg elimination with health facilities across Indonesia.
	Output 1.2.3 to achieve Outcome 1.2: All levels of Governmental institutions in charge of the regulatory systems for mercury collection, distribution, and storage capacitated in new rules and regulations**:**						
			No assess and change any capacity of national, provincial, regency, sub-district (if any) level policies, plans, regulations, standards and measures and changes of the regulatory systems for mercury collection, distribution, and storage.	The results (project outcomes 1.1 and 1.2) for increasing the capacity of all entities involved in/responsible for MCMDS and MFMDS and their waste in the two (2) project priority sites disseminated.	The results (project outcomes 1.1 and 1.2) for increasing the capacity of all entities involved in/responsible for MCMDS and MFMDS and their waste in the 4 project priority sites disseminated.		There is a lack of assess and change any capacity of national, provincial, regency, sub-district (if any) level policies, plans, regulations, standards and measures and changes of the regulatory systems for mercury collection, distribution, and storage.
	Output 1.2.4 to achieve Outcome 1.2: Inventories of stocks of Hg wastes and MCMDs are updated and assessed and real situation of mercury use, collection and storage in Health Care Facilities (HCF) are known						
.			The Government of Indonesia has initial assessment for the amount of MCMDs across Indonesia.	The method and mechanism on Inventories of stocks of Hg wastes and MCMDs are updated and assessed.	The inventory data established; Collection MCMDs established; The MCMDs storage.		The real amount of the amount of MCMDs across Indonesia is unknown. Lack of assessment on real situation of mercury used collection and storage in Health Care Facilities (HCF).
Project component 2	**Technical and institutional capacities of private sector stakeholders enhanced on MCMDs phase-out and environmentally sound mercury-containing medical waste management improved.**						

Outcome 2.1 MCMDs and their wastes are collected, stabilized (solidified) and disposed of in environmentally sound manner, in accordance with national regulations, international guidelines and Best Environmental Practices (BEP) and based on Gender sensitive principles.	**Outcome Indicator 4**: **Total of 20 metric tons of mercury is collected, distributed and safety stored** Manufactures are enabled to convert production lines as per legally mandated national phase-out planning guidelines, and to soundly manage remaining mercury, stockpiled devices and/or contaminated areas on premises resulting in the phase-out of at least **20 metric tons of mercury**.	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	There are 10,180 (*Ministry of Health, 2024*) primary healthcare (puskesmas) across Indonesia. The average of the Puskesmas has 27 sphygmomanometers, each of sphygmomanometers with average content of 65 gram of mercury. Thus, 10,180 x 27 unit x 65 gram = 17.8 ton of mercury. This amount does not include the number of thermometer and sphygmomanometers from the state hospital at Provincial and Regency level and also 1,545 private hospital in Indonesia.	10 metric tons of mercury is collected, distributed and put in temporary storage	Total of 20 metric tons of mercury is collected, distributed, and safely stored	Project progress report Project consultant report Site visits and monitoring report	Risks: Inventory to locate Stock of unused or damaged MCMDs at the national and sub-national healthcare facilities may encountered lack of cooperation or resistance Assumption: UNDP, MoE and MoH to liaise and work closely with responsible ministries and entities, healthcare facilities and conduct awareness raising activities
	Outputs 2.1.1 to achieve Outcome 2.1: Gender-sensitive technical guidance/ guidelines on mercury, MCMDs and their wastes for collection, distribution, and temporary safe storage are developed and established						
	Facility unit has a limited experience on technical capacity in handling collected MCMDs, and face challenges to comply with regulatory framework for mercury transport and storage, also lacking capacity to safely transport MCMDs from the health facility units to mercury storage.		No MCMD's technical guidelines for collection, distribution and temporary storage.	At least one (1) Technical guidance/guidelines for collecting developed. At least one (1) partnership mechanisms at the national level for collection or distribution or temporary storage established.	At least three (3) Technical guidance/guidelines for collecting, distributing and temporary storage. At least three (3) partnership mechanisms established at the national level for collection, distribution and temporary storage.		
	Outputs 2.1.2 to achieve Outcome 2.1: Health facility management capacities to address mercury-free medical devises are strengthened through gender-sensitive capacity building.						
	There is a limited capacity to fully enable a proper environmental sound		No national training modules yet for collecting or distributing or temporary storage or plastic	Two (2) national Training modules for collecting or distributing or temporary	Five (5) national Training modules for collecting, distributing, temporary storage, plastic		

	healthcare waste management for MCMDs and mercury-contained wastes which is taking into consideration local gender and social sensitivities and perspectives, to review and develop an integrated approach for healthcare waste management as a whole.		recycling, and/or technical electromedical. There are 10.180 (Ministry of Health, 2024) Puskesmas Facility across Indonesia which require to be strengthened their capacity. In average each of Puskesmas has 42 of health workers (Syahdilla, 2023) which more than half of the beneficiary target which 100.000 can be achieved from this program	storage or plastic recycling, and/or technical electromedical developed.	recycling, and technical electromedical developed. 10.000 health facilities for Puskesmas level involved on the trainings. 50,000 people directly involving on the training at 4 regional areas (30,000 female and 20,000 male).		
	Outputs 2.1.3 to achieve Outcome 2.1: Pilot plant for mercury temporary storage from medical devices containing mercury established						
	The implementation of mercury-based medical device waste management faces several obstacles and challenges, including there is no final treatment technology to manage mercury-containing medical device waste; no cooperation mechanism with waste treatment services related to stabilization and solidification technology; lack of formulate temporary and final storage options for stabilized and solidified mercury; lack of guidelines of mercury storage.		No facility for temporary storage from medical devices containing yet.	The design and technical specification of the pilot plant with consideration of gender-sensitive developed.	One (1) Pilot plant for mercury temporary storage from medical devices containing mercury established.		
	Output 2.1.4 to achieve Outcome 2.1: Gender and Social Inclusive (GESI) awareness programme on MCMDs replacement, collection and disposal to health facilities is created and implemented.						

	To achieve gender equality and drive fundamental changes in behaviors, attitudes, and norms within health care staff across Indonesia through priorities in social and cultural change.		No GESI awareness program on MCDMDs.	GESI assessment awareness program on MCMDs replacement, collection and disposal to health facilities for all components developed.	GESI assessment awareness program on MCMDs replacement, collection and disposal to health facilities for all components is shared implemented. At least 25 % from targeted beneficiary will be involved.		
Project component 3	**Circular models are developed and piloted to promote and sustain the large scale replacement to mercury-free alternatives for MCMDs.**						
Outcome 3.1 Technical guidelines developed on lifecycle management of mercury-free alternatives.	**Outcome Indicator 5:** **At least 3 technical guidelines developed and piloted**	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	There are no technical guidelines available	At least 1 technical guideline proposed to be developed on lifecycle management of mercury-free alternatives of medical devices.	At least 3 technical guidelines[1]14 were developed and piloted on lifecycle management of mercury-free alternatives of medical devices	Project progress report Project consultant report Site visits and monitoring report	Risks: Assumption:
	Output 3.1.1 to achieve Outcome 3.1: Circular models for mercury-free medical devices (MFMDs) to support MCMDs accelerated replacement assessed.						
	At least 2 validated circular economy models institutionalized and ready for scale-up		No circular models for Mercury-Free Medical Devices (MFMDs) are currently available	At least 1 circular economy models for MFMDs will be assessed for feasibility, cost-effectiveness, and scalability in target regions.[2]15	At least 2 validated circular economy models will be institutionalized and ready for scale-up.[3]16		
	Output 3.1.2 to achieve Outcome 3.1:: Green and gender-sensitive Procurement and Technical Guidelines for circular management of mercury-free medical devices developed						
	100 healthcare facilities and 5 manufacturers adopted green and gender-sensitive		There are no green and gender-sensitive procurement and technical guidelines for	At least 1 technical guideline proposed to be developed on lifecycle	100 healthcare facilities and 5 manufacturers adopted green and gender-sensitive		

	procurement and technical guidelines and improving gender equity in healthcare practices		circular management of MFMDs	management of mercury-free alternatives of medical devices	procurement and technical guidelines and improving gender equity in healthcare practices		
Outcome 3.2 Mercury-free medical devices piloted in selected health care facilities, collection and recycling guidelines developed for end-of-life products and disposal technologies/strategies piloted taking into consideration gender and social inclusive approaches	**Outcome Indicator 6:** **100% of targeted healthcare facilities have institutionalized mercury-free medical devices (MFMDs),** with finalized collection/recycling guidelines adopted nationwide, gender- and socially inclusive disposal strategies implemented	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	MFMDs already existed in healthcare facilities, but there are no collection/recycling guidelines for end-of-life products, or the implementation of gender- and socially inclusive disposal strategies.	50% of targeted healthcare facilities will have expanded the use of mercury-free medical devices (MFMDs), with draft collection/recycling guidelines developed and gender-inclusive disposal strategies piloted in 3–5 sites	100% of targeted healthcare facilities will have institutionalized mercury-free medical devices (MFMDs), with finalized collection/recycling guidelines adopted nationwide, gender- and socially inclusive disposal strategies implemented across 20+ sites, and a measurable 70% reduction in mercury waste.	Project progress report Project consultant report Site visits and monitoring report	Risks: Resistance to MCMD replacement and/or transition to MFMDs Assumption: MoE, MoH and UNDP to conduct awareness raising activities to promote replacement and transformation to MFMDs
	Outcome Indicator 7: **One (1) pilot at the laboratory scale for mercury stabilization and solidification is equipped and implemented**	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	There is no such laboratory conducing such services	Pilot laboratory selected, equipment procured and set up to commence mercury stabilization and solidification process	Laboratory fully functions and results and experience disseminated to replicate at reginal regional areas	Project progress report Project consultant report Site visits and monitoring report	Risks: Resistance to technology transformation Technology difficulties for the pilot Assumption: BRIN to continue explore technology transfer and experience to facilitate success of pilot
	Outcome Indicator 8: **Based on results of the pilot project, Hg stabilization and solidification strategies are upscaled at four (4) regional areas**	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	There is no regional facilities conducting such strategies	Four (4) regional areas selected and equipment procurement initiated	Four (4) regional areas fully established and equipment, training conducted to perform mercury stabilization and solidification	Project progress report Project consultant report Site visits and monitoring report	Risks: Technological difficulties in technology transfer Assumption: BRIN to continue explore technology transfer and experience to

							facilitate success of pilot
	Output 3.2.1 to achieve Outcome 3.2: Medical Devices manufacturers, distributors, and suppliers had incorporated circular economy principles on disposal of Hg-based and electronic-based devices in their CSRs and/or other relevant internal practices, Policies, or strategies						
.			There are no circular economy principles integrated into CSR, policies, or strategies for managing mercury (Hg)-based and electronic medical devices	At least 40% of targeted medical device manufacturers, distributors, and suppliers have initiated integration of circular economy principles into their CSR, policies, or strategies for Hg/electronic-based device disposal.	80% of targeted medical device manufacturers, distributors, and suppliers have institutionalized circular economy principles into their CSR, policies, and strategies for mercury (Hg)-based and electronic device disposal, resulting in measurable reductions in mercury pollution and enhanced social equity.[4]17		
	Output 3.2.2 to achieve Outcome 3.2: One (1) pilot at the laboratory scale for mercury stabilization and solidification technology are implemented						
.			There is no Hg stabilization and solidification technology being implemented	1 pilot at the laboratory scale for mercury stabilization and solidification technology are implemented	1 pilot at the laboratory scale for mercury stabilization and solidification technology are implemented		
	Output 3.2.3 to achieve Outcome 3.2: Hg stabilization and solidification strategies and solutions upscaled to 4 (four) locations in partnership with Public-Private selected institutions						
			There is no Hg stabilization and solidification strategies and solutions	2 locations ready for Hg stabilization and solidification strategies and solutions in partnership with Public-Private selected institutions	4 locations ready for Hg stabilization and solidification strategies and solutions in partnership with Public-Private selected institutions		
Outcome 3.3 Financing mechanisms to support replication and scale up of MCMDs replacement in collaboration with local fund	**Outcome Indicator 9:** **At least 200 targeted healthcare facilities, including 40% women-led establishments, across 5 provinces will**	Baseline data from PIF and PPG phases, reports collected through desk studies, investigati	There is no financing mechanism to support replication and scale up of MCMDs replacement	At least 1 financing mechanism available in collaboration with local fund providers/banks	At least 200 of targeted healthcare facilities, including 40% women-led establishments, across 5 provinces will gain access to affordable	Project progress report Project consultant report Site visits and monitoring report	Risks: Resistance to technology transformation Assumption: MoE, MoH and UNDP to conduct awareness

providers/banks assessed.	**gain access to affordable financing for** MFMDs through partnerships with at least one local bank in each location, which will have institutionalized gender-sensitive lending criteria	on, studies, interviews and site visits			financing for MFMDs through partnerships with at least 1 local bank in related locations that have institutionalized gender-sensitive lending criteria.		raising and Gender Equity and Social Inclusion (GESI) and explore financial mechanism for accessible financing
	Output3.3.1 to achieve Outcome 3.3: Development of gender-sensitive financing mechanisms that explored in collaboration with local fund providers/banks and new/revamped finance solutions proposed.						
Project component 4	**Project results monitored, documented, and shared**						
Outcome 4.1: Monitoring and evaluation activities carried out as per GEF requirements.	**Outcome Indicator10:** Number of M&E activities conducted throughout project duration in compliance of GEF and UNDP requirements	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	0	15	30	Mid-Term Review, Final Project Report and Terminal Evaluation reports	**Risks:** • Low participation rate on training and public awareness activities • Failure to exercise timely and effective M&E activities due to capacity issue. **Assumptions:** Efficient M&E to facilitate achievement of project outcomes and objectives.
Outputs to achieve Outcome 4.1	4.1.1. Assessed and applied Social and Environmental Screening Procedure (SESP). 4.1.2. Gender Action Plan and awareness raising activities on collection, transport, storage and disposal of mercury and mercury waste. 4.1.3 Periodic monitoring, and reporting, Project Implementation Reports (PIR), Mid-Term Review and Terminal Evaluation						
Outcome 4.2: Learning and knowledge sharing activities carried out and knowledge products developed and shared (including lessons-learned from the perspective of gender-equality and social inclusion implementation).	**Outcome Indicator 11:** Lessons-learned and experience captured, documented and disseminated	Baseline data from PIF and PPG phases, reports collected through desk studies, investigation, studies, interviews and site visits	*0*	*4*	*10*	Knowledge products, technical reports, resource documents, published materials	
	Outcome Indicator 12: Number of training sessions and/or public awareness workshops conducted	Baseline data from PIF and PPG phases, reports collected through desk studies, investigati	0	10	20	Training, public awareness and experience exchange reports	

		on, studies, interviews and site visits					
Outputs to achieve Outcome 4.2	4.2.1 Lessons-learned and best practices for knowledge management are collected and shared at national and international levels						

[1] The project will develop 3 guidelines consist of three distinct circular phases: the manufacturer phase, which involves developing a design manual; the user phase, which entails creating protocols for healthcare providers to safely use, maintain, and monitor mercury-free devices; and the end-of-life phase, which focuses on developing End-of-Life Management Guidelines for collecting, recycling, and disposing of mercury-free devices, with an emphasis on maximizing material recovery.

[2] Key milestones: (i) Completion of a comparative analysis of circular models (e.g., take-back systems, leasing models, material recovery hubs) tailored to healthcare settings. (ii) Identification of 1–2 high-potential models prioritized for pilot testing, based on stakeholder consultations and technical assessments. (iii) Establishment of partnerships with 3–5 healthcare facilities and/or manufacturers to co-design pilot implementation plans.

[3] Key milestones: (i) Full-scale pilots of 2 circular models (e.g., a take-back/recycling system for MFMDs) implemented in 10–15 healthcare facilities. (ii) Adoption of circular practices by 5–10 manufacturers/distributors (e.g., integration of take-back schemes into supply chains). (iii) See policy component to ensure policy alignment: National or regional guidelines updated to incentivize circular models (e.g., tax breaks for MFMD adoption, extended producer responsibility laws). (iv) Knowledge products: Final report documenting lessons learned, cost-benefit analyses, and replication roadmaps for other regions.

[4] This project will ensure 80% of targeted companies adopt circular economy policies for mercury (Hg) and electronic device disposal, Over 100 healthcare facilities will transition to mercury-free devices via circular procurement agreements, and gender equity benchmarks (e.g., 40% women in waste management leadership) will be met to ensure inclusive, sustainable systemic change aligned with global standards.

ANNEX D: STATUS OF UTILIZATION OF PROJECT PREPARATION GRANT (PPG)

Provide detailed funding amount of the PPG activities financing status in the table below:

Project Preparation Activities Implemented	GETF/LDCF/SCCF Amount ($)		
	Budgeted Amount	Amount Spent To date	Amount Committed
International Consultants	54,200.00	52,500.00	1,700.00
Local Consultants	37,900.00	23,586.46	14,313.54
Travel	37,900.00	36,765.59	1,134.41
Suppliers	2,000.00	0.00	2,000.00
Trainings, Workshop	18,000.00	18,000.00	0.00
Total	**150,000.00**	**130,852.05**	**19,147.95**

ANNEX E: PROJECT MAP AND COORDINATES

Please provide geo-referenced information and map where the project interventions will take place

Location Name	Latitude	Longitude	GeoName ID

Cluster 1	3.5894	98.6739	

Location Description:

Activity Description:

Location Name	Latitude	Longitude	GeoName ID
Cluster 2	-6.181111	106.812222	

Location Description:

Activity Description:

Location Name	Latitude	Longitude	GeoName ID
Cluster 3	-7.2458	112.7378	

Location Description:

Activity Description:

Location Name	Latitude	Longitude	GeoName ID
Cluster 4	-5.133313	119.407949	

Location Description:

Activity Description:

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

This project is managing the mercury collected from health care facilities and gold mining that no longer use mercury. Mercury management is carried out from the collection stage at the storage depot, transporting to the location of waste processing facilities, mercury processing itself. The mercury waste is processed in the stabilization equipment. Then, it is processed in the solidification equipment. After that, the solidified mercury is stored at temporary storage facilities.

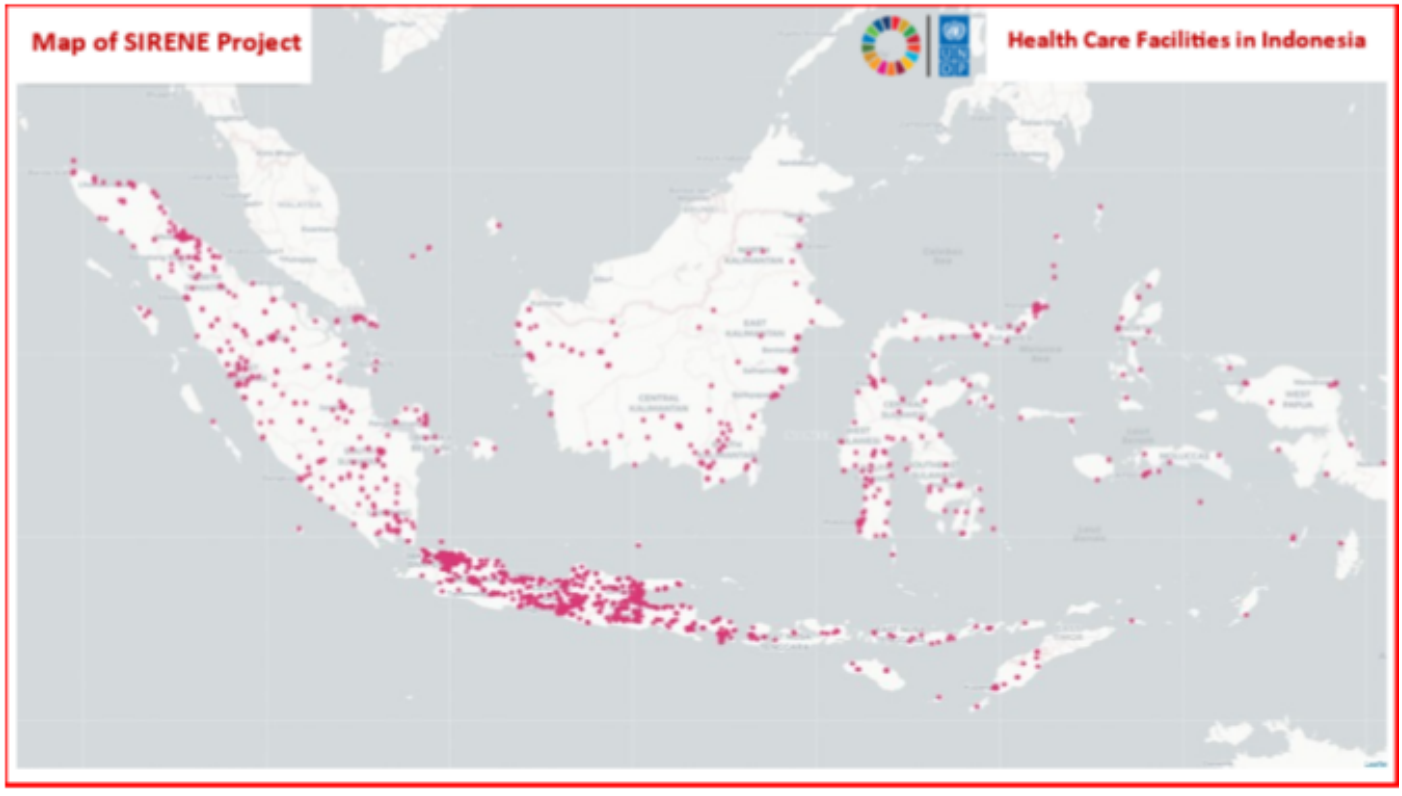
The equipment will be placed by cluster in the four (4) priority regional areas. The 4 red dots on the map reference point for the 4 regional cluster center. Coverage of each regional area as follow: **(1) Regional 1 (centered in Medan)** covering Aceh, North Sumatera, West Sumatera, Riau, Riau Islands, West Kalimantan; **(2) Regional 2 (centered in Jakarta)** covering Bangka Belitung Islands, Jambi, Bengkulu, South Sumatra, Lampung, Banten, West Java, DKI Jakarta, DI Yogyakarta, Central Java; **(3) Regional 3 (centered in Surabaya)** covering Central Kalimantan, South Kalimantan, North Kalimantan, East Kalimantan, East Java, Bali, West Nusa Tenggara, East Nusa Tenggara; **(4) Regional 4 (centered in Makassar)** covering South Sulawesi,

Southeast Sulawesi, Central Sulawesi, West Sulawesi, Gorontalo, North Sulawesi, Maluku, North Maluku, West Papua, Central Papua, Mountainous Papua, Southern Papua, Southwest Papua, Papua.

The points of location as illustrate in the following figure.

The geographic coordinates as shown in the following table provided represent approximate centroids of the four priority regional clusters as shown on the map. Due to the broad geographic scope of each region, the administrative capital city center was selected as a representative reference point for each cluster. Coordinates were retrieved from Google Earth Pro (WGS84 datum). These points serve as geospatial reference markers for monitoring and reporting purposes. To ensure alignment between project maps and formal geographic data, the above table provides the approximate geographic centroids for each regional cluster.

The SIRENE Project will have impacts on these following health care facilities in Indonesia:



The map above illustrates the distribution of healthcare facilities across Indonesia, with each red dot representing a facility that may be impacted by the SIRENE Project. These facilities include hospitals, clinics, laboratories, and other medical institutions that have historically used mercury-containing devices The SIRENE Project will support these facilities in transitioning away from MCMDs use through technical assistance, equipment replacement, training, and safe disposal of existing mercury waste. The project's four regional clusters are strategically positioned to serve all provinces within their respective coverage areas, ensuring equitable access to mercury collection, processing, and safe storage services throughout project implementation.

ANNEX F: ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCREEN AND RATING

Attach agency safeguard datasheet/assessment report(s), including ratings of risk types and overall project/program risk classification as well as any management plans or measures to address identified risks and impacts (as applicable).

Title
ProDoc ANNEX 9 PIMS9660 ESMF - revised after GEF Sec 2 Sept
ProDoc ANNEX 5 PIMS9660 SESP - revised after GEF Serc 2 Sept

ANNEX G: BUDGET TABLE

Please upload the budget table here.

GEF ID: 11546 (PIMS 9660)

Project Title: Strengthening Indonesia's Reduction and Elimination in the Distribution and Supply Chain of Mercury from National Health (SIRENE)

Annex G: Budget Table

1			Component (USDeq.)								
2											
3	Expenditure Category	Detailed Description	Component 1	Component 2	Component 3	Component 4	*Sub-Total*	*Monitoring and Evaluation*	*Project Management Cost (PMC)*	Total (USDeq.)	Responsible Entity (Executing Entity receiving funds from the GEF Agency)
4	Equipment	IT equipment for PMU	*30,000*	*20,000*	*10,000*		***60,000***			**60,000**	**MoE**
5	Equipment	Equipment for conducting inventory,		*49,900*	*10,000*		***59,900***			**59,900**	**MoE**

		collection, packaging, distribution and temporary storage of an estimated 750,000 units of MCMDs and contaminated plastic at/from national healthcare facilities									
6	Equipment	Equipment to support guideline development and its pilot			*20,000*		***20,000***			**20,000**	**MoE**
7	Equipment	Materials and goods for safe temporary storage of estimated 750,000 pieces of MCMDs at four (4) regional project sites			*680,000*		***680,000***			**680,000**	**MoE**
8	Contractual services-Individual	National Project Manager					-		*202,500*	**202,500**	**MoE**
9	Contractual services-Individual	Project Assistant					-		*75,000*	**75,000**	**MoE**
10	Contractual services-Company	Subcontracts for a) Detail Engineering Design (DED) of temporary storage, b) Establishment of temporary storage, and c) Technical electromedical of MFMD		*100,000*			***100,000***			**100,000**	**MoE**
11	Contractual services-Company	Subcontract for implementation of mercury stabilization and			*141,690*		***141,690***			**141,690**	**MoE**

		solidification facility and replication and establishing financial access									
12	Contractual services-Company	To develop awareness raising plan and its implementation				*40,000*	***40,000***			**40,000**	**MoE**
13	International Consultants	To support stabilization and solidification			*126,000*		***126,000***			**126,000**	**MoE**
14	International Consultants	To support environmental and social safeguard implementation and assessment				*10,000*	***10,000***			**10,000**	**MoE**
15	International Consultants	For awareness raising strategy and knowledge sharing				*20,000*	***20,000***			**20,000**	**MoE**
16	International Consultants	To conduct MTR and TE					-	70,000		**70,000**	**UNDP**
14	Local Consultants	Working Group Coordinator for WGC 1, 2, 3	*77,000*	*88,000*	*125,400*		***290,400***			**290,400**	**MoE**
18	Local Consultants	Project Assistant for Working Group 1, 2, 3	*52,500*	*60,000*	*85,500*		***198,000***			**198,000**	**MoE**
19	Local Consultants	Working Group Coordinator (WGC4)	*36,500*	*18,700*	*39,600*	*31,950*	***126,750***			**126,750**	**MoE**
20	Local Consultants	Project Assistant for Working Group 4	*24,750*	*12,750*	*27,000*	*21,750*	***86,250***			**86,250**	**MoE**
21	Local Consultants	For review, development and strengthening of policies, regulations and guidelines	*11,000*				***11,000***			**11,000**	**MoE**

22	Local Consultants	To conduct capacity building training of national and sub-national government staff to enhance policy enforcement and oversight	*12,250*				***12,250***			**12,250**	**MoE**
23	Local Consultants	To develop method and mechanism to conduct inventory of Hg wastes and MCMDs	*11,000*				***11,000***			**11,000**	**MoE**
24	Local Consultants	For the development of at least three (3) national technical guidance for collecting, distributing and temporary storage, and at least 5 national training modules on collecting, packaging, distributing and temporary storage		*11,000*			***11,000***			**11,000**	**MoE**
25	Local Consultants	To develop best practices and standards on GESI and conduct assessment to ensure implementation		*11,000*			***11,000***			**11,000**	**MoE**
26	Local Consultants	To conduct training at four (4) project locations on collection, distribution, temporary storage and management of plastic		*7,700*			***7,700***			**7,700**	**MoE**

		waste and technical electromedical									
27	Local Consultants	To conduct training on pilot plant for up-scaling to the four project locations		*6,850*			***6,850***			**6,850**	**MoE**
28	Local Consultants	Four (4) Regional Facilitators		*144,000*			***144,000***			**144,000**	**MoE**
29	Local Consultants	To develop technical guidelines for circular economy of recycling/disposal strategy			*22,000*		***22,000***			**22,000**	**MoE**
30	Local Consultants	To develop Gender Sensitive guidelines and training materials and conduct training			*33,000*		***33,000***			**33,000**	**MoE**
31	Local Consultants	For MFMD pilot			*88,000*		***88,000***			**88,000**	**MoE**
32	Local Consultants	To develop financing mechanism			*42,900*		***42,900***			**42,900**	**MoE**
33	Local Consultants	Social and Environmental Safeguards Expert (MoE)				*25,950*	***25,950***			**25,950**	**MoE**
34	Local Consultants	Social and Environmental Safeguards Expert (UNDP)					-	*7,700*		**7,700**	**UNDP**
35	Local Consultants	Gender Expert (MoE)				*18,150*	***18,150***			**18,150**	**MoE**
36	Local Consultants	Gender Expert (UNDP)					-	*15,000*		**15,000**	**UNDP**
37	Local Consultants	To conduct MTR and TE					-	*30,000*		**30,000**	**UNDP**
38	Training, Workshops, Meetings	Conduct five (5) two-day regional policies review and development workshops with 45	*90,000*				***90,000***			**90,000**	**MoE**

		participants at each workshops, plus audio/visual equipment rental and supplies									
39	Training, Workshops, Meetings	Conduct four (4) regional training workshops on revised and newly developed policies, regulations and guidelines, 150 participants for each workshop	*190,000*				***190,000***			**190,000**	**MoE**
40	Training, Workshops, Meetings	Conduct four (4) regional gender equity and social inclusion (GESI) capacity strengthening workshops for personnel of national and sub-national government agencies, healthcare facilities and relevant stakeholders, each workshops will be attended by 500 participants		*425,000*			***425,000***			**425,000**	**MoE**
41	Training, Workshops, Meetings	Conduct meetings/ technical sessions/training workshops			*410,000*	*40,000*	***450,000***			**450,000**	**MoE**
42	Training, Workshops, Meetings	One (1) national and four (4) regional Inception workshops,					**-**	*40,000*		**40,000**	**MoE**

		plus One (1) Project Board meeting									
43	Travel	Travel of personnel from the national and sub-national government agencies, healthcare facilities and relevant entities to participate in five (5) two-day regional policies review and developmen t workshops	*100,000*				***100,000***			**100,000**	**MoE**
44	Travel	Travel for personnel from national and sub-national government agencies, healthcare facilities and related entities to participate in four (4) regional workshops on revised and newly developed and updated policies, regulations and guidelines	*240,000*				***240,000***			**240,000**	**MoE**
45	Travel	Travel for personnel of national and sub-national government agencies, healthcare facilities on implementa tion and monitoring of MCMDs inventory, collection, distribution and		*170,000*			***170,000***			**170,000**	**MoE**

		temporary storage									
46	Travel	Travel to regional healthcare facilities and sub-national government agencies			*80,000*		***80,000***			**80,000**	**MoE**
47	Travel	Travel to support national healthcare facilities on the collection, packaging, distribution and temporary storage of MCMDs and contaminated plastic			*700,000*		***700,000***			**700,000**	**MoE**
48	Travel	Travel to facilitate development and establishment regional financial mechanism			*40,000*		***40,000***			**40,000**	**MoE**
49	Travel	Travel for safeguards, and progress monitoring				*52,000*	***52,000***			**52,000**	**MoE**
50	Travel	Travel for monitoring project progress, core indicators and M&E monitoring				*54,700*	***54,700***			**54,700**	**MoE**
51	Travel	M&E activities					**-**	*35,000*		**35,000**	**MoE**
52	Office Supplies	For Working Groups and Regional Facilitators and for development of policies, regulations and guideline	*15,000*				***15,000***			**15,000**	**MoE**
53	Office Supplies	To support collection, packaging, distribution and		*20,000*			***20,000***			**20,000**	**MoE**

		temporary storage of MCMDs and contaminated plastic at healthcare facilities									
54	Office Supplies	To support collection, distribution and temporary storage of MCMDs and contaminated plastic			*20,000*		***20,000***			**20,000**	**MoE**
55	Office Supplies	To support financial mechanism development and replication			*28,000*		***28,000***			**28,000**	**MoE**
56	Training, Workshops, Meetings	Yearly Technical Assistance activities at Project sites: annual capacity building/campaigns will be held in each project site to stretch local presence of project technical teams, facilitate exchange of experience and consultation, collect feedback/inputs from local stakeholders to improve project execution particularly focusing on the enforcement-related activities. *(US $ 5,000 year x 5 years timeframe)*	-	*25,000*	-	-	***25,000***			**25,000**	**MoE**
57	Other Operating Costs	Miscellaneous expenses	*25,000*				***25,000***			**25,000**	**MoE**

		to support review and establishment of policies, regulations and guidelines, the Working Groups and Regional Facilitators									
58	Contractual services-Company	*(In complementing the Budget Line 7 above)* Engage qualified service provider (company) for the oversight of collection, distribution and temporary storage of MCMDs and contaminated plastics at healthcare facilities, including the establishment of proper MRV systems and final reporting to Project Board, as well on-site technical assistance during the collection, distribution, and temporary storage of MCMDs and contaminated plastics at healthcare facilities.			*85,000*		***85,000***			**85,000**	**MoE**
59	Other Operating Costs	Miscellaneous expenses to support collection,			*20,000*		***20,000***			**20,000**	**MoE**

		distribution and temporary storage of MCMDs and contaminated plastic at national and sub-national healthcare facilities									
60	Contractual services-Company	Specialized waste management/disposal company to provide services related to ensuring packaging and carry on transportation related to the nation-wide collection and transport activities of MCMDs reaching sub-regencies at the 514 regencies in the 38 provinces, and from the 514 regencies to the four (4) regional project sites			*800,000*		***800,000***			**800,000**	**MoE**
61	Other Operating Costs	Miscellaneous covering supplies, printing, publication				*20,000*	***20,000***			**20,000**	**MoE**
62	Other Operating Costs	UNDP Annual audit costs					**-**		*36,310*	**36,310**	**UNDP**
63	Contractual services-Individual	Technical Expert (Individual Consultant) to oversee yearly project site level engagement activities (budget line 56) to	*25,000*								**MoE**

		ensure the enforcement of best practices and replication of local regulations and standards, and the implementation of appropriate technical measures across sub-regencies and regencies.									
			940,000	**1,169,900**	**3,634,090**	**334,500**	**6,078,490**	**197,700**	**313,810**	**6,590,000**	

Please explain any aspects of the budget as needed here

ANNEX I: RESPONSES TO PROJECT REVIEWS

From GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF.

No.	Comments	Response	Changes in CEO ERR
Comments of Germany			
1	Suggestions for improvements to be made during the drafting of the final program proposal	Noted and improvements made	
2	The project summary lists disposal of **POP-containing plastics**, which is not reflected in the more detailed project descriptions. Germany asks for details on how the POP-containing plastics will be identified, collected and disposed of	POP-contaminated plastic has been collected by healthcare facilities and will be collected and disposed.	Output 2.1.2, Activities 2.1.2.2 and 2.1.2.3
3	Germany asks to add the factor of air emissions from facilities handling **mercury-containing waste** (barriers to be addressed). Air monitoring for mercury storage and processing facilities should also be added to Component 2. 19	Mercury contents from the unused, unbroken and broken MCMDs will go through the stabilization and solidification process in strict compliance with Minamata Convention requirements for suitable longer-term safe t temporary pending final disposal. Thee waste management enterprise handling the final temporary storage for which air emissions monitoring is and will be fully implemented	Component 2, Output 2.1, Activity 2.1.1.1
4	As Component 2 improves **private sector capacity** for phase-out and environmentally sound disposal of mercury-containing medical waste, Germany asks to explain how private sector stakeholders will be empowered and whether the process will be monitored	Partnership mechanism with private sector will be established at national and sub-national level, and training and capacity building activities will involve private sector at the four (4) regional project sites	Component 2, Output 2.1, Activities 2.1.1.2 and 2.1.3.3
5	Germany proposes to set out how **knowledge of technologies for stabilization and solidification** of mercury at laboratory scale (Component 63) will be disseminated to private sector stakeholders	The knowledge and technologies, supported with expertise and guidance of The National Research and Innovation Agency (BRIN) will be upscaled to individual laboratories in the four (4) regional project sites, and in partnership with select public and private institutions	Outcome 3.2.3, Activities 3.2.3.1 and 3.2.3.2
6	The section on **stakeholder engagement** lists that IP&LCs, civil society and private Sector were consulted. Yet, the summary lists mostly private sector companies that will be engaged, not who has already been contacted. In addition, no reference is made to IP&LCs and	A Stakeholder Engagement Plan, upon further investigation and consultation, was developed that include leaseholders to be engaged during project implementation	UNDP Project Document Annex 8 Stakeholder Engagement Plan

	CSOs are only mentioned very shortly. Germany asks to provide information on who has already been contacted and how civil society and IP&LCs are to be involved in stakeholder engagement		
7	Germany recommends that **corruption risks and mitigation measures** be considered in the project risk section due to the identified limited capacity to monitor and enforce laws in healthcare waste management in Indonesia, as well as the severe restriction of the formally independent anti-corruption agency during the presidency of Joko Widodo, which may persist since Widodo's son is the vice-president elect. Corruption may occur in relation to the storage, treatment, and disposal of medical waste, or related to medical waste workers, data management, appointment of contractors, or in relation to environmental clearance certificates or others and awareness should be raised.	It is noted that UNDP also has a funding for conducting 1. Harmonized Approach to Cash Transfers (HACT) Assessment. 2. Spot-check 3. Financial Audits The purpose of financial audits and spot checks conducted by UNDP is to ensure that project funds are used efficiently, transparently, and in accordance with the agreed-upon regulations and standards. These processes will help to identify potential risks, strengthen financial management, and ensure accountability in the use of resources for avoiding the occurrence of corruption.	Project will be implemented under UNDP Country Office Support to National Project
Comments of STAP			
1	**Systems thinking**. The system best considered is that of Hg-containing waste in the hospital sector. The system could be more comprehensively described by considering the waste handling sector dealing with Hg-containing medical devices, how this sector might change, and the implications of any change for effective and safe waste disposal. The system should also include the manufacturers and retailers of medical devices who will be affected by this equipment change-over. Is the system the same in more urbanized vs remote island locations, and if so, what are the implications? The system going beyond Hg-containing medical devices is not well described. For example, what e-waste is included? What system should be considered to increase circularity?	Project designed to address unused unbroken and broken mercury-containing medical devices and also included POP containing plastic in the nation's healthcare facilities. It does include engaging private sector manufacturers of mercury-free medical devices to promote rapid and large scale replacement of MCMDs. Through the four (4) reginal project sites, the project covers both national and sub-national level facilities	Section A, Project Rationale

2	**Uncertainty futures** were not discussed but could be useful, e.g., the availability of Hg-free medical equipment. How will variability in replacement costs affect the project? Do some of the logic pathways in the Theory of Change depend on the timely cooperation of a stakeholder, and what would be the consequences of not having a timely response? Please consult STAP's brief on Future Narratives for guidance on how to address uncertain futures through simple future narratives	Through collaboration of Ministry of Environment (MoE) and Ministry of Health (MoH), with technical support by The National Research and Innovation Agency (BRIN), will facilitate collection, transportation, stabilization and solidification of mercury for longer-term safe temporary storage for eventual disposal when matured technologies are available. The replacement is, complemented with partnership with private sector mercury-free medical devices manufacturers to promote rapid and large scale replacement	Component 3
3	**Baseline, barriers, and enablers**. The baseline concerning Hg emissions to air is sufficiently well described. Barriers related to Hg-containing medical equipment are considered, e.g., for collecting, transporting, and disposing of Hg. However, more details could be provided to distinguish barriers relevant to urban vs. remote islands since the geography of Indonesia is raised as a challenge. Major challenges are explained regarding regulation, law enforcement, financing, and awareness raising, but not the availability of facilities or expertise in Hg waste handling. A limited budget was identified as a barrier, but how it would be addressed was not clear in the proposal.	During PPG stage, healthcare facilities in both urban and remote locations were investigated and evaluated and taken into consideration in formulating the activities to achieve the planned outputs, outcomes to reach the project objectives	Section A, Project Rationale; Section B, Project Results
4	**Theory of Change (ToC):** The scope of the project needs to be better delineated. Most of the project concerns Hg-containing medical devices, but some parts of the proposal extend more broadly to consider medical devices that could include future e-waste under the umbrella of "circularity." Details are insufficient regarding these other medical devices, including what "circularity" means. For example, "sustainable waste management technologies" are mentioned, but no details are given about how this fits into the activities	Additional paragraph added	Section B Theory of Change

	The ToC has a limited description of the logic connecting the root problems, barriers, outcomes, and longer-term outcomes. A discussion of drivers and assumptions is missing. Some barriers are not explained or justified, e.g., why is limited public awareness a problem if this project deals with the healthcare and waste handling sectors? Some barriers, such as limited political capacity, geographic constraints, and limited budget, are mentioned but not dealt with.		
5	**Project Components** In general, all descriptions need to list critical assumptions and risks. Component 1: The description here is very general but should address how efforts will be made towards policy coherence, particularly since this was identified as a barrier. This component should include a timeline for achieving specific milestones and how the barrier of poor law enforcement will be addressed. The proposal is inconsistent in describing the project's lack of regulations/policies along with operationalization vs the harmonization of existing policies and regulatory frameworks. The enforcement issue needs more explanation, particularly because the proposed engagement with healthcare units is described as follows: the "governance	Project components, Outcomes, Outputs and Activities to address the barriers to achieve expected project results have been revised with details	Section B, Expected Results
	Component 2: More information is needed on how the private sector will be engaged (incentives and/or penalties and enforcement). The general description needs to consider targets and a timetable for phase-out and environmentally sound management (ESM). How do the planned activities and capacity for stabilization and storage relate to the magnitude of Hg-containing waste? Is there sufficient capacity available to handle and transport collected Hg-containing devices	Project components, Outcomes, Outputs and Activities to address the barriers to achieve expected project results have been revised with details	Section B, Expected Results

	Component 3: A connection needs to be made with proposed activities that provide safe temporary and long-term storage of collected Hg. The title includes "circular models" – what is circular about Hg collection and disposal? The proposed technology [solidification and stabilization S/S)] is meant for end-of-life disposal, so it is not circular. Also, have the pros and cons of S/S technology for mercury in Indonesia been assessed? Waste treated by S/S would require landfilling, as noted in the proposal, but is this feasible or advisable in a country that has been reported to have landfills at risk of overcapacity? An explanation of what and how a "circular economy approach" and the mishandling of e-waste will be achieved is missing.	Project components, Outcomes, Outputs and Activities to address the barriers to achieve expected project results have been revised with details	Section B, Expected Results
	Component 4: The proposal needs to include more details about what will be monitored, documented, and shared. How do gender equality and social inclusion (GESI) fit into this project?	Project components, Outcomes, Outputs and Activities to address the barriers to achieve expected project results have been revised with details	Section B, Expected Results
6	**Additionality**. The proposal clearly states that progress on controlling Hg emissions from the healthcare sector would proceed without GEF funding but at a much slower pace and without adequate attention to local circumstances. For example, some of the distant Indonesian Islands would not be	Government initiated actions to collect and transport MCMDs from healthcare facilities to safe temporary storage were stopped due to financial and human resources constraints. The project will support the Government's efforts to fulfill its obligations to the Convention, to reduce the risks of exposure to mercury.	
7	**Engaging stakeholders**. The proposal does well to list stakeholders from the private sector, including suppliers of alternative technologies, distributors, as well as waste management companies. However, the proposal did not explain how the listed stakeholders will be engaged. Stakeholders from the hospital sector were not listed, which seems to be a significant oversight. What is a "gender-responsive regulatory and	The Stakeholder Engagement Plan, included as an Annex to the UNDP Project Document, outlines the respective roles and responsibilities of key stakeholders and the engagement during project implementation.	UNDP Project Document, Annex 8, Stakeholder Engagement Plan

	policy framework"? Women are not included as stakeholders		
8	Calculations of **GEBs**. The 20 tonnes of Hg collected was based on 176,946 units of Hg-containing devices (that's a very certain number). How was this value calculated? What is the assumption of how much Hg is in the range of devices collected? How will GHG emission reduction be achieved through the project? What specific activity will lead to emission reduction? How was the expected emission reduction arrived at? The project description does not mention deca-BDE, but 5.00 tonnes are listed as being removed or disposed of. How was this number determined, and which components of the proposal will deliver this GEB? How was 20,000 tons of avoided residual plastic waste determined, as this is not adequately discussed in the proposal? The calculation of 20 g TEQ of organic pollution or uPOP was based on avoiding the incineration of medical devices. Did this calculation account for ~80% of hospital waste being landfilled or illegally dumped together with MSW?	Detailed calculation and justification of GEBs is included following the section of Core Indicators. Activities designed to achieve the outputs and outcomes are included in the section under Expected Results.	Section following Core Indicators, and Section B Expected Results
9	8. The discussion of policy coherence needs further details. How will the proposal lead to policy coherence? Representatives from different government agencies were not listed amongst those consulted, yet their involvement would seem essential.	A detailed analysis of Regulatory Framework is contained in the UNDP Project Document. Project Component 1 has been revised to provide details on activities to achieve desired outputs and outcomes on strengthened Policy and regulatory frameworks to support mercury phase out and enforcement	UNDP Project Document, and Section B Expected Results section of the CEO ER
10	9. Analysis of risks: The discussion of risk is overly general. For example, risks from climate change that are not discussed include potential releases of Hg from temporary or	Risks to achieve project outcomes and risk identified at UNDP Social and Environmental Safeguard Procedures ate identified and analyzed	Sections on Riss to achieve Project Outcomes and Safeguards Rating

	"permanent" storage sites due to extreme weather events such as flooding or fire. Increased temperatures will increase Hg release to air during transfer and handling. A climate risk screening is needed for this project. Regarding "political and governance," the proposal should consider how a change of government might affect Component 1, which seeks to improve regulations and compliance monitoring. Technological risks related to achieving circularity or identifying and properly handling PBDE-containing waste should be discssed		
Comments of Switzerland			
1	The capacity-building aspect, which is present across several components and will help ensure **gender-responsiveness** in the project, needs adequate attention and planning as it was cited as a major barrier in the country. Capacity-building activities can integrate expertise to help manage the specific goals of the project, incorporating guidance from the Minamata Convention Secretariat on phasing out MCMDs and from civil society for coordination, stakeholder engagement, and gender sensitivity.	Noted. The project will leverage the technical expertise and guidance of The National Research and Innovation (BRIN) in the development and implementation of the gender responsive capacity building activities	Section B, Expected Results
2	While taking a **circular approach** will have many cross-benefits for Indonesia's waste management systems, it is also vital that it adequately plans for safe final storage practices for mercury after temporary storage. This means allocating further resources to this activity and will likely require greater capacity building needs as well to ensure proper disposa	While the project will not deal with the final disposal of mercury, through the stabilization and solidification process, mercury contents will be suitably for safe temporary storage in an established facilities of a waste management entity in full compliance with the Minamata Convention requirements. The Government agency, The National Research and Innovation Agency (BRIN) will provide technical support to plan for the safe temporary storage, and to research suitable technologies for final disposal.	Section B, Expected Results

3	Although coordination will be a significant challenge due to Indonesia's diverse geography and lack of systems in place, this also provides immense potential for extensive reach of the **new coordination measures** in place and expanding sound management of chemicals and waste practices throughout the country. The impact may also be significant in terms of reach, as mercury poses health and environmental risks that are extensive and persistent. These elements should be better reflected in the proposal, as they provide opportunities and may have cross-benefits in different dimensions of life.	The project attempts to ensue extensive outreach to include healthcare facilities throughout Indonesia. This is done by the project to facilitate closer and more effective coordination and collection of MCMDs from the sub-regencies to the regencies in the 38 provinces, and, and will then congregated in four (4) regional project sites to undergo stabilization and solidification process for suitable longer-term temporary storage at established temporary storage facilities at the waste management enterprise.	Section B, Expected Results