REQUEST FOR MSP APPROVAL (1-STEP PROCEDURE)

TYPE OF TRUST FUND: GEF TRUST FUND

PART I: PROJECT IDENTIFICATION

Project Title: Development of a Plan for Global Monitoring of Human Exposure to and Environmental Concentrations of Mercury			
Country(ies):	Global	GEF Project ID:[1]	5409
GEF Agency(ies):	UNEP	GEF Agency Project ID:	01011
Other Executing Partner(s):	UNEP DTIE Chemicals Branch	Submission Date: 1st Resubmission 2nd resubmission 3rd resubmission	22.07.2013 26.07.2013 19.08.2013 25.11.2013
GEF Focal Area (s):	Persistent Organic Pollutants /Chemicals	Project Duration(Months)	24 months
Name of Parent Program (if applicable): For SFM/REDD	N/A	Agency Fee ($):	80,750

A. FOCAL AREA STRATEGY FRAMEWORK[2]:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount ($)	Cofinancing ($)
Pilot sound chemicals management and mercury reduction CHEM-3	Country capacity built to effectively manage mercury in priority sectors.	Countries receiving GEF support for mercury management and reduction, on a pilot basis.	GEF TF	776,000	2,726,479
Subtotal				*776,000*	*2,726,479*
Project management cost[3]			GEF TF	74,000	278,932
Total project costs				850,050	3,005,411

B. PROJECT FRAMEWORK

Project Objective: To harmonize approaches for monitoring mercury in humans and the environment, and strengthen the capacity for mercury analysis in humans and the environment to accurately determine their concentrations globally

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount ($)	Co-financing ($)
Review of existing information on human exposure to and environmental concentrations of mercury	TA	Project technical and analytical baseline strengthened and information needs identified	1.1 Worldwide analysis of existing networks for mercury monitoring 1.2 Central mercury laboratory database established and first report on interlaboratory assessment available	GEF TF	137,500	893,479
Development of a monitoring plan on presence of mercury in ambient air	TA	Enhanced understanding of mercury concentrations in ambient air through	2.1 Comprehensive network and stations for mercury atmospheric samples established and ready to be used	GEF TF	232,750	1,429,000

[1] Project ID number will be assigned by GEFSEC.

[2] Refer to the reference attached on the Focal Area Results Framework and LDCF/SCCF Framework when filling up the table in item A.

[3] GEF will finance management cost that is solely linked to GEF financing of the project. PMC should be charged proportionately to focal areas based on focal area project grant amount.

		the strengthening of the Global Monitoring Observation System (GMOS) and the development of the complimentary, passive air sampling (PAS) network for ambient air concentrations improves national and global capacity to analyse mercury in ambient air and to develop and apply sound mercury mitigation plans	2.2 Results of one-year pilot test of the atmospheric network for mercury in ambient air available in one consolidated report 2.3 Draft proposal for monitoring plan for mercury on ambient air includes active and passive sampling techniques and short, medium and long-term actions.			
Development of a monitoring plan on human exposure to mercury	TA	Capacity in developing countries to analyse total mercury in human samples improved and monitoring plan on human exposure to mercury developed	3. 1 Standard Operation Procedures (SOP) for human biomonitoring of mercury in place and includes selected sample matrices. 3.2 Network for mercury biomonitoring established and harmonized protocols for national assessments available 3.3 Draft global plan for biomonitoring of mercury includes short, medium and long term actions	GEF TF	259,750	384,000
Lessons learned and formulation of GMP	TA	Lessons learned and consolidated global plan for monitoring human exposure to and environmental concentration of mercury enable countries to monitor mercury in a harmonized manner	4.1 Report on science-based international workshop for review and finalization of the human exposure and environmental components of the global monitoring plan 4.2 Lessons learned reported. 4.3 Monitoring and evaluation plan fully implemented assess rate of project's success	GEF TF	146,000	20,000
Subtotal					*776,000*	*2,726,479*
Project management Cost[4]				GEF TF	74,000	278,932
Total project costs					850,000	3,005,411

C. CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, ($)

Sources of Co-financing	Name of Co-financier (source)	Type of Cofinancing	Cofinancing Amount ($)
GEF Agency	UNEP Chemicals Branch	In-kind	895,022
Other	World Health Organization	In-kind	410,389
Other Multilateral Agency (ies)	Global Mercury Observation System (GMOS)	In-kind	1,700,000
Total Co-financing			3,005,411

[4] Same as footnote #4.

D. GEF/LDCF/SCCF/NPIF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY[1]

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in $) Grant Amount (a)	Agency Fee (b)[2]	Total c=a+b
UNEP	GEF TF	Persistent Organic Pollutants	Global	850,000	80,750	930,750
Total Grant Resources				850,000	80,750	930,750

[1] In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table

[2] Please indicate fees related to this project.

E. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Grant Amount($)	Co-financing ($)	Project Total ($)
Local consultants*			0
International consultants*	47,500	232,923	280,423
Total	**47,500**	**232,923**	**280,423**

F. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? (Select)

(If non-grant instruments are used, provide an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

PART II: PROJECT JUSTIFICATION

A. PROJECT OVERVIEW

A.1. Project Description. Briefly describe the project, including ; 1) the global environmental problems, root causes and barriers that need to be addressed; 2) the baseline scenario and any associated baseline projects, 3) the proposed alternative scenario, with a brief description of expected outcomes and components of the project, 4) incremental cost reasoning and expected contributions from the baseline , the GEFTF, LDCF/SCCF and co-financing; 5) global environmental benefits (GEFTF, NPIF) and adaptation benefits (LDCF/SCCF); 6) innovativeness, sustainability and potential for scaling up.

Global environmental problems, root causes and barriers that need to be addressed

Although guidelines or protocols have been developed by governmental or academic institutions, the existing materials on mercury monitoring do not provide sufficient and specific guidance to countries in order to establish a national and regional monitoring system. In anticipation of needs for technical assistance, countries will have to fulfil their new obligations for mercury monitoring and the updating of the existing guidance documents will be needed.

Regarding the capacity for analysis of mercury, it is not yet agreed on the criteria that constitute sustainable mercury analysis at international standards; neither have laboratories been identified that have the necessary instrumentation and experience to analyse mercury. The project will establish a centralized, web-accessible databank, hosted at Chemicals Branch of UNEP/DTIE, that will contain mercury laboratories world-wide including their expertise related to chemicals management and laboratory infrastructure. The "Mercury Laboratory Databank" will be a copy of the well recognized existing "POPs Laboratory Databank". It cannot be assumed that the same laboratories are also capable to analyse mercury.

This project aims to foster improved coordination and to harmonize approaches between programmes monitoring environmental concentrations and human exposure to mercury, and to ensure that adequate laboratory capacity is available in each region or be accessible to each region in order to provide accurate and comparable data on human exposure to and environmental concentrations of mercury as part of a global mercury monitoring plan.

Baseline scenario and any associated baseline projects

In response to the growing concern over global exposure to mercury and its risks for human health and the environment, governments agreed in 2009 to undertake negotiations towards an international treaty on mercury. In 2005, emissions of anthropogenic mercury to air were estimated to be 1921 metric tonnes, the main source being the combustion of fossil fuels. Other anthropogenic sources to air, soil and water include gold mining (large-scale and artisanal small scale); cement production; non-ferrous metal industries; iron steel production; waste management; cremation; chlor alkali industry and mercury production[5] .

At present, gaps in existing mercury monitoring activities prevent from effective global mercury monitoring, including time and spatial trends. The limited knowledge of the links between mercury emissions, environmental concentrations and human exposure makes adoption of adequate risk reduction measures and assessment of their effectiveness more difficult. As part of its work to support the development and implementation of chemicals international agreements, the Chemicals Branch of the United Nations Environment Programme (UNEP) Division of Technology, Industry and Economics (DTIE) is therefore proposing to strengthen capacity for mercury monitoring globally. The aims of the project are to foster coordination between existing programmes for monitoring environmental concen-

[5] UNEP (2010), *"Study on mercury sources and emissions, and analysis of cost and effectiveness of control measures UNEP Paragraph 29 study"*, UNEP Division of Technology, Industry and Economics (DTIE) Chemicals Branch, Geneva, p. 2.

trations and programmes for monitoring human exposure/body burden related to mercury, *i.e.*, to build on existing programmes and projects and expanding them to address the needs under the Minamata Convention on mercury. One goal of the project is to ensure that laboratory capacity is available in each UN region (Africa, Asia, Europe, Latin America and the Caribbean and Pacific) to provide reliable and comparable data on human exposure to and environmental concentrations of mercury as part of a global mercury monitoring system.

The project will also set the necessary requirements for generating representative and comparable data on the presence of mercury in the environment and in humans. As mercury moves through all media of the environment (air, sediments, water) as well as in organisms including humans, it undergoes complex transformations. Mercury cycles in the environment are a result of natural and human (anthropogenic) activities. Most of the mercury in the atmosphere is atomic mercury vapour (Hg^0), which circulates in the atmosphere for up to a year, and hence can be widely dispersed and transported thousands of kilometers from sources of emission. Most of the mercury in water, soil, sediments, plants, animals and humans is in the form of inorganic, ionic mercury salts (such as mercuric chloride) or organic forms of mercury (*e.g.*, methylmercury). Inorganic mercury, when either bound to airborne particles or in a gaseous form, is readily removed from the atmosphere by precipitation and is also dry deposited.

The atmospheric transport and deposition patterns of mercury emissions depend on various factors including the chemical form of mercury present, stack height, characteristics of the area surrounding the emitting site, topography, and meteorology. The mercury emitted to the air from various types of sources (usually in elemental or divalent forms) transports through the atmosphere and eventually deposits onto land or water bodies. The chemical and physical properties of these different mercury forms determine their behavior in the environment and the pattern of deposition.

Mercury continues to be used in a variety of products and processes all over the world. Elemental mercury is used in activities such as artisanal and small-scale mining of gold and silver; chlor alkali production; manometers for measurement and control; thermometers; electrical switches; fluorescent lamp bulbs; back lights of computers; and dental amalgam fillings. Mercury is also present in various raw materials (such as coal, oil, wood, and various mining deposits) and can be released to the air or other media when these materials are extracted, burned, processed, or disposed. Since mercury can be distributed over long distances through the atmosphere and through oceans, even countries with minimal mercury emissions, and areas situated remotely from dense human activity may be affected.

Mercury, mercury salts and methyl mercury are persistent in the environment. However, mercury is constantly mobilized, deposited and re-mobilized. Many studies have recently documented the negative health and environmental impacts resulting from exposure to mercury in its various species, as well as the significant costs related to mercury mismanagement[6].

An improved understanding of mercury emission sources, fate and transport is important in: setting priorities at the national, regional and global levels; developing and implementing policies and strategies; and establishing baselines to monitor and assess progress on mercury reductions. However, knowledge of two main sets of causal relationships is needed for informed chemicals risk reduction policymaking. The first aims at locating the populations and ecosystems at risk of contamination and possible risk reduction measures in the current emissions scenario. The second tries to predict the ef-

[6] See for example: Poulin J, Gibb H. (2008), 'Mercury: Assessing the environmental burden of disease at national and local levels', *WHO Environmental Burden of Disease Series*, No. 16, Editor, Prüss-Üstün A. World Health Organization, Geneva.; Trasande L. Landrigan P.J., Schechter C. (2005), 'Public Health and Economic Consequences of Methyl Mercury Toxicity to the Developing Brain', *Environmental Health Perspectives*, Vol. 113, N°5.; Spadaro J.V., Rabl A. (2008), 'Global Health Impacts and Costs Due to Mercury Emissions', *Risk Analysis*, Vol. 28, N° 3; UNEP-IOMC (2002), *Global Mercury Assessment*, UNEP Chemicals, Geneva, Pacyna J.M. at al (2008), *Socio-economic costs of continuing the status-quo of mercury pollution*, Nordic Council of Ministers, Copenhagen, UNEP-WHO (2008), *Guidance for Identifying Populations at Risk from Mercury Exposure*, Inter-Organization Programme for the Sound Management of Chemicals (IOMC), Geneva.

fects of emissions reduction measures on environmental concentrations and/or human exposure rates. In the case of mercury, quantifying these relationships is complicated by at least two features[7].

On the one hand, *"while mercury (Hg) is globally distributed mainly through the atmosphere, it differs from other major atmospheric pollutants (e.g. ozone, particulates) in that its environmental [and therefore health] impact is not directly related to the atmospheric burden.[8]"* In effect, the main sources of concerns arises either from localized exposure to inorganic mercury, or from methylation, bioaccumulation and biomagnification in the food chain, with different effects.

On the other hand, observed environmental concentrations and human exposures result from a combination of natural and anthropogenic emissions, transported through different regional and global cycles, and including extensive recycling of mercury at the airwater/terrestrial interface. These factors make attribution of the source based on atmospheric concentrations significantly more difficult than for other pollutants.

The technical challenges are further complicated by the current significant geographical imbalance in available data. Most existing measurements are from North America and Western Europe. Few observations have been made in the Southern Hemisphere, hampering the development of a more accurate picture of mercury transport and cycling patterns, as well as the testing and refinement of existing models. In addition, quantifying risks to human health and the environment, and assessing the effectiveness of risk reduction measures, requires knowledge of other aspects of the biogeochemical cycle of mercury.

The aforementioned issues currently prevent the development of accurate knowledge of mercury speciation, transformation in the environment and cycling, and as a result it is not possible to accurately model mercury time and spatial trends, as required for informed policy-making. In order for the INC to make informed decision on an efficient and cost-effective system for evaluating the effectiveness of the future mercury treaty, and as part of its work to support the development and implementation of chemicals International Agreements.

The Chemicals Branch of UNEP is proposing to strengthen capacity for mercury monitoring at the global level by combining existing mercury monitoring programmes and activities under the UN umbrella and to serve the Minamata Convention, its parties and the global community. The project will conduct a series of activities to foster improved coordination between programmes monitoring environmental (air) concentrations of and human exposure to mercury, and ensure that adequate laboratory capacity is available in each region for providing accurate and comparable data on human exposure to and environmental concentrations of mercury as part of a future global mercury monitoring system. So far, neither air monitoring programmes/projects nor human monitoring programmes/projects have been reviewed ore combined with a view to serve a global chemicals convention. This project offers a unique opportunity to create state-of-the-art reports on existing projects, identify key stakeholders, stimulate cooperation of these to meet the requirements in the Minamata Convention on Mercury, assess progress and to close gaps. This UNEP-coordinated project will start with the two major players in monitoring environment and humans: GMOS and WHO.

Human biomonitoring is recognized as the most effective tool for evaluation of cumulative human exposure to mercury. Since *in-utero* development is the most vulnerable stage for the long-term adverse neurodevelopmental effects of mercury, characterizing pre-natal exposure is critical for evaluating public health impacts of mercury and assessing public health benefits of exposure reduction measures. Biomonitoring of pre-natal exposure to mercury using analysis of maternal hair samples was identified

---

[7] The following considerations were derived from the Convention on Long-Range Transboundary Air Pollution Task Force on Hemispheric Transport of Air Pollution (2010), *Hemispheric Transport of Air Pollution 2010. Part B: Mercury,* Air Pollution Studies N° 18, United Nations Economic Commission for Europe, Geneva.

[8] Convention on Long-Range Transboundary Air Pollution Task Force on Hemispheric Transport of Air Pollution (2010), Hemispheric Transport of Air Pollution 2010. Part B: Mercury, Air Pollution Studies N° 18, United Nations Economic Commission for Europe, Geneva, p. 1.

by WHO as an indicator for monitoring the implementation of pertinent Parma Declaration commitments. Standardized methodological documents for the proposed surveillance including survey design, recruitment procedures for national staff and selection of consultants, standard operating procedures for sampling and analysis and data analysis plan, have been developed in close collaboration with the Consortium to Perform Human biomonitoring on a European Scale (COPHES[9]). Current efforts focus on the development of protocols for additional sample matrices and of survey methodology for highly exposed subgroups.

The detailed methodological documents for mercury biomonitoring in hair samples developed by WHO Europe are transferable to countries outside the WHO European Region and will be used in the project. Two more Standard Operating Procedures will be developed to analyze exposure to mercury using other biological matrices; it is anticipated to develop SOPs for fish and shellfish given the importance for the food-chain and the focus in the negotiations of the mercury convention. Pilot surveys in selected countries will be necessary to develop a comprehensive global monitoring scheme and harmonized approach, and ensure collection of comparable data from across countries. The implementation of pilot human biomonitoring surveys to assess exposure to mercury will also produce valuable baseline data on exposure levels and facilitate capacity building in participating countries.

Through its activities the project will contribute to harmonize approaches and methodologies, improve the quality and comparability of data generated globally, and therefore allow for monitoring of the global fate of mercury.

The methodologies to be included in the project are described in details in Appendix 5. The project will make use of the six Global Monitoring Observation System (GMOS) Master Stations, which will allow the comparison of sampling and analytical methods.

In addition, through mapping with the two large partner projects – GMOS and COPHES - the project will identify countries/regions lacking mercury monitoring, provide training and capacity building activities for selected laboratories in developing countries to monitor mercury, and develop sampling guidelines and schemes for analysis of biotic and abiotic samples. This project will ensure all regions are capable to provide reliable data for future effectiveness evaluation of the mercury treaty. Throughout its activities, the project will promote and facilitate inter-sectoral collaboration for monitoring, especially between the health and environment sectors.

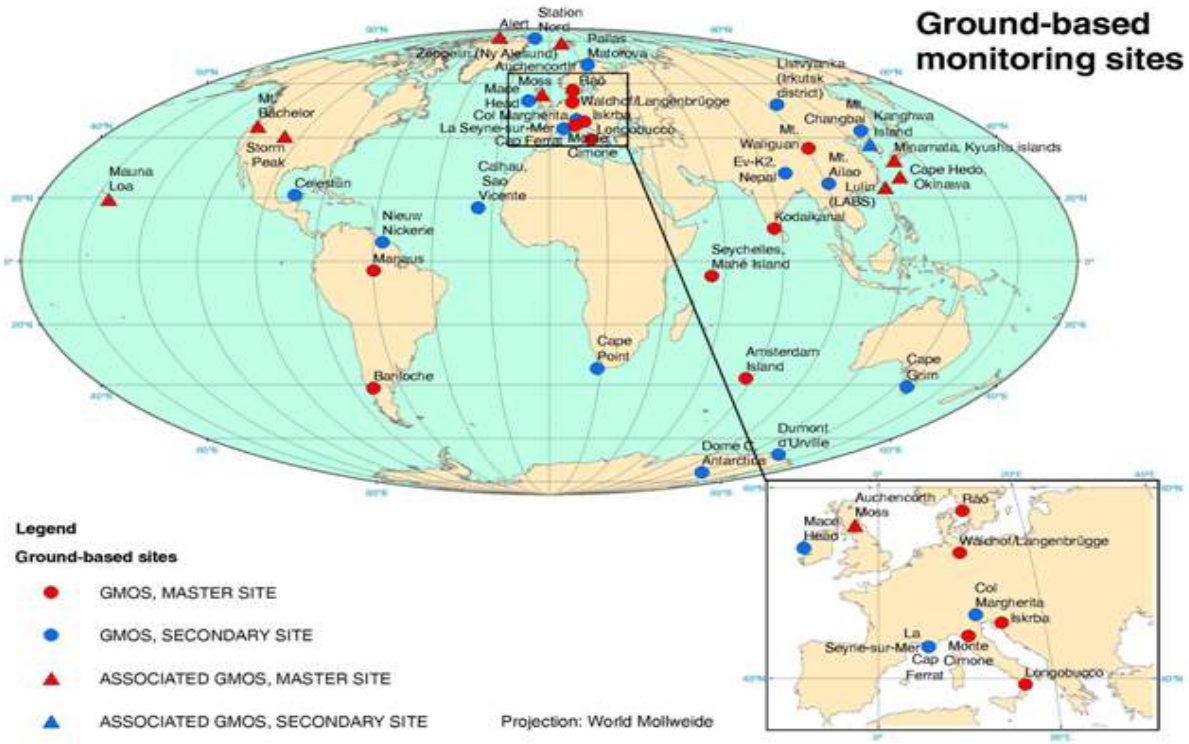
Furthermore, the project will contribute to the current efforts towards improving the understanding of human exposure to and environmental concentration of mercury at the national, regional and global levels including spatial and time trends taking into account mercury speciation and transformation. As such, the project will facilitate the adoption of effective mercury emissions reduction measures, and therefore the minimization of the risks to humans and the environment, and will contribute to the clarification of source attribution.

Baseline projects

The project builds on two existing global activities for the monitoring of mercury: the GMOS and the COPHES.

With respect to air monitoring, the project will cooperate with GMOS and its already established network of monitoring stations. The ground-based master stations of the GMOS project are located as follows:

[9] COPHES = Consortium to perform human biomonitoring on a European Scale, online available http://www.eu-hbm.info/cophes/project-work-packages



Reference http://www.gmos.eu/index.php?option=com_content&view=article&id=19&Itemid=16

With respect to analytical approaches, mercury in the air is present in three distinct forms:

- gaseous elemental Hg (GEM),
- reactive gaseous or gaseous oxidized Hg (RGM or GOM), and
- Particle-bound Hg (PHg), with the sum of GEM and GOM designated as total gaseous Hg (TGM).

The standard method applied to measure TGM and operationally defined GEM is collection on a gold (Au) coated substrate followed by thermal desorption and quantification using cold vapor atomic fluorescence spectrometry (CVAFS). Elemental Hg and possibly GOM under certain conditions are collected using this method.

For the past 10 years, semi-continuous measurements of atmospheric Hg have been possible using automated analyzers that collect Hg in an Au trap and analyze using CVAFS. The costs (investment and running costs) associated to the use of automated analyzers are substantial (> 30,000 € as investment cost and 30,000 € for running costs) compared to passive or diffusive samplers (less than 80 € per unit). The annual costs for analysis and costs for consumables, *e.g.*, acquisition of PUF and precleaning) depend on the number of exposures and samples *per* year.

Passive or diffusive samplers are an economical alternative to active analyzers, since they require no electric power (expensive pumps) and tend to be simpler (no pump operation or calibration) and cheaper to deploy than automated analyzers. However, they require longer minimum sampling times (hours to months, depending on the gas of interest) and often have poorer precision. Therefore, the advantage of using an automated analyzer is that provide quasi-real time concentrations of total gaseous mercury in ambient air, on the contrary passive samplers need an exposition time of hours to several days, depending on the average concentrations of mercury in ambient air to be sampled. The advantage of passive sampler is that does not require electrical power, that in many places can be a limiting factor, due to their very low cost, passive samplers can be placed at many points in a given area allowing a spatial mapping of mercury concentrations (not just in one point as it is with an automated

analyzer) and does not require experts for their deployment, analysis can be performed at centralized specialized laboratories where passive samplers can be easily shipped.

A passive air sampler typically consists of a collection surface that has a high affinity for the chemical of interest and a method to eliminate turbulence and create a region of stagnant air between the ambient atmosphere and the collection surface where only diffusion occurs. Gas molecules are collected on these samplers by passing through the barrier, diffusing through the region of stagnant air, and sorbing to the collection surface. Because they diffuse more slowly, particles are largely excluded from collection, with the possible exception of those in the ultrafine size range.

The development of passive samplers that could be utilized without electricity, thus in remote areas, would allow a better understanding of spatial and temporal distributions of atmospheric Hg. Recently passive samplers has been developed for GEM or TGM and GOM and several methods have been applied or are yet under investigation.

For the human matrix, the project will build upon an existing project and cooperate with COPHES, which is led by the expertise of WHO. This basis includes that WHO will be responsible for the development of methods for human biomonitoring of mercury and coordination of five surveys in selected developing countries. In the field of mercury, WHO has developed guidelines on air inhalation[10] establishing a TWA of 1 μg per cubic meter; on drinking water[11] establishing a limit of 0.006 mg inorganic mercury per litre of water. The FAO/WHO Joint Expert Committee on Food Additives and Contaminants (JECFA) established a Provisional Tolerable Weekly Intake for methyl mercury (maternal intake to protect the foetus) of 1.6 μg per kilogramme body weight applicable to dietary exposure from fish and shellfish. The Provisional Tolerable Weekly Intake for inorganic mercury is 4 μg per kilogramme body weight, applicable to dietary exposure to total mercury from foods other than fish and shellfish[12].

On human monitoring, one of the key components of this project, WHO is coordinating the development of standardized protocols for human biomonitoring surveys for mercury, and planning pilot testing in volunteer countries, under the mandate of the Parma Declaration commitments to reduce early life exposure to environmental pollutants[13]. Further valuable information has been compiled and will be applied such as the "report on indicators to evaluate and track the health impacts of mercury and identify vulnerable populations" (2010) [14] or the report on information on harmonized systems for measuring mercury body burden (published in 2010) [15].

Expected outcomes and components of the project

Project goal/objectives, components and expected results

Project Goal: The project goal is to strengthen the capacity for global monitoring of human exposure

---

10 WHO Air Quality Guidelines (2005), http://www.euro.who.int/__data/assets/pdf_file/0005/74732/E71922.pdf

11 WHO Guidelines for Drinking-Water Quality, 4th Edition (2011); http://www.who.int/entity/water_sanitation_health/publications/2011/9789241548151_ch08.pdf

12 WHO Guidelines for dietary intake of methyl mercury and inorganic mercury (update 2010); http://www.who.int/ipcs/assessment/public_health/mercury_recent/en/index.html

13 See the most recent meeting report (April 2012) in English and Russian: http://www.euro.who.int/en/what-we-do/data-and-evidence/environment-and-healthinformation-system-enhis/publications/2012/biomonitoring-based-indicators-of-exposure-tochemical-pollutants.-meeting-report

14 http://www.unep.org/hazardoussubstances/Mercury/Negotiations/INC2/INC2MeetingDocuments/tabid/3484/language/en-US/Default.aspx

15 http://www.unep.org/hazardoussubstances/Mercury/Negotiations/INC2/INC2MeetingDocuments/tabid/3484/language/en-US/Default.aspx

to and environmental concentration of mercury. Through its activities the project will assist countries in making informed decision for the selection of mercury risk management measures and in the assessment of their effectiveness.

Project Objective: To harmonize approaches for monitoring mercury in humans and the environment, and strengthen the capacity for mercury analysis in humans and the environment to accurately determine their concentrations globally.

Project Components and expected results: The project will have four components, these are:

- **Component 1:** Review of existing information on human exposure to and environmental concentrations of mercury;
- **Component 2:** Development of a monitoring plan on presence of mercury in ambient air
- **Component 3:** Development of a monitoring plan on human exposure to mercury
- **Component 4:** Lessons learned and formulation of GMP

The execution of these components will be supported by UNEP, in close collaboration with WHO and GMOS, local national staff and external international and regional specialists. The following sections detail the outcomes, objectively verifiable indicators, and activities and outputs of each component.

Component 1: Review of existing information on human exposure to and environmental concentrations of mercury

Activities and outputs are geared towards the achievement of Outcome 1, will be lead by UNEP, in collaboration with project partner WHO on human biomonitoring. In order to ensure this outcome is achieved and all existing baseline data is made available to the project, UNEP will first identify in collaboration with WHO and GMOS, existing networks with advanced expertise in mercury monitoring. A questionnaire survey will then be conducted to review the capacity of existing laboratories for mercury monitoring. Key laboratories from the four developing regions will be selected on the basis of the survey for further review, as well as training and capacity building. This work will be done in collaboration with experienced laboratories with advanced expertise in mercury sampling and analysis.

The exact number of laboratories to be selected for training and capacity building activities will depend on existing laboratory capacity. However, given financial constraints and in light of the aim of the project to strengthen capacity for global mercury monitoring, participating laboratories will be selected based on a regional balance. It is expected that at least two laboratories will participate per region (one for human samples and one for environmental samples). These laboratories will be guided and advised by an expert laboratory from a developed country. This laboratory will also be selected during the review and based on its experience in mercury samples analysis. It is expected that trained laboratories in the region will share their experiences with their peer laboratories and will provide services to the region as needed.

Experience with POPs laboratories has shown that at initial stage the valid data for use in follow-up will come from experienced laboratories having accreditation and many years of experience with the test sample under scrutiny; thus, it is assumed that the data from the regions will come out of OECD laboratories; data from developing countries will be indicative only. This project will resemble twinning structure, *i.e.,* OECD lab working together with developing country lab. At this stage "one familiy" feeling network will be established; One for human samples, one for air samples. South to south cooperation is aimed and this project will build basic capacity to ensure mercury monitoring can be done at the regional level

A desk study will be undertaken to review the results from the laboratories. Results from laboratories "accredited" under the GMOS project or WHO Reference laboratories will be considered qualified. The project will examine their status as to accreditation, participation in interlab studies, *etc.* Sample types will be distributed according to matrix: human samples to WHO-associated labs; *i.e.*, Ministry of Health; air samples to GMOS-associated labs (*e.g.,* Ministry of Environment).

Planned activities

Activity 1.1: Compile and assess existing networks on mercury in humans and air

Activity 1.2: Establish a mercury laboratory assessment databank and organize the first round of inter-laboratory assessment

Expected Outcome:
Project technical and analytical baseline strengthened and information needs identified

Expected Outputs:

1. Worldwide analysis of existing networks for mercury monitoring
2. Central mercury laboratory database established and first report on inter-laboratory assessment available

Component 2: Development of the first global monitoring plan on presence of mercury in ambient air

Component 2, objectively verifiable indicators include: the availability of quantitative results from new sampling stations; a GMOS network progress report with air monitoring results that can be integrated into UNEP/GEF report; report/paper characterizing the new sampler; published protocols; report presenting measured data from deployment of PAS in at least three developing country regions; laboratory results; report on comparison of mercury species to total mercury as well as results from active versus passive samplers; and a proposal on global air sampling.

Activities and outputs geared towards the achievement of Outcome 2 will be led by UNEP in close cooperation with GMOS, and national (site-specific) project partners. Key activities include: the development of a suitable sampler to collect gas-phase total mercury; the development of sampling and analysis protocols for PAS sampling sites; PAS sampling by project partners and analysis of disks; ambient air sampling at UNEP/GMOS superstations; and the drafting of an international air monitoring plan.

Planned activities
Activity 2.1: Establish a network for atmospheric samples by developing passive air samples to complement the GMOS work
Activity 2.2: Conduct a pilot testing of the atmospheric network for one year
Activity 2.3: draft a proposal for a worldwide air monitoring plan, including interaction between active and passive sampling techniques

Expected Outcome:
Enhanced understanding of mercury concentrations in ambient air through the strengthening of the Global Monitoring Observation System (GMOS) and the development of the complimentary passive air sampling (PAS) network for ambient air concentrations improves national capacity to analyse mercury in ambient air and to develop and apply sound mercury mitigation plans

Expected Outputs:

1. Comprehensive network and stations for mercury atmospheric samples established and ready to be used
2. Results of one-year pilot test of the atmospheric network for mercury in ambient air available in a consolidated report
3. Draft proposal for a monitoring plan for mercury on ambient air includes active and passive sampling techniques and short, medium and long term actions.

Component 3: Development of the first global monitoring plan on human exposure to mercury

Component 3, objectively verifiable indicators include: selection of sample matrices report; detailed SOPs for mercury biomonitoring; feasibility evaluation and report of country selection; standardized recommendations and five national protocols; database with results of mercury analysis with data from five countries; WHO report on population exposure to mercury; and the proposed scheme for international human biomonitoring of mercury.

Activities and outputs are geared towards the achievement of Outcome 3 and will be coordinated by WHO, in consultation with UNEP. Key activities include: the selection of sample matrices for human

biomonitoring of mercury exposure; development of SOPs for human biomonitoring of mercury; establishing a network for one round of randomized human biomonitoring; the development of harmonized protocols for national surveys; the collection of baseline data from national human biomonitoring surveys of mercury; reporting on population exposure to mercury; and the development of a proposed scheme for global human biomonitoring.

Planned activities

Activity 3.1: Select sample matrices for human biomonitoring of mercury exposure and development of Standard Operation Procedures (SOP) for human biomonitoring of mercury and inclusion of 2 additional matrices
Activity 3.2: Develop Network for biomonitoring surveys and harmonized protocols for national assessments, baseline data from national surveys, and report on body burden
Activity 3.3: Draft a results-based proposed plan for global human biomonitoring

Expected Outcome:

Capacity in developing countries to analyze total mercury in human samples improved and monitoring plan on human exposure to mercury developed

Expected Outputs:

1. Standard Operation Procedures (SOP) for human biomonitoring of mercury in place and includes selected sample matrices and two additional matrices
2. Network for mercury biomonitoring established and harmonized protocols for national assessments available
3. Draft global plan for biomonitoring of mercury includes short, medium and long term actions.

Component 4: Lessons learned and formulation of GMP

Component 4, objectively verifiable indicators include: the final project workshop report and associated workshop recommendations; agreed global monitoring plan for human and environmental mercury monitoring; the mid-term and final project reviews; and the lessons learned report.

Activities and outputs are geared towards the achievement of Outcome 4 and will be led by UNEP, in consultation with project partners WHO and GMOS. Key activities include: the convening of a science-based international workshop for review and finalization of the human exposure and environmental components of the global monitoring plan with regional and sectoral representation; and the drafting and dissemination of a project lessons learned report.

Planned activities
Activity 4.1: Organize a science-based international workshop for review and finalization of the human exposure and environmental components of the global monitoring plan
Activity 4.2: Develop a report on lessons learned
Activity 4.3: Implement a Monitoring and Evaluation Plan

Expected Outcome:

Lessons learned and consolidated first global plan for monitoring human exposure to and environmental concentration of mercury enable countries to monitor mercury in a harmonized manner

Expected Outputs:

1. Global mercury monitoring plan, including two additional SOPs for fish and shellfish, available and published in UNEP's website
2. Draft report on lessons learned includes recommendations on setting-up a mercury monitoring team, scope of mercury monitoring, and results interpretation.
3. Monitoring and Evaluation plan fully implemented assess rate of project success

Incremental cost reasoning and expected contributions from the baseline , the GEFTF,

LDCF/SCCF and co-financing

Without GEF support, most participating countries would not be able to provide accurate national mercury monitoring data, and therefore an adequate international picture of mercury concentrations in humans and the environment, could not be formed. More importantly, without training and provisions to be able to analyze the key GMP matrices, such as air, human hair and other matrices, they also will not be able to contribute to future evaluations. With GEF support and technical assistance of UNEP, these countries, and associated laboratories, will gradually enhance their capacities by implementing new methods to analyze - for these countries – the new matrices. Strengthening of the analytical performance and international acceptance of the analytical data will significantly increase the monitoring and analytical capacity and thus, these parties will become active contributors to the GMP. This project will also contribute to strengthen existing global monitoring systems on ambient air and humans. Through its activities the project will contribute to harmonize approaches and methodologies, improve the quality and comparability of data generated globally, and therefore allow for monitoring of the global fate of mercury.

Global environmental benefits (GEFTF, NPIF) and adaptation benefits (LDCF/SCCF)

The global environmental benefit has to be seen in the context of international efforts to establish a global legally binding instrument on mercury, with provisions to increase knowledge through awareness-raising and scientific information exchange and to specify arrangements for capacity building and technical and financial assistance. The project contributes to these efforts by strengthening the monitoring capacity at national level and with this enabling the participating countries to contribute national data to the GMP in a regionally and internationally agreed and harmonized approach.

Innovativeness, sustainability and potential for scaling up

This project represents the first attempt to harmonize approaches for mercury monitoring at a global scale. The project builds on two existing global activities for the monitoring of mercury: the Global Mercury Observation System (GMOS)[16] and the COPHES[17]. The GMOS project has been collecting air mercury emissions data since 2010. COPHES aims at using biomonitoring data to create the basis for policy-making. This process with ensure sustainable actions and fully integration into the national agenda.

Countries in the regions participating in this project will have to comply with newly adopted Mercury Convention's obligations on monitoring. One of the criteria for country selection in this project will be a direct interest and commitment of the countries to follow-up on the project activities on a longer term to serve the national efforts to comply with the Mercury Convention. The presence of an operational laboratory in the developing country is not a pre-requisite for participation in the project, although an asset. A first approximation for setting up the air and the human samples network is to attempt co-location and to fill the gaps in the two networks (GMOS and COPHES). It is attempted to cover all UN regions. South to south cooperation will be encouraged and that trained laboratories will share their knowledge and will provide services to the region.

The WHO is already established and will continue to exist. The databank of operational mercury laboratories established through this project will be hosted by Chemicals Branch and continue beyond the life-time of this project. It will be maintained as a tool within HSHW PoW or transferred to the future clearinghouse of the Minamata Convention (same as for POPs Lab databank).

The outcomes of mercury monitoring will provide sound basis for the preparation of sound action plans on mercury and to effectively assess the regional and global situation and guide targeted interventions.

[16] http://www.gmos.eu/

[17] COPHES = Consortium to perform human biomonitoring on a European Scale, online available http://www.eu-hbm.info/cophes/project-work-packages

This project will result in sharing experiences and information through the lessons learned and good practices identified, and recommendations developed will be presented in available reports to participating countries and beyond and to UNEP and GEF. Project outcomes will be presented in workshops organised by UNEP or GEF Secretariat and the mercury related international activities. Lastly, the mercury monitoring report will be used as a prime resource to build the effectiveness evaluation component of the Mercury Convention and to monitor the presence of mercury globally.

A.2. Stakeholders. Identify key stakeholders (including civil society organizations, indigenous people, gender groups, and others as relevant) and describe how they will be engaged in project and/or its preparation:

No comprehensive global review of existing regional and international networks and programmes has been performed yet. As such, stakeholders mapping and analysis is part of the first component of the project. However, a number of partial reviews have been performed (i.e. with regard to transboundary air monitoring, existing country-specific or regional monitoring efforts relating to fish and marine mammals, etc.). The main existing regional and international networks for mercury monitoring networks include those listed in Table 2 below.

Table 2: List of stakeholders involved in the project

Stakeholder	Activity
Global Mercury Partnership[18]	Mercury Air Transport and Fate Research Partnership Area
WHO	WHO Regional Office for Europe and WHO Headquarters Department of Public Health and Environment – Children's Environmental Health Biomonitoring Programme Department of Food Safety and Zoonoses – Global Environmental Monitoring System-Food Contamination Monitoring and Assessment Programme (GEMS/Food) WHO Collaborating Centre for Studies on the Health Effects of Mercury Compounds, at NIMD, Minamata, Japan.
International Maritime Organization (IMO)	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) Working Group 37: Mercury and its Compounds
Group on Earth Observation (GEOS)	Global Monitoring Plan for Atmospheric Mercury
United Nations Economic Convention for Europe (UNECE) Convention on Long-range Transboundary Air Pollution (LRTAP)	Task Force on Hemispheric Transport of Air Pollution (TF HTAP)
European Union (EU)	Co-operative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) Directorate General Research – Consortium to Perform Human Biomonitoring on a European Scale (COPHES)
CNR-Institute of Atmospheric Pollution Research (CNR-IIA)	Global Mercury Observation System (GMOS) network

[18] The list of partners in the partnership area is maintained by Chemicals Branch and based on submission of nomination letters; it includes governments, intergovernmental organisations, non-governmental organisations, others. The list of partners is online available at http://www.unep.org/hazardoussubstances/Mercury/GlobalMercuryPartnership/CurrentPartners/MercuryAirTransportandFateResearch/tabid/53963/Default.aspx

Stakeholder	Activity
Arctic Monitoring and Assessment Programme (AMAP)	Arctic Council Action Plan to Eliminate Pollution of the Arctic (ACAP)
Finnish Environment Institute (SYKE)	Control of Hazardous Substances in the Baltic Sea Region (COHIBA)
US Environment Protection Agency	MercNet-Establishing a Comprehensive National Mercury Monitoring Network
US National Atmospheric Deposition Program	Mercury Deposition Network (MDN) Atmospheric Mercury Network (AMNet)
Japan Ministry of the Environment	National Institute for Minamata Disease (NIMD)
Partner countries	GMOS proposes science-based sites to complement the GMOS network as follows: Ireland, Italy (both not funded under the GEF project), Nepal, China, and South Africa WHO aims to train at least five developing countries on the human monitoring

A.3. Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF).:

The project will develop national and regional capacities for mercury monitoring. It will also develop standardised methodologies and approaches for mercury monitoring. Emphasis is given to environmental development and capacity building. The project will strengthen the national institutions and coordinate chemical analyses across political and economic sectors and thus, strengthen national policies through cooperation within the government and across countries. National and regional coordination will have a significant socio-economic impact, bringing together ministries of health and environment and participating in the development of joint standards will have an inherent social and economic impact (avoid duplication of efforts, developing regional and national capacity, using a harmonized approach for mercury monitoring). In this way, the project will reinforce and enhance the capacities at individual, institutional, and societal levels to participate and manage the development process.

Women and children are especially susceptible to mercury, and the project, through its role in underpinning national mercury management, contributes to the improving their well-being. The project will empower women in their responsibilities within the laboratory management and will be strengthened further through training activities at international level. The project will address baseline exposures, so no group in the population will be targeted.

In addition to populations particularly exposed to elemental and inorganic mercury at the local/regional levels due to occupational or other factors, the general population has been found to be exposed to potentially dangerous levels of methylmercury through the consumption of fish. Methylmercury is known to be a powerful neurotoxicant crossing the blood-brain barrier and affecting in particular the developing brain. This is of particular concern since fetuses and children are especially at risk due to contaminated mother milk. Through biomonitoring of pre-natal exposure to mercury using analysis of maternal hair samples and other matrices, this project sets out to provide a framework for ongoing global monitoring of mercury, which will assist in identifying vulnerable populations and in developing appropriate measures to protect them.

In addition, sampling response will be provided to the individuals they were collected from upon their request, allowing women to take informed decision about their health. National survey reports containing hair sampling results will be published by participating national institutions (UNEP) and also WHO/Euro web-site.

A.4 Indicate risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and if possible, propose measures that address these risks:

The following risks, together with mitigation measures have been identified.

Risks	Mitigation Measures
Not all regions working at the same pace **Medium risk**	The selection of the country partners and understanding of project goals and objectives will require special attention. The project will pay special attention to the setup of the coordinating mechanism and will ensure that all players have the tools readily available to implement the project smoothly.
Guidance materials are not considered appropriate for national or sub-regional situations **Low risk**	This project will develop new analysis schemes and sampling guidelines, based on existing ones. The close partnership with the key international organizations in this area will ensure that the guidance materials will be of use and useful for all countries. This project will engage interested and affected parties in each region and consultation bodies to share their experiences develop new guidance, as needed.
Laboratories capacity in the regions not suitable for the project purposes **Medium risk**	Laboratories will be assessed and appropriate laboratories selected for capacity building activities. It is expected that following the capacity building activities and training, the participating laboratories, will be sufficiently enabled to undertake mercury analysis of PAS. The laboratories already included in the GMOS network regularly deliver analytical results and it is assumed these laboratories will not require assistance. However, for quality assurance purposes, a number of samples will be analyzed in an experienced partner laboratory. As a back-up, experienced and accredited laboratories will provide results in a centralized approach and thus, making the generation of data independent from locally generated results.
Timeframe too short to deliver expected outputs **Medium risk**	Timeframe for this project will be managed with special attention. Partners participating in this project have sufficient experience in this kind of activities and will make everything possible to meet deadlines. However, unexpected events may happen and delays cannot be avoided.
Selected matrices not necessarily the best media to monitor mercury **Low risk**	The preferred matrices for mercury monitoring have currently not been decided by negotiating governments and the project aims to test several matrices and propose the most appropriate ones as part of the plan for global mercury monitoring. However, it will not be possible to test all possible matrices and choices will have to be made beforehand. Careful selection of the matrices to be tested will be performed. The preferences expressed by the major organizations involved in mercury monitoring will be taken into account in order to ensure that only the most relevant ones are proposed.
Not all existing monitoring systems are compatible **Medium Risk**	The project will build upon existing monitoring projects and will not “break” them since they have been established for a given purpose. Existing monitoring projects cooperating in this project will lay down minimum requirements to make results from human monitoring and air monitoring comparable and complementary. It is expected that also already existing projects will consider to make (small) adaptations from this project to suit the global mercury monitoring under the future mercury convention. Such experiences have been made within the Global Monitoring Plan on POPs and were proven successful.

A.5. Explain how cost-effectiveness is reflected in the project design:

Cost-effectiveness is the provision of an effective benefit in relation to the cost involved. As opposed to creating a new monitoring network for mercury, this project aims to gather data on existing monitoring activities and augment this data with new monitoring locations.

The project will use existing analytical infrastructure present in the regions. The project will also rely on the existing reference laboratories to develop, according to their capacity, training materials and modules for a harmonized approach on the analysis of mercury. The project will also consider, as a starting point, laboratories participating in the GMP for POPs programme. This will allow to work on existing basis and to use, as much as possible, existing resources. The proposed location of the monitoring sites is described in Appendix 5

In any laboratory it only makes sense to set up an analysis if the amount of usage warrants the start-up costs and that there are funds available to pay for these analyses. Therefore, only laboratories that have at least the basis analytical equipment and have the staff trained in basic analytical procedures will be used to achieve cost-effectiveness for this project. The present project does not allow setting up new laboratories and training as this would require several times the cost of using the existing laboratory infrastructure

Through its activities the project will harmonize approaches and methodologies, improve the quality and comparability of data generated globally, and therefore allow for monitoring of the global fate of mercury. In addition, the project will identify areas lacking mercury monitoring, and provide training and capacity building activities for selected laboratories in developing countries to monitor mercury, and develop sampling guidelines and of schemes for analysis of biotic and abiotic samples. This project will ensure all regions are capable to provide reliable data for future effectiveness evaluation of the mercury treaty. Throughout its activities, the project will promote and facilitate inter-sectoral collaboration for monitoring, especially between the health and environment sectors. The project aims to develop standardized human biomonitoring methodology as an instrument to assess the effectiveness of risk reduction measures, enabling countries to adjust policy and action plans in a cost-effective way based on the objective data on human exposure.

A.6. Outline the coordination with other relevant GEF financed initiatives [not mentioned in A.1]:

To ensure maximum convergence and synergies with other international chemicals MEAs, the project activities will be conducted taking into account the experience gained in and lessons learned from the Global Monitoring Plan of the Stockholm Convention. The development of the global plan for mercury monitoring will build on and complement the POPs Global Monitoring Plan. This will include: the use and refinement of the criteria to evaluate programme and capacities in all regions, the four group categories of programmes, use of the same matrices as far as possible. The GEF has funded, from 2009 to 2012, four projects to develop regional capacity to monitor the 12-initial POPs under the Global Monitoring Plan on POPs. The four projects were implemented in a) West Africa; b) South-East Africa; c) Latin America and the Caribbean; and d) the Pacific. A follow-up project on GMP will follow and start in 2013 and will focus on strengthening the capacity built in the previous project and to build capacity to include the 10 additional POPs (adopted in the last two Conferences of the Parties) in the GMP.

In the development of harmonized methodologies and guidelines for mercury sampling and analysis, collaboration with and review from the key international organizations with experience in this area will be sought. These will include:

- World Health Organization (WHO)
- International Standardization Organization (ISO)
- European Committee for Standardization (CEN)
- Food and Agriculture Organization of the United Nations (FAO)
- Organization for Economic Co-operation and Development (OECD)

- International Laboratory Accreditation Cooperation (ILAC)
- International Union for Pure and Applied Chemistry (IUPAC)

UNEP has developed the "Standardized Toolkit on Identification and Quantification of Mercury Releases" to develop national mercury inventories. UNEP/DTIE Chemicals Branch has applied this Toolkit in a number of countries and will assist participating countries in the application of the Toolkit and provide guidance for several sectors and activities. It will also be used in UNEP/GEF projects on the development of mercury inventories and action plans; *e.g.*, in China. The UNEP Mercury Toolkit will be applied in the horizontal and the vertical approach, i.e., for the nationwide sectoral inventories and the detailed inventory for selected key sectors. The Toolkit will also be used to carry out the surveys on mercury production, distribution, use, import, and export. Benefits from the inventories will not be restricted to prioritization of sources and options for pollutant reduction but also the first step in the establishment of mechanism for long-term statistics and monitoring. They will provide the basis for science-based management of the mercury issue and decision-making. The experiences on the application of the Toolkit in participating countries will contribute to the further improvement and updating of the UNEP Toolkit, which is in line with the overall strategic thinking of GEF on global mercury releases and control. The Toolkit will be used as a resource in training of laboratory analytical staff.

The Mercury Air Transport and Fate Research Partnership Area under the Global Mercury Partnership aims to increase global understanding of international mercury emissions sources, fate and transport. This project will specifically contribute to two priority actions identified in the partnership area business plan, including: (i) accelerating the development of sound scientific information to address uncertainties and data gaps in global mercury cycling and its patterns (e.g., air concentrations and deposition rates, source-receptor relationships, hemispheric-global air transport/transformation emission sources, transboundary movement through hydrological and atmospheric pathways, air/water exchange, aquatic mercury cycle and exposure in biota, particularly fish); and (ii) providing technical assistance and training to support the development of critical information.

In the development of harmonized methodologies and guidelines for mercury sampling and analysis, the project will collaborate with, and draw on work undertaken by key international organizations including: the International Standardization Organization (ISO); the European Committee for Standardization (CEN); WHO; FAO; the Organization for Economic Co-operation and Development (OECD); the International Union for Pure and Applied Chemistry (IUPAC); and the International Laboratory Accreditation Cooperation (ILAC).

The UNEP-WHO Health and Environment Strategic Alliance (HESA). Started in 2006, the work on health and environment linkages aims to help coordinate action by the health and environment sectors and engage in country-level development planning processes, to effectively utilize health and environment inter-linkages in the protection and promotion of public health and ecosystem integrity. In this regard, the project will in particular promote collaboration for information collection and analysis between these sectors based on the tools developed and experience gained through the UNEP-WHO Health and Environment Linkages Initiative (HELI), and on the work done by Health and Environment Strategic Alliance (HESA) in Africa[19]. In addition, work is about to start on the development of integrated health and environment surveillance systems, including consultations for the development of integrated indicators and Standard Operational Procedures. Opportunities to contribute to this process will be explored during the project.

The WHO work on the Environmental Burden of Disease. As part of its long-term assessment of the burden of disease due to environmental risk factors, WHO developed a methodology to assess the burden of disease due to mercury. However, current lack of exposure data from representative populations

[19] For more information, see: www.who.int/heli , www.unep.org/roa/hesa , and in particular UNEP-WHO (2010) Environmental Determinants and Management Systems for Human Health and Ecosystem Integrity in Africa. Final Synthesis report On the Situation Analysis and Needs Assessment for Implementation of the Libreville Declaration on Health and Environment in Africa, especially pp. 20 and followings.

currently prevents from quantifying the global burden of disease due to mercury[20]. The data generated as a result of the proposed project will contribute to the WHO database.
The International Conference on Mercury as a Global Pollutant is scheduled to convene from 28 July to 3 August 2013, in Edinburgh, Scotland. This conference is the largest international conference on mercury including approximately 1000 scientists and takes place every two years. Efforts will be made to convene one project meeting back-to-back with this conference, to ensure cost-efficiency, as well as to provide opportunities for dissemination of the project results.

A.7 Describe the institutional arrangement for project implementation:

This project is implemented by the United Nations Environment Programme (UNEP), more preciswely by the GEF Unit. UNEP will provide administrative supervision in the implementation of the project

This project will be internally executed by UNEP,/DTIE Chemicals Branch and Science Unit will serve as project coordinator. It will also execute components of the projects within its expertise.

The UNEP DTIE Chemicals Branch will be the executing agency and international coordinator. UNEP Chemicals will closely liaise with executing partners, including GMOS and the World Health Organization.

The project coordinator will ensure coordination across participating countries and institutions, provide liaison between these and UNEP Chemicals, and provide support to the project partners for project execution. Specifically on a day-to-day level the coordinator will: liaise with the national laboratories in participating countries, and the experts responsible for the national monitoring networks; coordinate the questionnaire survey and development of the laboratory database; coordinate the available information for designing the workplan of this project such as existing analytical manuals and procedures, and subsequently assist in the joint development of the training and capacity building needs; coordinate provision of the necessary infrastructure for national activities of participating laboratories; provide regular updates on project progress; assist in the development of the global plan for mercury monitoring; and write a final report summarizing the activities undertaken in this project including lessons learned and future needs

WHO will work closely with UNEP in project component 3 and will also support the development of project components 1 and 4. GMOS will work closely with UNEP in project component 2 and will also assist with project component 4. As previously indicated in the document, among other tasks, both organizations will play a key role in the training and field testing of biomonitoring and air monitoring respectively and this project will allocate matching funds (to the funds they are providing to the project as co-financing) to expand or increment their activities on mercury monitoring. The project will make full use and build upon existing infrastructure (WHO regional offices) and monitoring sites of the GMOS programme.

Project activities will be guided by an international Project Steering Committee comprised of UNEP Chemicals, WHO, and representatives from the main global/regional programmes monitoring mercury in humans and the environment. The PSC will be responsible for:

- Providing advice on the identification of relevant existing literature; national, regional and global programmes and networks; and laboratories;
- Providing advice on a strategy to maximize synergies with other chemicals monitoring efforts and related MEAs (in particular, the Global Monitoring Plan (GMP) on POPs as established by article 16 of the Stockholm Convention);
- Guiding and advising the development and scientific review of analytical schemes and sampling guidelines for various matrices;

[20] See: Poulin J, Gibb H. Mercury: Assessing the environmental burden of disease at national and local levels. Editor, Prüss-Üstün A. World Health Organization, Geneva, 2008. (WHO Environmental Burden of Disease Series No. 16).

- Providing advice on selection of laboratories to participate in training and capacity building activities (i.e. definition of criteria for selection);
- Providing advice on the delineation of the main parameters of a plan for global monitoring of human exposure to and environmental concentration of mercury;
- Providing advice on a dissemination of experience and lessons learned.

At the national level, UNEP will subcontract selected laboratories through the national responsible authorities. National institutions/laboratories responsible for the implementation of Component 3 will be subcontracted in coordination with WHO/EURO. This will ensure that the project activities are well understood and supported by the national authorities. Partner Laboratories/Institutions in participating countries will be responsible for:

- Identifying and assigning a national coordinator;
- In cooperation with UNEP Chemicals, WHO and the expert laboratories, identifying the experts for the national monitoring network and entering into an agreement with them;
- Providing the necessary information such as existing analytical manuals and procedures, and subsequently assist in the joint development of the SOPs, the training and capacity building needs;
- Convening relevant meetings with governmental sectors concerned with mercury analysis;
- Arranging and facilitating access for the back-up laboratory to the laboratory/laboratories for the training course and ensure participation of relevant staff at the training course;
- Coordinating provision of the necessary infrastructure to collect relevant samples;
- Analyzing the agreed samples and submitting the results to the expert back-up laboratories, UNEP Chemicals and WHO; and
- Participating at the final workshop to discuss results and exchange views.
- Providing a financial statement on expenditures occurred for the national activities undertaken during project implementation for this country and submits to the sub-regional coordinator.

In order to provide highest technical standards, it is envisaged that UNEP Chemicals and WHO will subcontract one or more expert laboratories for analytical training and mirror analysis of samples, and organization of intercalibration studies. It is possible that one expert laboratory be subcontracted for environmental samples and another for human samples. The Expert Laboratory/ies will be responsible for the following:

- Participating at the first topical workshop and provide input to the Standard Operating Procedure (SOP) development;
- Undertaking an inspection tour to the developing country laboratories – either physically or electronically - to verify infrastructure and operation of the national laboratory;
- Defining needs for upgrading the laboratory with respect to spares, consumables, and training needs;
- Preparing a report on the inspection tour and a work program for each of the laboratories for the coming months;
- Undertaking the training in the pilot laboratory according to needs identified; provide and analyze samples as a Quality Assurance/Quality Control (QA/QC) tool;
- Organizing training for the analysis of mercury;
- Providing spares and consumables to the laboratories where necessary;
- Preparing training manuals and final report on work undertaken in the feasibility study;

- Providing support to national laboratories in developing countries;
- Providing methodological support to UNEP Chemicals and WHO throughout the project.

B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

B.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAs, NAPs, NBSAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, etc.

At the international level, UNEP Governing Council (GC) decision 25/5, adopted in February 2009, requests UNEP's Executive Director to convene an intergovernmental negotiating committee (INC) with the mandate to prepare a global legally binding instrument on mercury. GC Decision 25/5 mandates the intergovernmental negotiating committee to develop a comprehensive and suitable approach to mercury, including provisions to increase knowledge through awareness-raising and scientific information exchange and to specify arrangements for capacity building and technical and financial assistance.

The text of the legally binding instrument was concluded by countries at the fifth session of the intergovernmental negotiating committee to prepare a global legally binding instrument (INC5) on 19 January 2013[21] .One of the provisions therein is the issue of effectiveness evaluation. While countries have stressed the importance of evaluating the effectiveness of the future mercury treaty, they remain undecided on the modalities for evaluation. As UNEP's specialized chemicals programme, the Chemicals Branch, DTIE, in partnership with the World Health Organisation (WHO), is best placed to initiate and execute global, science-based activities to support the future mercury treaty.

With this project, UNEP – with GEF support – builds upon the experiences and lessons learned in the evolution of the Global Monitoring Plan of the Stockholm Convention. Before the date of entry-into-force of the Stockholm Convention, UNEP Chemicals Branch had already convened a workshop to develop the Global Monitoring Plan for persistent organic pollutants in 2003. The expert concluded on the elements of a future global monitoring plan to support the effectiveness evaluation of the Stockholm Convention. A first edition of a guidance document was prepared and published by UNEP Chemicals Branch in 2004. This proposal was later taken up by the Conference of the Parties (COP), amended and further developed to be consistent with COP decisions. Key components of the guidance document are:

Definition of the objectives of the Global Monitoring Plan to serve the Stockholm Convention. This includes the selection of core matrices that are ubiquitous and accessible globally to be monitored long-term. Finally, ambient air and human milk/blood have been selected as core matrices; later water was added for PFOS since this POP is water soluble.

With the same approach, this project under the leadership of UNEP, will develop a proposed Global Monitoring Plan for Mercury by collating existing networks on mercury monitoring for the first time, assessing their approaches, tools and geographic coverage (refer to section A.2), identify gaps and attempt to close these (especially with respect to address needs in developing country regions). The project attempt to create a pool of mercury laboratories and develop a mercury laboratory databank that is web-accessible and contains information on the infrastructure and experience of these laboratories. It will harmonize analytical methods and propose recommended criteria for quality assurance and quality control to put confidence into the results generated by these laboratories. Towards the end of the project, registered laboratories will be

[21] The final report of the meeting was not yet available at the time of the submission of this proposal. The INC Chair's draft text is contained in UNEP(DTIE)/Hg/INC.5/3

invited to participate in the first UNEP-coordinated interlaboratory assessment on mercury. The results will provide a first status report on the performance of the mercury laboratories. The project includes capacity building in mercury analysis for the proposed environmental and human matrices.

With the experiences from the POPs Global Monitoring Plan, one environmental core matrix will be proposed, which is air. Air is a transient medium, where mercury is transported long distances and thus considered of global relevance. The presence of mercury does not depend only on local sources. Ambient air is available in all countries and therefore, relevant for them and a future effectiveness evaluation. The existing network of GMOS will provide the start-up and will be expanded to close some geographic gaps but also to become more robust and cost-efficient by introducing the use of passive air samplers (PAS). This aspect is new and innovative, but builds on experiences with the POPs.

The proposed human matrix is hair, which reflects the body burden of humans for mercury. Human milk, as used in the POPs monitoring is not a suitable matrix for mercury. Therefore, POPs and mercury sampling will differ by matrix but apply similar criteria for collection, such as ethical clearance at national level, representativeness, pooling, *etc*. WHO will lead this study.

It is well understood that countries might be interested in testing mercury in other matrices of national interest such as fish or sediments. However, these sample types do not have the global dimension since their concentrations reflect hotspots and local nearby sources rather than globally distributed baseline concentrations. As always, hotspots need site-specific assessment. Further, the concentrations in fish (or other animals for food consumption or as wildlife) are species-dependent and time-dependent. The same type of fish at comparable age is not available around the globe.

It is foreseen that this project will play an important role in the effectiveness evaluation of the mercury instrument. That is, the Global Monitoring Plan (GMP) on Mercury developed under this project will provide a comparable set of robust data, providing a baseline in mercury concentrations in the environment (air), and in humans (through hair samples and other matrices).

These two matrices - ambient air and humans - are proposed as core matrices for mercury monitoring following the successful approach taken by the Stockholm Convention on Persistent Organic Pollutants (POPs). Therein, air represents the major transport medium at global level to distribute pollutants from the source to all parts of the world and humans represent the highest trophic level in the food-chain and the most precious endpoint to protect. Air has been chosen based on the information provided in the "Global Atmospheric Mercury Assessment: Sources, Emissions and Transport" (2013)[22]. These reports state the importance of air as a recipient medium for atmospheric mercury emissions and the major transport pathway of mercury across and between regions. For humans, especially hair represents an appropriate and robust matrix to characterize human exposures in a cost-efficient manner and by using non-invasive methods for sample collection. In addition, human blood is considered in this project to serve as a core matrix. Analysis of both human matrices is well-established and comparable data are available for assessment.
In support of UNEP Decision 25/5 and in recognition that the global legally binding instrument is of critical importance for the prevention of adverse health effects, the 5th European Ministerial Conference on Environment and Health (2010) committed Member States of the WHO European Region to support its development. This project is an integral part of WHO's support.

B.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities

This project is in line with GEF Focal Area Strategy CHEM-3: Pilot sound chemicals management and mercury reduction. Project activities involving capacity building for air – chosen due to its relevance in

[22] http://www.unep.org/PDF/PressReleases/REPORT_Layout11.pdf

the Convention with respect to atmospheric emissions - and human monitoring of mercury support the following GEF Focal Area Output: countries receiving GEF support for mercury management and reduction, on a pilot basis.

Since this is a Global project, selected participating countries in the initiative will need to be eligible to receive GEF funding.

B.3 The GEF Agency's program (reflected in documents such as UNDAF, CAS, etc.) and Agencies comparative advantage for implementing this project:

The fifth thematic priority (Harmful Substances and Hazardous Waste) of the UNEP Mid Term Strategy has as its objective: *to minimize the impact of harmful substances and hazardous waste on the environment and human beings.* This MTS sets out the main areas of work of UNEP and is in line with UNEP's comparative advantage in the GEF. The UNEP strategy for GEF V is based on the three pillars of the UNEP MTS 2010-2013, which are described as follows:

a) That States and other stakeholders have increased capacities and financing to assess, manage and reduce risks to human health and the environment posed by chemicals and hazardous wastes;

b) That coherent international policy and technical advice is provided to States and other stakeholders for managing harmful chemicals and hazardous waste in an environmentally sound manner, including through better technology and best practices;

c) That appropriate policy and control systems for harmful substances of global concern are developed and in place in line with States' international obligations.

All GEF proposed interventions in GEF V, whether POPs, mercury, chemicals or Ozone, are complementary to UNEP's Subprogram 5 (Harmful Substances and Hazardous Waste), executed by UNEP DTIE OzonAction and Chemicals Branches, for the years 2010 – 2013. The Mid Term Strategy for the years 2014-2017 is currently under development and will include the Subprogram 5 on Harmful Substances and Hazardous Waste, so continuous support for the project is ensured.

UNEP has Chemicals and POPs related staff capacity in the Regional Offices in Latin America (Panama), Asia (Bangkok), Africa (Kenya), Europe (Geneva), North America (U.S.A.) and West Asia (Bahrain) to identify further opportunities of cooperation with ongoing and planned activities in the region and to provide substantial input in this project.

For this project, UNEP will provide a total co-finance of USD 895,022 in-kind contribution. Out of this amount provided, UNEP will provide approx USD 218,000 on staff time, representing the time for project coordination, technical input and reviews needed in this project. More details are provided in the UNEP co-financing letter.

C. DESCRIBE THE BUDGETED M &E PLAN:

Day-to-day management and monitoring of the project activities will be the responsibility of UNEP DTIE Chemicals as executing agency. UNEP will submit half-yearly reports to GEF and a Project Implementation Report (PIR) annually if applicable (in dependence of project execution period).

The half-yearly reports will include progress in implementation of the project, financial report, a work plan and expected expenditures for the next reporting period. It will also include obstacles occurred during the implementation period. The PIR will be prepared on an annual basis with the first report due one year after project inception according to GEF rules. It will be submitted by the UNEP DTIE Chemicals Branch project officer to the UNEP task manager.

Each country or institution within a country that implements a major monitoring activity to fill the gaps in the two large projects that are complementary to this project will nominate a focal point, responsible for the delivery of the task.

The Project Steering Committee (PSC) will comprise UNEP DTIE Chemicals, GMOS, WHO and focal points. The PSC will monitor the progress of the project and give advice as to implementation issues.

The PSC will meet during the inception workshop, at the mid-point of project implementation and the final lessons learned workshop.

TABLE: MONITORING AND EVALUATION BUDGET

M&E activity	Purpose	Responsible Party	Budget (US$)	Time-frame
Inception workshop	Awareness raising, building stakeholder engagement, finalization of participating laboratories, detailed work planning with key groups	UNEP DTIE Chemicals	0	Within two months of project start
Inception report	Provides implementation plan for progress monitoring	Project manager (UNEP DTIE Chemicals)	0	Within two weeks of the Inception Workshop
Project review by PSC*	Assesses progress, effectiveness of operations and technical outputs; Recommends adaptation where necessary and confirms implementation plan.	PSC, UNEP DTIE Chemicals	25,000	Months 3, 12 and 24
Terminal report	Reviews effectiveness against implementation plan, highlights technical outputs, identifies lessons learned and likely design approaches for future projects, assesses likelihood of achieving design outcomes	UNEP DTIE Chemicals	0	At the end of project implementation (Month 24)
Independent terminal evaluation	Reviews effectiveness, efficiency and timeliness of project implementation, coordination mechanisms and outputs Identifies lessons learned and likely remedial actions for future projects Highlights technical achievements and assesses against prevailing benchmarks	UNEP appointed external consultants	30,000	Terminal evaluation after project completion
Independent financial audit	Reviews use of project funds against budget and assesses probity of expenditure and transactions	UNEP DTIE Chemicals	0	At the end of project implementation
Total indicative M&E cost*[1]			55,000	

* PSC is calculated at 6,000 USD per meeting and travel cost for Project Coordinator at 7,000 USD

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. 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. For SGP, use this OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for project identification and preparation.					
Agency Coordi-		**DATE**	**Project**		**Email Address**

nator, Agency name	**Signature**	*(MM/dd/yyyy)*	**Contact Person**	**Telephone**	
Maryam NIAMIR-FULLER Director, UNEP GEF Coordination Office		11/25/2013	Jorge Ocaña, Task Manager - POPs and Chemicals, UNEP/DTIE (Chemicals Branch / GEF Operations)	+41 22 917 8195	Jorge.ocana@unep.org

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Strategy Narrative	Indicator	Units	Baseline	Mid-Term Target	End of Project Target	Sources of Verification	Risks and Assumptions
Project Objective: To harmonize approaches for monitoring mercury in humans and the environment, and strengthen the capacity for mercury analysis in humans and the environment to accurately determine their concentrations globally							
Outcome 1: Project baseline strengthened and information needs identified							
	1.1 Number of reports reviewed and networks on mercury monitoring identified	# of reports collated and reviewed	No coherent and comprehensive review of existing information WHO has published a review of hair data in 2008. Further work is currently underway and will be made available to this project. No centralized databank containing operational mercury laboratories WHO maintains existing networks and contacts for laboratory analysis.	Existing information on human exposure and environmental concentrations reviewed (>5 reports, from >4 regions) including global or regional surveys and studies	Existing Information on environmental and human monitoring compiled, assessed and new information added through project activities (>10 reports, from >4 regions)	Report on available information on air monitoring Report on existing information on Hg in humans. Report on knowledge gaps Emails Project correspondence Progress reports from other networks available and content reflected in project reports.	Project partners identified and available for cooperation in the project activities; Data on Hg concentrations in humans and exposure pathways, and on Hg concentrations in the environment is available.
	1.2 Number of laboratories participating in the interlaboratory databank and number of laboratory assessed through the interlaboratory assessment	# of entries into Hg laboratory databank # of laboratories assessed.	No inter-laboratory assessment available except for inter-laboratory assessment for analysis of hair samples in some European countries (established under the COPHES project).	Database including a tiered classification scheme (i.e., according to type (total Hg vs. speciation), and matrix (abiotic, biotic), instrumentation used) Entries from 4 regions, and >15 countries > 10 laboratories have expressed interest in participating in UNEP-coordinated interlaboratory assessment for mer-	Operational databank established (>30 entries), and web-accessible to external users Databank used by project partners and other stakeholders interested in mercury analysis WHO database for mercury biomonitoring. > 15 laboratories are invited to submit results for at least one of the test matrices to the coordinator of the mercury interlaboratory assessment	Laboratory questionnaire available and distributed to mercury laboratories Manual for databank published Databank Inter-laboratory assessment report	National laboratories interested to participate in the project activities Operational mercury laboratories willing to undergo interlaboratory comparison study and submit results to UNEP

Strategy Narrative	Indicator	Units	Baseline	Mid-Term Target	End of Project Target	Sources of Verification	Risks and Assumptions
				cury			
Outcome 2: Enhanced understanding of mercury concentrations in ambient air through the strengthening of the Global Monitoring Observation System (GMOS) and the development of the complimentary passive air sampling (PAS) network improves national capacity to analyse mercury in ambient air and to develop and apply sound mercury mitigation plans							
	2.1 Number of passive sampling stations established and reporting results to the UNEP network	# of passive sampling stations	GMOS operating on its own with emphasis on northern hemisphere regions No sampler currently available	GMOS and UNEP networks establish joint or complementary air sampling stations 1 passive air sampler developed and characterized for mercury uptake	> 5 new sampling stations established to complement the GMOS ambient air network in four UNEP regions New PAS sampler deployed at three sampling stations and analyzed for content of total mercury At least one paper published to characterize the new sampler	Quantitative results from new sampling stations Progress report from GMOS network available and results integrated into UNEP/GEF report At least one paper published to characterize the new sampler	Good planning ensures timely delivery of outputs and the passive air sampler. Passive sampler developed with considerable delays, undermines the overall project objective
	2.2 Number of sites sending samples for analysis as a result of the one-year pilot test.	# of sites in network # of sites sending samples for analysis # of super-stations	No PAS monitoring regime in place Currently no co-exposure of active and passive air samplers to determine mercury in ambient air	>5 sampling sites identified Distribution of PAS and disks (?) to >5 sites underway. > 3 locations for co-exposure of active and passive air samplers agreed	>5 Sites used for sampling, protocols in use by project partners. PAS and disks (?) distributed to, and utilized at >5 last five sites. After exposure, samples sent to laboratories for analysis. > 2 Master sites established that deliver results for simultaneous capture of mercury using active and passive air samplers	Published protocols At least one report presenting measured data from deployment of PAS in at least three developing country regions Laboratory results. Report on comparison of mercury species to total mercury as well as results from active vs. passive samplers	
	2.3 Number of internationally recognized experts consulted on the development of a global mercury monitoring plan for ambient air	# of experts consulted	No global air monitoring of Hg in place	>8 experts identified for convening international expert group to develop draft monitoring plan	> 10 experts consulted and participating in the expert group to develop a draft mercury monitoring plan Chapters for draft monitoring plan developed	Draft proposal finalized and circulated	
Outcome 3: Capacity in developing countries to analyse total mercury in human samples improved and monitoring plan on human exposure to mercury developed							
	3.1 Number of selected matrices and Standard Operation Procedures	# of sample matrices	1 sample matrix selected (hair samples from mothers collected in	3 sample matrices proposed to characterize exposures	3 sample matrices selected At least 3 detailed SOP for	Report on selection of sample matrices	WHO willing and capable to steer on human samples

Strategy Narrative	Indicator	Units	Baseline	Mid-Term Target	End of Project Target	Sources of Verification	Risks and Assumptions
	(SOP)	#of SOP and protocols	maternity wards) One SOP developed for monitoring of pre-natal exposure to methyl mercury using maternity hair samples	in general population and special population groups 2 draft SOP for monitoring of mercury exposure using other matrices	monitoring of mercury exposure 2 draft SOP for other matrices (fish and shellfish)	Detailed SOPs for mercury biomonitoring.	People willing to provide hair and other matrices for mercury concentration analysis.
	3.2 Number of network members for mercury biomonitoring and number of protocols for national assessments available	# of network member countries # of national protocols # of samples collected and analyzed	No network for human biomonitoring of mercury exposure No harmonized national protocols No systematic sampling of human hair and other matrices. Report developed by WHO in 2012 Criteria for the selection of countries and population groups to be developed	Detailed recommendations for development of harmonized national survey protocols Survey sites are identified in each country	>4 countries selected in at least 4 UNEP regions; target populations identified in each country >4 national survey protocols National surveys completed in >4 countries; baseline concentrations of mercury characterized in at least 250 individuals per country in 5 countries using at least 2 sample matrices in each country Updated WHO report incorporating results from 5 national surveys	Feasibility evaluation and report of country selection. Standardized recommendations and 4 national protocols Database with results of mercury analysis with data from 4 countries WHO report on population exposure to mercury	
	3.3 Results-based proposed plan for global human biomonitoring.	NA	No scheme for global human biomonitoring of mercury	International experts identified to develop a draft scheme for human biomonitoring of mercury	Scheme for human biomonitoring of mercury	Proposed scheme for human biomonitoring of mercury	
Outcome 4: Lessons learned and consolidated global plan for monitoring human exposure to and environmental concentration of mercury enable countries to monitor mercury in a harmonized manner							
	4.1 Science-based international workshop for review and finalization of the human exposure and environmental components of the global monitoring plan with	# of experts in attendance # of regions represented	No global monitoring plan	N/A	At least 12 international experts attend the international workshop At least 4 regions represented at the international workshop	Workshop report and recommendations. Agreed global monitoring plan (and associated report)	Experts available for the international science-based workshop on mercury monitoring

Strategy Narrative	Indicator	Units	Baseline	Mid-Term Target	End of Project Target	Sources of Verification	Risks and Assumptions
	regional				Proposed global monitoring plan reviewed and finalized.		
	4.2 Lessons learned reported	N/A	N/A	Continual review of project progress, documentation of lessons learned.	Lessons learned documented as part of final independent M&E.	Mid-term review Final project review Lessons learned review	
	4.3 Number of Steering Committee Meeting reports available as part of the M&E plan	# of SC Mee Meeting reports	N/A	2 Steering Committee meeting reports	3 reports from Steering Committee meetings	Reports of Steering Committee meetings available	Stakeholders participation

APPENDICES

1. **Acronyms and abbreviations**
2. **Overall Project Budget**
3. **GEF Budget by Project Components and UNEP budget lines**
4. **Co-financing by source and UNEP budget lines**
5. **Detailed analytical methods and proposal for mercury monitoring sites**
6. **Public awareness, communications and mainstreaming**
7. **Environmental and Social Safeguards**
8. **Workplan and timetable**
9. **Key deliverables and benchmarks**
10. **Summary of reporting requirements and responsibilities**
11. **Decision making flowchart and organigram**
12. **Terms of Reference**
13. **Co-financing commitment letters from project partners**
14. **Draft Procurement plan**
15. **Tracking tools**

APPENDIX 1: ACRONYMS AND ABBREVIATIONS

Au	Gold
CVAFS	Cold vapor atomic fluorescence spectrometry
DTIE	Division of Technology, Industry and Economics
GC	Governing Council (of UNEP)
GEF	Global Environment Facility
GEF TF	Global Environment Facility Trust Fund
GMOS	Global Monitoring Observation System
GOM	Gaseous oxidized mercury
GMP	Global monitoring plan (of POPs under the Stockholm Convention)
HBM	Human biomonitoring
Hg	Mercury
Hg (GEM)	Gaseous elemental mercury
INC	Intergovernmental Negotiating Committee
PAS	Passive Air Sampling
PHg	Particle-bound mercury
PIR	Project Implementation Review
QA/QC	Quality Assurance/Quality Control
RGM	Reactive gaseous mecury
UNEP	United Nations Environment Programme
SOP	Standard Operating Procedure
TGM	Total gaseous mercury
WHO	World Health Organization

APPENDIX 2: OVERALL PROJECT BUDGET

FINANCE AND CO-FINANCE BY ACTIVITY

Project Components and Activties	**GEF Funding**	CNR - National Research Council of Italy - GMOS programme	UNEP	WHO	***Co-finance subtotal***	**Total**
	Cash	in-kind	in-kind	in-kind		
	US$	US$	US$	US$	US$	US$
Component 1: Review of existing information on human exposure to and environmental concentrations of mercury						
1.1 Compile and assess existing networks on mercury in humans and air	57,500	350,000	300,000		650,000	**707,500**
1.2 Establish a mercury laboratory assessment databank and organize the first round of inter-laboratory assessment	80,000		118,090	125,389	243,479	**323,479**
SUBTOTAL	**137,500**	**350,000**	**418,090**	**125,389**	**893,479**	**1,030,979**
Component 2: Development of a monitoring plan on presence of mercury in ambient air						
2.1 Establish a network for atmospheric samples by developing passive air samplers to complement the GMOs work	88,750	300,000	99,000		399,000	**487,750**
2.2 Conduct a pilot testing of the atmospheric network for one year	120,000	1,030,000			1,030,000	**1,150,000**
2.3 Draft a proposal for a worldwide air monitoring plan, including interaction between active and passive sampling techniques	24,000				0	**24,000**
SUBTOTAL	**232,750**	**1,330,000**	**99,000**	**0**	**1,429,000**	**1,661,750**
Component 3: Development of a monitoring plan on human exposure to mercury						
3.1 Select sample matrices for human biomonitoring of mercury exposure and development of Standard Operation Procedures (SOP) for human biomonitoring of mercury	68,750		99,000		99,000	**167,750**
3.2 Develop netowrk for biomonitoring suveys and harmonized protocols for national assessments, baseline data from national surveys and report on body burden	149,000	0		285,000	285,000	**434,000**
3.3 Draft a results-based proposed plan for global human biomonitoring	42,000				0	**42,000**
SUBTOTAL	**259,750**	**0**	**99,000**	**285,000**	**384,000**	**643,750**
Component 4: Lessons learned and formulation of GMP						
4.1 Organize a science-based international workshop for review and finalization of the human exposure and environmental components of the global monitoring plan	92,000				0	**92,000**
4.2 Develop a report on lessons learned and dissimination of results	26,000	20,000			20,000	**46,000**
4.3 Implement a Monitoring and Evaluation Plan	28,000				0	**28,000**
SUBTOTAL	**146,000**	**20,000**	**0**	**0**	**20,000**	**166,000**
Project Management and Supervision						
Project Management	74,000		278,932		278,932	**352,932**
SUBTOTAL	**74,000**	**0**	**278,932**	**0**	**278,932**	**352,932**
TOTAL	**850,000**	**1,700,000**	**895,022**	**410,389**	**3,005,411**	**3,855,411**

APPENDIX 3: GEF BUDGET BY PROJECT COMPONENTS AND UNEP BUDGET LINES

		BUDGET ALLOCATION BY PROJECT COMPONENT/ACTIVITY *						ALLOCATION BY CALENDAR YEAR **		
		Component 1	Component 2	Component 3	Component 4		Total	Year 1	Year 2	Total
		Review of existing information on human exposure to, and environmental concentration of mercury	Development of a monitoring plan on presence of mercury in air	Development of a monitoring plan on human exposure to mercury	Lessons learned and formulation of mercury GMP	Project management				
	UNEP BUDGET LINE/OBJECT OF EXPENDITURE	US$	US$	US$	US$	US$	US$	US$	US$	US$
10	**PROJECT PERSONNEL COMPONENT**									
	1100 Project Personnel									
	1101 Project coordinator (UNEP)					60,000	60,000	30,000	30,000	60,000
	1199 Sub-Total	0	0	0	0	60,000	60,000	30,000	30,000	60,000
	1200 Consultants									
	1201 Establishing mercury labs databank, WebSite	20,000					20,000	20,000		20,000
	1202 Coordination across pilot countries		12,500	15,000			27,500	13,750	13,750	27,500
	1299 Sub-Total	20,000	12,500	15,000	0	0	47,500	33,750	13,750	47,500
	1300 Administrative support						0			
	1301 Administrative assistance to countries						0	0	0	0
	1399 Sub-Total	0	0	0	0	0	0	0	0	0
	1600 Travel on official business (above staff)						0			
	1601 Travel Project coordinator (UNEP)				7,000	14,000	21,000	10,500	10,500	21,000
	1699 Sub-Total	0	0	0	7,000	14,000	21,000	10,500	10,500	21,000
	1999 Component Total	**20,000**	**12,500**	**15,000**	**7,000**	**74,000**	**128,500**	**74,250**	**54,250**	**128,500**
20	**SUB-CONTRACT COMPONENT**									
	2200 Sub-contracts (SSFA, PCA, non-UN)						0			
	2201 Literature study and existing networks on Hg in humans and the environment	45,000					45,000	45,000		45,000
	2202 Synthesis report and design of feasibility study	12,500					12,500	4,167	8,333	12,500
	2203 Draft analytical schemes for Hg in human and environmental matrices		10,000	13,500			23,500	23,500		23,500
	2204 Global intercalibration assessment	60,000					60,000	60,000		60,000
	2205 Expert laboratory for mirror analysis		11,250	30,250			41,500	20,750	20,750	41,500
	2299 Sub-Total	117,500	21,250	43,750	0	0	182,500	153,417	29,083	182,500
	2999 Component Total	**117,500**	**21,250**	**43,750**	**0**	**0**	**182,500**	**153,417**	**29,083**	**182,500**
30	**TRAINING COMPONENT**									
	3200 Group training (field trips, WS, etc.)						0			
	3201 Field testing air		40,000				40,000	20,000	20,000	40,000
	3202 Field testing humans			53,000			53,000	26,500	26,500	53,000
	3203 International expert workshop		30,000	18,000			48,000	24,000	24,000	48,000
	3204 Lessons learned report		0	0	4,000		4,000	2,000	2,000	4,000
	3299 Sub-Total	0	70,000	71,000	4,000	0	145,000	72,500	72,500	145,000
	3300 Meetings/conferences						0			
	3301 Technical Coordination workshop to coordinate network		25,000	25,000			50,000	25,000	25,000	50,000
	3302 Topical expert workshop		24,000	38,000			62,000	31,000	31,000	62,000
	3303 International field testing results workshop		0	0	65,000		65,000	32,500	32,500	65,000
	3304 Steering Committee meetings				8,000		8,000	2,000	6,000	8,000
	3399 Sub-Total	0	49,000	63,000	73,000	0	185,000	90,500	94,500	185,000
	3999 Component Total	**0**	**119,000**	**134,000**	**77,000**	**0**	**330,000**	**163,000**	**167,000**	**330,000**
40	**EQUIPMENT & PREMISES COMPONENT**									
	4100 Expendable equipment (under 1,500 $)						0			
	4101 Office supplies		4,000	2,500			6,500	3,250	3,250	6,500
	4102 Spares and consumables		5,000	5,000			10,000	5,000	5,000	10,000
	4103 Reference materials and standards		8,000	5,000			13,000	6,500	6,500	13,000
	4104 Sampling equiment, sample taking		17,000	7,500			24,500	12,250	12,250	24,500
	4199 Sub-Total	0	34,000	20,000	0	0	54,000	27,000	27,000	54,000
	4999 Component Total	**0**	**34,000**	**20,000**	**0**	**0**	**54,000**	**27,000**	**27,000**	**54,000**
50	**MISCELLANEOUS COMPONENT**									
	5200 Reporting costs (publications, maps, NL)									
	5201 National reports (including data reporting)		24,000	24,000			48,000	24,000	24,000	48,000
	5202 Draft Global Mercury Monitoring Plan				20,000		20,000	10,000	10,000	20,000
	5203 Translation of essential documents				10,000		10,000		10,000	10,000
	5299 Sub-Total	0	24,000	24,000	30,000	0	78,000	34,000	44,000	78,000
	5300 Sundry (communications, postage, etc)									
	5301 Communication, postage, freight, etc.		7,000	6,000			13,000	6,500	6,500	13,000
	5302 Shipment materials and samples		15,000	17,000			32,000	16,000	16,000	32,000
	5303 Dissemination of results				12,000		12,000		12,000	12,000
	5399 Sub-Total	0	22,000	23,000	12,000	0	57,000	22,500	34,500	57,000
	5500 Evaluation						0			
	5501 Mid-term evaluation				5,000		5,000		5,000	5,000
	5502 Final evaluation				15,000		15,000		15,000	15,000
	5599 Sub-Total	0	0	0	20,000	0	20,000	0	20,000	20,000
	5999 Component Total	**0**	**46,000**	**47,000**	**62,000**	**0**	**155,000**	**56,500**	**98,500**	**155,000**
	TOTAL	**137,500**	**232,750**	**259,750**	**146,000**	**74,000**	**850,000**	**474,167**	**375,833**	**850,000**

APPENDIX 4: CO-FINANCE BY SOURCE AND UNEP BUDGET LINES

			Donors				ALLOCATION BY CALENDAR YEAR **		
			CNR - National Research Council of Italy - GMOS programme	UNEP	WHO	Total	Year 1	Year 2	Total
			in-kind	in-kind	in-kind				
		UNEP BUDGET LINE/OBJECT OF EXPENDITURE	US$	US$	US$	US$	US$	US$	US$
10		**PROJECT PERSONNEL COMPONENT**							
	1100	**Project Personnel**							
	1101	Project coordinator (UNEP)		100,000		100,000	50,000	50,000	100,000
	1199	Sub-Total	0	100,000	0	100,000	50,000	50,000	100,000
	1200	**Consultants**							
	1201	Establishing mercury labs databank, WebSite		118,090	114,833	232,923	232,923		232,923
	1202	Coordination across pilot countries				0	0	0	0
	1299	Sub-Total	0	118,090	114,833	232,923	232,923	0	232,923
	1300	**Administrative support**							
	1301	Administrative assistance to countries		44,932		44,932	22,466	22,466	44,932
	1399	Sub-Total	0	44,932	0	44,932	22,466	22,466	44,932
	1600	**Travel on official business (above staff)**							
	1601	Travel Project coordinator (UNEP)		84,000		84,000	42,000	42,000	84,000
	1699	Sub-Total	0	84,000	0	84,000	42,000	42,000	84,000
	1999	**Component Total**	**0**	**347,022**	**114,833**	**461,855**	**347,389**	**114,466**	**461,855**
20		**SUB-CONTRACT COMPONENT**							
	2200	**Sub-contracts (SSFA, PCA, non-UN)**							
	2201	Literature study and existing networks on Hg in humans and the environment	180,000			180,000	90,000	90,000	180,000
	2202	Synthesis report and design of feasibility study	170,000			170,000	56,667	113,333	170,000
	2203	Draft analytical schemes for Hg in human and environmental matrices	150,000	300,000		450,000	450,000		450,000
	2204	Global intercalibration assessment				0	0		0
	2205	Expert laboratory for mirror analysis				0	0	0	0
	2299	Sub-Total	500,000	300,000	0	800,000	596,667	203,333	800,000
	2999	**Component Total**	**500,000**	**300,000**	**0**	**800,000**	**596,667**	**203,333**	**800,000**
30		**TRAINING COMPONENT**							
	3200	**Group training (field trips, WS, etc.)**							
	3201	Field testing air	500,000		0	500,000	250,000	250,000	500,000
	3202	Field testing humans			200,000	200,000	100,000	100,000	200,000
	3203	International expert workshop				0	0	0	0
	3204	Lessons learned report		0	0	0	0	0	0
	3299	Sub-Total	500,000	0	200,000	700,000	350,000	350,000	700,000
	3300	**Meetings/conferences**							
	3301	Technical Coordination workshop to coordinate network	150,000	198,000		348,000	174,000	174,000	348,000
	3302	Topical expert workshop				0	0	0	0
	3303	International field testing results workshop	150,000		85,000	235,000	117,500	117,500	235,000
	3304	Steering Committee meetings				0			0
	3399	Sub-Total	300,000	198,000	85,000	583,000	291,500	291,500	583,000
	3999	**Component Total**	**800,000**	**198,000**	**285,000**	**1,283,000**	**641,500**	**641,500**	**1,283,000**
40		**EQUIPMENT & PREMISES COMPONENT**							
	4100	**Expendable equipment (under 1,500 $)**							
	4101	Office supplies	10,000		5,556	15,556	7,778	7,778	15,556
	4102	Spares and consumables	20,000	50,000	5,000	75,000	37,500	37,500	75,000
	4103	Reference materials and standards	50,000			50,000	25,000	25,000	50,000
	4104	Sampling equiment, sample taking	300,000			300,000	150,000	150,000	300,000
	4199	Sub-Total	380,000	50,000	10,556	440,556	220,278	220,278	440,556
	4999	**Component Total**	**380,000**	**50,000**	**10,556**	**440,556**	**220,278**	**220,278**	**440,556**
50		**MISCELLANEOUS COMPONENT**							
	5200	**Reporting costs (publications, maps, NL)**							
	5201	National reports (including data reporting)				0	0	0	0
	5202	Draft Global Mercury Monitoring Plan				0	0	0	0
	5203	Translation of essential documents				0		0	0
	5299	Sub-Total	0	0	0	0	0	0	0
	5300	**Sundry (communications, postage, etc)**							
	5301	Communication, postage, freight, etc.				0	0	0	0
	5302	Shipment materials and samples				0	0	0	0
	5303	Dissemination of results	20,000			20,000	0	20,000	20,000
	5399	Sub-Total	20,000	0	0	20,000	0	20,000	20,000
	5500	**Evaluation**							
	5501	Terminal evaluation				0			
	5502	Final evaluation				0		0	0
	5599	Sub-Total	0	0	0	0	0	0	0
	5999	**Component Total**	**20,000**	**0**	**0**	**20,000**	**0**	**20,000**	**20,000**
		TOTAL	**1,700,000**	**895,022**	**410,389**	**3,005,411**	**1,805,834**	**1,199,577**	**3,005,411**

APPENDIX 5 – DETAILED ANALYTICAL METHODS AND PROPOSAL FOR MERCURY MONITORING SITES

Environmental Sampling

Mercury in the air is measured as three operationally defined forms:

- gaseous elemental Hg (GEM),
- reactive gaseous or gaseous oxidized Hg (RGM or GOM),
- and particle-bound Hg (PHg), with the sum of GEM and GOM designated as total gaseous Hg (TGM).

The standard method applied to measure TGM and operationally defined GEM is collection on a gold (Au) coated substrate followed by thermal desorption and quantification using cold vapor atomic fluorescence spectrometry (CVAFS). Elemental Hg and possibly GOM under certain conditions are collected using this method.
For the past 10 years, semi-continuous measurements of atmospheric Hg have been possible using automated analyzers that collect Hg in a Au trap and analyze using CVAFS. The costs (investment and running costs) associated to the use of automated analyzers are substantial (> 30000 € as investment cost and 30000 € for running costs) compared to passive or diffusive samplers (less than 80€ per unit including the analysis).

Passive or diffusive samplers are an economical alternative to active analyzers, since they require no electric power (expensive pumps) and tend to be simpler (no pump operation or calibration) and cheaper to deploy than automated analyzers. However, they require longer minimum sampling times (hours to months, depending on the gas of interest) and often have poorer precision. Therefore, the advantage of using an automated analyzer is that provide quasi-real time concentrations of total gaseous mercury in ambient air, on the contrary passive samplers need an exposition time of hours to several days, depending on the average concentrations of mercury in ambient air to be sampled. The advantage of passive sampler is that does not require electrical power, that in many places can be a limiting factor, due to their very low cost, passive samplers can be placed at many points in a given area allowing an spatial mapping of mercury concentrations (not just in one point as it is with an automated analyzer) and does not require experts for their deployment, analysis can be performed at centralized specialized laboratories where passive samplers can be easily shipped.

A passive air sampler typically consists of a collection surface that has a high affinity for the chemical of interest and a method to eliminate turbulence and create a region of stagnant air between the ambient atmosphere and the collection surface where only diffusion occurs. Gas molecules are collected on these samplers by passing through the barrier, diffusing through the region of stagnant air, and sorbing to the collection surface. Because they diffuse more slowly, particles are largely excluded from collection, with the possible exception of those in the ultrafine size range.

The development of passive samplers that could be utilized without electricity, thus in remote areas, would allow a better understanding of spatial and temporal distributions of atmospheric Hg. Recently passive samplers has been developed for GEM or TGM and GOM and several methods have been applied or are yet under investigation.

PROPOSAL FOR MERCURY MONITORING SITES

Proposal for new mercury monitoring sites using passive air samplers (note : some will complement existing GMOS sites for scientific purposes = comparing results from active and passive samplers to investigate if the cost-efficient passive samplers would be a tool for the Minamata Convention[23]):

UN region	Country	Location/Description	Type
Africa	South Africa	Cape Point	GMOS site
	Zimbabwe	Kadoma-Chakari, ASGM site	To be identified and established for comparison with ASGM sites in other countries/regions
Asia	China	Mt. Waliguian – Zhuzhang, Southwestern China	*GMOS site*
	China	Weifang, ASGM site	To be identified and established for comparison with ASGM sites in other countries/regions
	Indonesia	Sulawesi, ASGM site	To be identified and established for comparison with ASGM sites in other countries/regions
	Nepal	Ev-K2 (Himalaya) located in Sagarmatha National Park, in the eastern Nepal Himalaya near the base camp area of Mt. Everest	*GMOS site*
CEE	TBD	Country and site will be determined upon inception of the project and will be based on the recommendation from COPHES (human study) that concentrates on Europe	
GRULAC	Brazil	Itaituba, ASGM site	To be identified and established for comparison with ASGM sites in other countries/regions
	Peru	Madre de Dios, ASGM site	To be identified and established for comparison with ASGM sites in other countries/regions
WEOG	Ireland	Mace Head GMOS site is located on the west coast of Ireland, offering westerly exposure to the North Atlantic ocean and the opportunity to study atmospheric composition under Northern Hemispheric background conditions.	*GMOS site* *Not funded by GEF*
	Italy	High altitude site situated in the Sila Massif between the Thyrrenian and Ionian seas	*GMOS site* *Not funded by GEF*

23 Similar approach as is used in the POPs GMP where some “master stations” exist

APPENDIX 6 – PUBLIC AWARENESS, COMMUNICATIONS AND MAINSTREAMING

The project is primarily designed to improve the evidence-base for informed decision-making on the sound management of mercury. In this respect, results and findings will be communicated to responsible policy-makers, including all countries involved in the INC and subsequent processes.

Efforts will be made during the project to raise awareness of the targeted populations, in the vicinity of monitoring sites. In terms of maternal hair sampling, the analytical results will be provided to individuals they were collected from upon their request, the national survey reports will be published by participating national institutions, and on the WHO/Euro web-site. In addition, the procedures developed for sample collection will include considerations for public awareness and communication. UNEP, WHO and GMOS will also disseminate project reports and findings through their respective networks.

In instances where exposure concentrations from samples are high, WHO will inform the National focal point for environment and health, responsible for Parma Declaration implementation, as mercury is an indicator for Parma. The national focal points will then take a decision on how to manage the data.

An underlying objective of this project is the promotion of mainstreaming of mercury monitoring activities into national policies and plans. To this end, efforts will be made to ensure understanding of the value of the project activities and commitment to sustained monitoring from national responsible authorities of participating laboratories, as well as the broader group of countries participating in the INC process. In addition, the project will assist participating laboratories in positioning mercury monitoring in their work plan (i.e. business plan) and as part of the national health/environment/chemicals management policy. Finally, recommendations will be made in the proposed global plan for the establishment of an adequate legal and institutional infrastructure for mercury monitoring including sustainable financing.

APPENDIX 7 – ENVIRONMENTAL AND SOCIAL SAFEGUARDS

Sampling and analytical work in the participating laboratory will be carried out according to international safety standards and quality control. The selected laboratories will apply the standards as established in "Good Laboratory Practices" (GLP) which includes the laboratory management of human resources, data reporting and storage, operation of equipment, and disposal of waste. In addition, as a sound reference, the POPs Analytical Guidelines developed under the UNEP/GEF POPs Analytical Capacity Assessment project provide information as to safe laboratory operations including handling and storage of samples and materials or quality control criteria.

Countries participating in the biomonitoring component of the project will sign the statement of interest by both, health and environment sector as required by WHO.

In line with the UNDAF outcome, the project is aimed to assist Parties in the implementation of their national priorities when implementing chemicals related multilateral environmental agreements. Emphasis is given to environmental development and capacity building. The project will strengthen the national institutions and coordinate chemical analyses across political and economic sectors and thus, strengthen national policies through cooperation within the government and across countries. In this way, the project will reinforce and enhance the capacities at individual, institutional, and societal levels to participate and manage the development process. Women and children are especially susceptible to mercury and chemicals in general, and the project, through its role in underpinning national mercury management, contributes to the improving their well-being. The project will empower women in their responsibilities within the laboratory management and will be strengthened further through training activities. The project addresses baseline exposures, no group in the population will be targeted.

- This project will take into account environmental considerations at all stages. The project will adopt preventing measures rather than curative actions. The environmental safeguards will be applied at different stages of the project, such as: **Project coordination and management**: reduced impact on greenhouse emissions by restricting the number of travel to the necessary. Most communication and coordination will be made through telephone or internet. Reduce the use of paper to the minimum; meeting documents will be circulated to participants through email rather than sending hard copies.
- **Sample taking**: the WHO standardised protocols for sampling will be used in order to avoid accidents and to ensure proper handling of samples. Taking environmental samples will respect nature and will not disrupt natural habitats and ecosystems.
- **Shipping samples and sending them to the back-up laboratories**: internationally recognised and standardised methods for shipping and handling will be used.
- **Used samples**: will be treated as wastes and as such will be managed adequately in the respective laboratories.

APPENDIX 8 – WORKPLAN AND TIMETABLE

Component	Activities	Year 1						Year 2					
		2	4	6	8	10	12	2	4	6	8	10	12
Review of exisiting information on human exposure to and environmental concentrations of mercury	1.1 Compile and assess exisitng networks on mercury in humans and air												
	1.2 Establish a mercury laboratory assessment databank and organize the first round of inter-laboratory assessment												
Development of a monitoring plan on presence of mercury in ambient air	2.1 Establish a network for atmospheric samples by developing passive air samples to complement the GMOs work												
	2.2 Conduct a pilot testing of the atmospheric network for one year												
	2.3 Draft a proposal for a worldwide air monitoring plan, including interaction between active and passive sampling techniques												
Development of a monitoring plan on human exposure to Mercury	3.1 Select sample matrices for human biomonitoring of mercury exposure and development of Standard Operation Procedures (SOP) for human biomonitoring of mercury												
	3.2 Develop network for biomonitoring suveys and harmonized protocols for national assessments, baseline data from national surveys and report on body burden												
	3.3 Draft global plan for biomonitoringof mercury includes short, medium and long term actions												
Lessons learned and formulation of mercury GMP	4.1 Organize a science-based international workshop for review and finalization of the human exposure and environmental components of the global monitoring plan												
	4.2 Develop a report on lessons learned												
	4.3 Implement a Monitoring and Evaluation Plan												

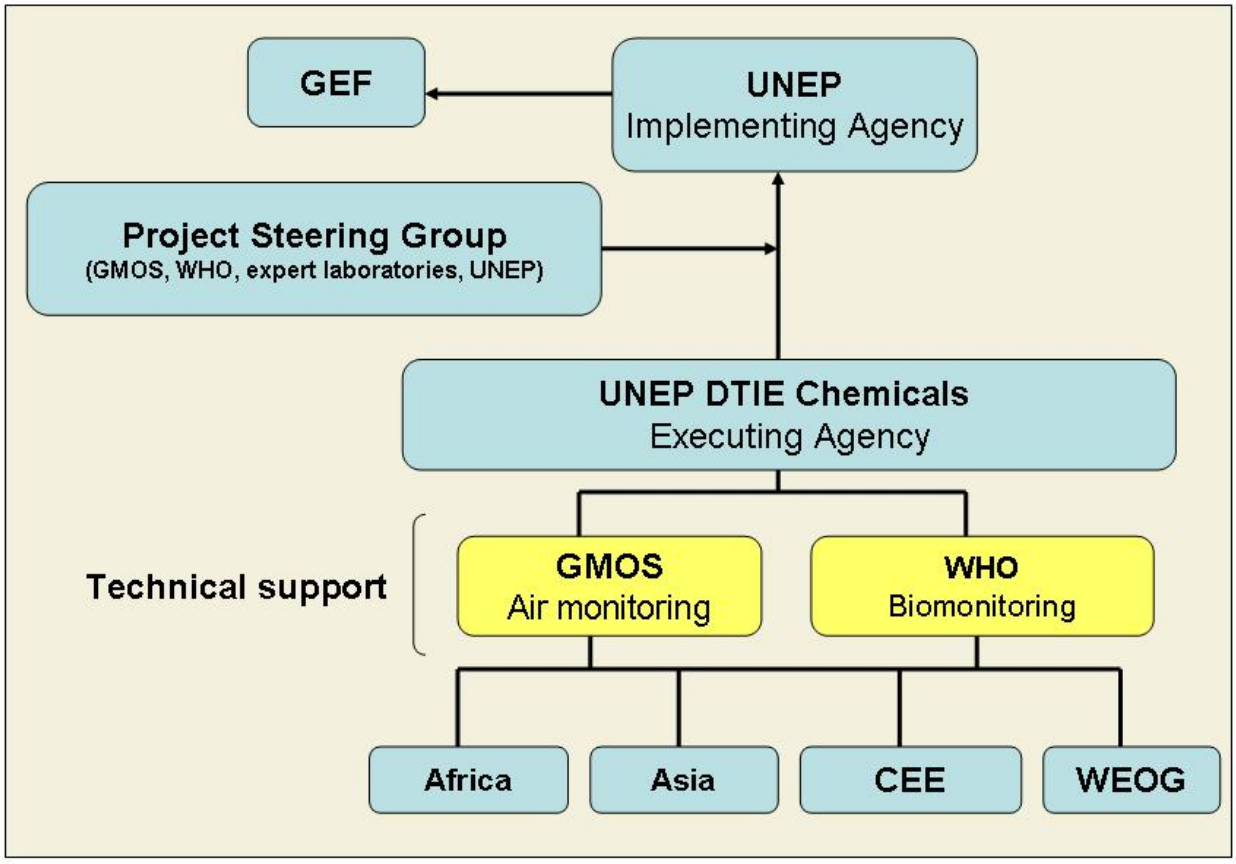
APPENDIX 9 - KEY DELIVERABLES AND BENCHMARKS

Key deliverables	Time line (months after project start)
1. Inception meeting	1-2
2. Review of existing information on Hg concentrations in humans and exposure pathways, and on Hg concentrations in the environment (air, soil/sediments, fish)	2-4
3. Listing of and contact with existing networks for mercury monitoring in humans and the environment at national and regional concentrations.	4-6
4. Database containing operational laboratories capable of analyzing mercury operational. 5. Interlaboratory assessment on performance of mercury laboratories from developed and developing countries offering abiotic and biotic test samples,	8 8-10
1. Cooperation with Global Monitoring Observation System (GMOS) in the field of ambient air measurements of mercury established	3
2. Development of a sampler to collect gas-phase total mercury	4-6
3. Determine network of PAS global sampling sites at (spatial distribution) and develop sampling and analysis protocols . 4. Sites equipped with PAS and disks to undertake sampling for at least one year, and disks sent for analysis. 5. Sampling and analysis of Hg in ambient air at selected “superstations” of the UNEP/GMOS,	2-8 10 12-16
6. Proposal for a worldwide air monitoring plan.	18-20
7. Selection of sample matrices for human biomonitoring of mercury exposure	2
8. Development of Standard operation procedures (SOP) for human biomonitoring of mercury	4-8
9. Network for one round of randomized human biomonitoring surveys in place	10-12
10. Development of harmonized protocols for national surveys	14-18
11. Baseline data from national human biomonitoring surveys of mercury.	18-20
12. Report on population exposure to mercury	18-20
13. Proposed scheme for global human biomonitoring.	20-22
14. Science-based international workshop for review and finalization of the GMP	20-22
15. Lessons learned report	22-24
16. Terminal evaluation and report	24

APPENDIX 10 - SUMMARY OF REPORTING REQUIREMENTS AND RESPONSIBILITIES

Reporting requirements	Due date	Responsibility of
Procurement plan (goods and services)	2 weeks before project inception meeting	Project Coordinator
Inception Report	1 month after project inception meeting	Project Coordinator
Expenditure report accompanied by explanatory notes and cash advance report	Half-yearly	Project Coordinator
Progress report	Half-yearly on or before 31 January and 31 July	Project Coordinator
Inventory of non-expendable equipment	Yearly on or before 31 January	Project Coordinator
Minutes of steering committee meetings	Yearly (or as relevant)	Project Coordinator
Final report	2 months of project completion date	Project Coordinator
Final inventory of non-expendable equipment		Project Coordinator
Equipment transfer letter		Project Coordinator
Final expenditure statement	3 months of project completion date	FMO
Final audited report for expenditures of project	6 months of project completion date	UNEP
Independent terminal evaluation report	6 months of project completion date	UNEP

APPENDIX 12 - DECISION MAKING FLOWCHART AND ORGANIGRAM



APPENDIX 13 – TERMS OF REFERENCE

Terms of Reference for the Project Coordinator to be developed after project approval

APPENDIX 14 – CO-FINANCING COMMITMENT LETTERS FROM PROJECT PARTNERS

APPENDIX 15 – DRAFT PROCUREMENT PLAN

Project title: Development of a Plan for Global Monitoring of Human Exposure to and Environmental Concentrations of Mercury

Project number: ADDIS 1011
Project executing partner: United Nations Environment Programme

Project implementation period: 2013-2015

UNEP Budget Line	Total USD
20SUB-CONTRACT COMPONENT	
2201 Literature study and existing networks on Hg in humans and the environment	60,000
2202 Synthesis report and design of feasibility study	17,500
2203 Draft analytical schemes for Hg in human and environmental matrices	33,500
2204 Global intercalibration assessment	60,000
2205 Expert laboratory for mirror analysis	41,500
2299Sub-total	**212,500**
2999Component total	**212,500**
40EQUIPMENT AND PREMISES COMPONENT	
4100Expendable equipment	
4101Office supplies	6,500
4102Spares and consumables	10,000
4103Reference materials and standards	15,000
4104Sampling equiment, sample taking	27,500
4199**Sub-total**	**59,000**
4999Component total	**59,000**
50MISCELLANEOUS COMPONENT	
5200Reporting costs	
5201National reports (including data reporting)	48,000
5202Draft Global Mercury Monitoring Plan	20,000
5203Translation of essential documents	20,000
5299Sub-total	**88,000**
5300Sundry	
5301Communication, postage, freight, etc.	13,000
5302Shipment materials and samples	32,000
5303Dissemination of results	12,000
5399**Sub-total**	**57,000**
5500Evaluation	
5501Mid-term evaluation	10,000
5501Final evaluation	20,000
5599Sub-total	**30,000**
5999Component total	**175,000**
99GRAND TOTAL	**446,500**

APPENDIX 16 – TRACKING TOOLS

Project Titte:	Development of a Plan for Global Monitoring of Human Exposure to and Environmental concentrations of mercury
ADDIS Project number:	1011
Project executing partner:	UNEP DTIE Chemicals

Project implementation period (add additional years as required): Year 1 | Year 2 | Year 3

Month	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J
Mth no	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

Executing partner
UNEP/DTIE Chemicals (Implementing) ♦
Output ♣

Activity/Task/Output	
Project Management, Coordination & Sustainability	
Inception meeting and report of meeting	
Progress report - Dec 31 + 30 days	
Annual audit report - Dec 31 + 180 days	
Annual co-financing report - Dec 31+30 days	
Establish M&E system	
Expenditure report - Mar, June, Sep and Dec 31 + 30 days	
Mid-term review/evaluation	
Procurement of equipment & hiring of consultants	
Progress reports to co-financiers	NA
Project brochure/newsletter/banner	
Project Implementation Review	
Project website design & development + updates/revamps	
PSC/PMC meetings + minutes of meetings	
GEFSEC communications (Inception, midterm & completion)	
Site visits + mission reports	
Final report	
Training workshops/seminars	
Pipeline of projects	
Terminal evaluation	
Final audit report for project	
Component 1: Review of exisiting information on human exposure to and environmental concentrations of mercury	
1.1 Compile and assess exisitng networks on mercury in humans and air	
Output: worldwide analysis of exisiting networks for mercury monitoring	
1.2 Establish a mercury laboratory assessment databank and organize the first round of inter-laboratory assessment	
Output: Central mercury laboratory database established	
Component 2: Development of a monitoring plan on presence of mercury in ambient air	
2.1 Establish a network for atmospheric samples by developing passive air samples to complement the GMOs work	
Output: Comprenhensive network and stations for mercury atmospheric samples established and ready to be used	
2.2 Conduct a pilot testing of the atmospheric network for one year	
Output: Results of one-year pilot test of atmospheric network for mercury in ambient air available	
2.3 Draft a proposal for a worldwide air monitoring plan, including interaction between active and passive sampling techniques	
Output: Draft proposal for air monitoring plan for mercury on ambient air includes short, medium and long-term actions	
Component 3: Development of a monitoring plan on human exposure to Mercury	
3.1 Select sample matrices for human biomonitoring of mercury exposure and development of Standard Operation Procedures (SOP) for	
Output: Standard Operation Procedures (SOP) for human biomonitoring in place and includes selected sample matrices	
3.2 Develop network for biomonitoring suveys and harmonized protocols for national assessments, baseline data from national surveys	
Output: Network for mercury biomonitoring established	
3.3 Draft a results-based proposed plan for global human biomonitoring	
Output: Draft global plan for biomonitoringof mercury includes short, medium and long term actions	
Component 4: Lessons learned and formulation of mercury GMP	
4.1 Organize a science-based international workshop for review and finalization of the human exposure and environmental components of the global monitoring plan	
Output: Global Mercury Monitoring Plan available and published in	
4.2 Develop a report on lessons learned	
Output: Draft report on lessons learned	
4.3 Implement a Monitoring and Evaluation Plan	
Output: Project Steering Committee reports and terminal evaluation	