

A STUDY ON THE HEALTH CO-BENEFITS OF
GEF CHEMICALS AND WASTE FOCAL AREA
Final Report

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Abbreviations and Acronyms

APR — Annual Progress Report

ASGM — Artisanal and small-scale gold mining

BAT/BEPs — best available techniques and best environmental practices

C&W — Chemicals and Waste

CAM Matrix — Criteria analysis matrix

CBD — Convention on Biological Diversity

CFCs — Chlorofluorocarbons

CMMVI — Chronic metallic mercury vapor intoxication

CSO — Civil Service Organizations

DALYs — Disability-adjusted life years

DENR — Department of Environmental and Natural Resource

DDT — Dichlorodiphenyltrichloroethane

DOH — Philippines Department of Health

E-waste — electronic waste

GCO II — Global Chemicals Outlook II

GEB — Global environmental benefit

GEF — Global Environment Facility

GEF-# — GEF Replenishment #

GEF PMIS — GEF's Project Management Information System

GHGs — Greenhouse gases

GMP — Global Monitoring Plan of the Stockholm Convention

GOLD — Global Opportunities for Long-term Development in the ASGM sector

HABs — Harmful algal blooms

HCFCs — Hydro-chlorofluorocarbons

HCW — Health care workers

HFCs — Hydrofluorocarbons

IEO — GEF Independent Evaluation Office

IPBES — The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

IPCC — Intergovernmental Panel on Climate Change

LDCs — Least developed countries
LMICs — Lower- and middle-income countries
M&E — Measurement and evaluation
MIA — Minamata Initial Assessment
NAP — National Action Plans
NGO — Non-governmental organization
NIP — National Implementation Plan
ODP-tonnes — Ozone depletion potential tonnes
ODS — Ozone depleting substances
OPS6 — Sixth Comprehensive Evaluation of the Global Environment Facility
PAD — Project Appraisal Document
PCBs — Polychlorinated biphenyls
PIF — Project Identification Framework
PIR — Project Implementation Report
PM — Particulate matter
POPs — Persistent Organic Pollutants
PPG — Project Preparation Grant
SAICM — Strategic Approach to International Chemicals Management
SGP – GEF Small Grants Programme
STAP — GEF Scientific and Technical Advisory Panel
TE — Terminal Evaluation
TER — Terminal Evaluation Report
TOC — Theory of Change
UNCCD — United Nations Convention to Combat Desertification
UNEA – United Nations Environmental Assembly
UNEP — United Nations Environmental Programme
UNFCCC — United Nations Framework Convention on Climate Change
UNIDO — United Nations Industrial Development Organization
U-POPs — Unintentional Persistent Organic Pollutants
UV — Ultraviolet
WHO — World Health Organization

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1. Executive Summary

The Global Environment Facility (GEF) has had a longstanding role and measured impact in protecting global environmental through its unique mandate. However, despite the substantial global environmental benefits (GEBs) attained over the years, there has been limited study of the value-added of GEF interventions concerning impacts on human health and well-being—so-called “health co-benefits.” This systematic inattention to health co-benefits has stemmed from an implicit assumption that GEBs are de facto human health and well-being improvements. With limited resources and a mandate to attain GEBs, health co-benefits may be considered in the theory of change (TOC) of GEF interventions but are not principally tracked or analyzed.

This study is the first attempt to provide an account of health co-benefits associated with GEF interventions. Human health issues are part of the greater nexus of the environmental agenda and the work done at the GEF, spanning all focal areas. Due to limitations in scope, the study will delve into a cohort of representative projects in the Chemicals and Waste (C&W) focal area. There were 11 projects within this cohort, of which 9 have been completed and 2 have been approved. These projects were identified by the C&W Team and demonstrate the range of considerable improvements to health and well-being that arise from GEF interventions—co-benefits that have been left unaccounted for.

C&W interventions provide a unique opportunity to assess health co-benefits of GEF interventions, as it is more feasible to track directly or secondarily, the pathways of exposure and attribute health outcomes to interventions in this context. Additionally, methods of calculating the impacts of these outcomes have been increasingly well-regarded and tested. Well-evidenced and growing consensus in the literature and among practitioners suggests that C&W-related burden of disease is substantially underestimated, especially among vulnerable populations in lower- and middle-income countries (LMICs).^{24,36,40}

Current scholarship and reports released by international organizations are clear on the significant relationship between environmental health risks and poor health outcomes, as well as health equity and environmental justice concerns.^{20,26, 40,49,50} Whether it be through exposure to ambient air pollution, plastic pollution, lead, toxic chemicals, or hazardous waste, for example,

there is documented evidence of stress and cumulative impacts burdening local populations not only in high-income countries, but also and increasingly in LMICs, and disproportionately so for vulnerable groups.^{24,36} Opportunities for improvement and intervention put forward by these studies suggest the multifocal nature of health co-benefits, through linkages to C&W, as well as in relation to biodiversity, climate change, ocean pollution, and food insecurity, among other issue areas.^{40,50}

The goal of the project is to develop an understanding of the nature of health co-benefits of GEF C&W interventions and how to maximize them. The study was directed by three analytical objectives:

1. Determine the characteristics or dynamics of the GEF C&W Portfolio vis-à-vis health co-benefits
2. Assess the capacity to target vulnerable populations and the scope and scale of health co-benefits
3. Develop an understanding of the potential benefit in human health and well-being mainstreaming during the C&W project cycle and identify a concrete example of such a mechanism

This report will first provide a high-level account of the interrelations between the GEF focal areas and health outcomes, giving examples of the associated health and socioeconomic co-benefits of intervention. Next, findings from a multifactor criteria analysis conducted on the project cohort will be presented. This criteria analysis identified one project, GEF ID 5216: “Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions,” which stood out in terms of its criteria scores and the realization of health co-benefits. This success is primarily due to the robust environmental community health systems-thinking incorporated into the project’s logical framework. Lessons learned from the case study are provided as well as recommendations for ongoing and future GEF interventions.

Overall, this study and the review of the representative cohort of projects found there is encouraging and clear potential for attaining substantial improvements in health and well-being

from GEF interventions in C&W. The primary limiting factors in maximizing these benefits are the lagged and indirect nature of their manifestation, baseline data and counterfactuals, quantitative reporting of GEBs realized in interventions, resources apportioned for measurement and evaluation, the capacity within the GEF and executing agencies to measure and track these co-benefits, and most importantly, engagement with the health care sector, public health community, and intervention beneficiaries. These limiting factors have translated into the systematic lack of attention to health dimensions of the abatement of C&W pollution. However, an institutional push to leverage these co-benefits may not only lead to more sustained impact for beneficiaries of GEF interventions, but also would help establish the additionality of GEF involvement.

Recommendations for maximizing and incorporating health co-benefits of GEF C&W interventions, with general application to the larger GEF portfolio, are as follows:

1. Explore the additionality of GEF interventions vis-à-vis health co-benefits
2. Mainstream health and well-being
3. Engage more closely with the health sector and public health community
4. Adopt a community health approach when appropriate, prioritizing equity, creating sustainable partnerships, and promoting the agency of beneficiaries
5. Develop capacity within the GEF and its implementing agencies to mainstream health and well-being
6. Promote systems-thinking and encourage the development of multifocal projects and integrated programs
7. Encourage the development of synergies at the convention level and push for the integration of human health dimensions within international and national frameworks

2. Issue Overview

In the face of the ongoing deterioration of the global environment, extensively detailed in emerging scientific reports such as the 2018 IPCC *Special Report on the Impacts of Global Warming of 1.5°C*,²⁵ the 2019 IPBES *Global Assessment Report on Biodiversity and Ecosystem Services*,²³ and the 2019 UNEP *Global Chemicals Outlook II*,⁴⁰ the GEF serves as a pivotal financial mechanism for several multilateral conventions dedicated to addressing such issues,

namely the Convention on Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC), the Stockholm Convention on Persistent Organic Pollutants (POPs), the United Nations Convention to Combat Desertification (UNCCD), and the Minamata Convention on Mercury. Although not directed by multilateral agreement, the GEF facilitates international cooperation and action on issues regarding transboundary water systems. Additionally, it has committed to supporting countries in economic transition to implement the Montreal Protocol on Substances that Deplete the Ozone.

These conventions and commitments have translated into five focal areas: Biodiversity, Chemicals and Waste, Climate Change, Forests, International Waters, and Land Degradation. Although the focal areas remain the central organizing framework in GEF-7 programming, the GEF also funds projects within three innovative impact programs in Food Systems, Land Use, and Restoration; Sustainable Cities; and Sustainable Forest Management. In light of encouraging findings from the Sixth Comprehensive Evaluation of the Global Environment Facility (OPS6), new guidance from the GEF-7 Replenishment indicates that the GEF is moving towards more sustained impact in these areas. OPS 6 highlighted the continued overall good performance of GEF interventions that, despite some shrinking of donor funding, has been achieved thanks to improvements in the partnership, further engagement with the private sector, enhanced safeguards, and broader systems-thinking. Additionally, multifocal co-benefits and transformational change have emerged as important markers and drivers of success across focal areas and impact programs.^{15,56}

The GEF's emphasis on transformational change has led not only to substantive multifocal co-benefits, but also to local socioeconomic co-benefits, as evidenced by findings from the novel study of GEF interventions in Sustainable Forest Management.¹⁶ This relationship is an unsurprising result of sound integration across focal areas and systems-thinking, approaches which characterize much of the evolution of the GEF theory of change model. Increasingly, more projects and programs in the GEF portfolio have taken notice of the potential co-benefits associated with robust multi-sectoral and systemic change, namely social and economic improvements. These interventions more effectively engage with complex systems, leveraging typically unseen and lagged impacts that can manifest directly, indirectly, or secondarily—or in some cases, unintentionally. The logical frameworks of these types of interventions are designed

to reflect the interdependence of the complex systems in which they operate. As a result, they achieve longer-term and larger-scale impacts.^{9,56} Ultimately, it is these sustained impacts that underly the impetus for many GEF interventions.

By its unique mandate, the GEF has implemented projects committed to improving human health and well-being in addition to providing GEBs. However, even if explicitly mentioned in the project background or in project objectives, enhanced measures of improvements in human health and well-being are principally not tracked through project indicators. Thus, improved outcomes in human health and well-being are viewed primarily as co-benefits of GEF projects. The difficulty with measuring these short-term or long-term co-benefits lies precisely in the lagged nature of their realization, meaning they can be difficult to track, let alone to link causally to interventions. There are already limitations on post-closure reporting compliance for projects, especially when there is limited capacity for reporting of GEBs to begin with. There is currently no comprehensive assessment of GEF achievements in the attainment of socioeconomic co-benefits, let alone health co-benefits. However, there is promise and already clear positive results from the mainstreaming of socioeconomic considerations as well as gender equity in the GEF project cycle.^{12,16} The lack of attention to the estimation of health co-benefits achieved is in part due to the nature of project objectives, GEF guidelines, national priorities, and the feasibility of such an undertaking in practice.

However, health outcomes do serve as clear indicators of the success and lasting impact of an intervention and can be quite significant. For example, a project that achieves a reduction in the concentration of pollutants, such as black carbon, would not only help to slow global warming, but also lead to sustained positive local health outcomes and improved health equity. These benefits include reduced cases of cardiovascular disease, asthma, and birth defects, among other afflictions, in addition to the substantial economic benefits of reduced medical expenses and retained earnings for those individuals, many of whom are disproportionately poor.⁵³ Human health is “inextricably linked” to the protection of the environment.⁷ The degree to which this relationship holds may vary depending on context, but it is intrinsic to interactions between humans and the natural and built environment.

At present, the academic and scientific literature reflects this reality. In particular, broader systems-thinking, technological innovation, and a multitude of empirical studies have shown the presence and potential of severe consequences to human health and well-being associated with environmental hazards. For example, regarding the ongoing climate crisis, a conservative estimate by the World Health Organization (WHO) is that between 2030 and 2050, there will be an additional 250,000 climate-change-related deaths annually.⁴⁴ However, the current politico-economic paradigm is one that precludes or limits ways to build into environmental policies prevention and response actions that address these secondary implications.⁴⁴ In an ideal scenario, this dynamic would be flipped on its head, as efforts to address complex environmental issues that span economies, sectors, regions, and generations, should be encouraged, not hindered by efforts to account for socioeconomic or health co-benefits.^{7,8,50}

Reimagining the drivers and impacts of environmental degradation is a key step in breaking down the pathways of inequality, which are reinforced and expanded by further environmental degradation. There is a growing call from the scientific and health-professional communities to integrate health and equity considerations into the overarching environmental policy framework in order to meet ambitious goals, like those of the 2030 Agenda for Sustainable Development.^{20,50} Similarly, with regard to the GEF portfolio, given the nature of its work and the growing movement towards transformational change and multifocal approaches, there is promise in further exploring the way in which the GEF can maximize these co-benefits by incorporating health dimensions into all phases of the project cycle. In fact, although health is not considered, the recent evaluation prepared on the additionality of GEF projects demonstrates that there is existing momentum for expanding the concept of incremental reasoning of GEF interventions and establishing strong baseline data and counterfactuals. The concept of additionality is “based on the project and program evaluation principles of establishing a strong counter-factual to derive the true impact on development outcomes of a project or program.”¹³ This evolution of GEF evaluation policy would provide substantial depth to the logical framework for ongoing and future projects by ensuring that GEF value-added does not just reflect financial dimensions, but also consists of the wider impact, including systemic, capacity-building, and socioeconomic contributions as well as multifocal GEBs.¹³

Within the GEF portfolio there is not only a significant amount of overlap between focal areas, but also profound interlinkages to health. The environmental concerns that drive action for each focal area have profound implications on human health and well-being. Provided below is a partial yet demonstrative account of such concerns and implications.

Biodiversity

The ongoing and anthropogenic sixth major extinction crisis represents a significant challenge to human health and one that strains already existing inequalities.^{21,23} As stated by the IPBES report, “Nature plays a critical role in providing food and feed, energy, medicines and genetic resources and a variety of materials fundamental for people’s physical well-being and for maintaining culture.”²³ Due to climate change, pollution, land use change, and the growth in human populations and demand for resources, as well as other anthropogenic pressures, there exists a severe threat to biodiversity and the provision of ecosystem services across the globe. Loss of ecosystem functions and services as well as the loss or extinction of species could even lead to the loss of ecosystems. The implications of such damages—such as loss of wild and domesticated pollinators, agrobiodiversity, and aquatic diversity, which severely affect the quality and quantity of food available—undermine food security for members of the global population of today, let alone the 10 billion people projected by 2050.^{17,21} There are also threats to biodiversity from the advance of invasive species, which can take over ecosystems (especially those already damaged) and also can serve as vectors for infectious disease. Framing these issues in terms of the effects on human health and socioeconomic outcomes may help communicate the urgency of the situation and the extent and magnitude of harm but also, more importantly, the value in prevention and reversal. For example, mitigating losses of biodiversity that reduce fish-catch would prevent an estimated 845 million people from developing severe micronutrient deficiencies. Such deficiencies increase risks of mortality for women and children and lead to cognitive and immune-function deficits.¹⁷

Climate Change

The worsening climate crisis presents one of the biggest threats to global health in the 21st century. In fact, a report from the public health community was prepared for the 24th Conference of the Parties to the UNFCCC in 2018, which outlined the severe repercussions of climate

change on health and called for urgent and ambitious action to be taken to address these threats to human lives, health, and well-being.⁵⁰ Greenhouse gases (GHGs) and short-lived climate pollutants, such as black carbon, have profound local and global impacts on climate and health. Meeting commitments to the Paris Agreement and beyond would not only mitigate the environmental and economic consequences of our changing climate, but also would result in the prevention of millions of lives saved due to reduced air pollution. In fact, nascent but increasing evidence suggests that the economic valuation of such benefits outweigh the necessary financial costs for mitigation.^{50,53} Even these estimations are conservative as climate change has other direct health impacts such as increases in non-communicable diseases, the physiological and behavioral effects of higher temperatures, and injuries and death due to exacerbated natural disasters.^{28,44,50,55} Additionally, climate change presents indirect impacts to health and well-being, including threats to clean drinking water access and food security, the spread of infectious diseases, and population displacement, as well as any resultant conflict or reduction in health services.^{28,44,50}

Climate change exacerbates existing inequalities and will be devastating to those, such as small-island developing nations, who are most vulnerable to and least responsible for climate change, and who also have the lowest adaptive capacity. Thus, climate change reductions are intimately tied with improvements in health outcomes, health equity, and environmental justice. These “co-benefits”—although not adequately incorporated adequately within international or national environmental frameworks addressing climate change—may represent the “greatest global health opportunity of the 21st century.”^{7,50}

Forests

Deforestation represents significant losses not only in the form of reduced ecosystem services, such as erosion and flood protection, but also to human health, especially indigenous health.²³ Sustained damages to forest ecosystems by deforestation can lead to the deterioration of subsistence and traditional livelihoods as well as a reduction in local air quality. For example, a study of reductions in deforestation and clearing by means of burning in the Brazilian Amazon from 2001 to 2012 found a decline in particulate matter (PM) concentrations by 30% during the dry season. Increased concentrations of PM due to the clearing of forests and vegetation by fire

can lead to increased hospital admissions and premature mortality. This reduction in PM concentration was associated with the prevention of an estimated 400 to 1,700 premature deaths annually.³¹ Employing sustainable forest management, preventing deforestation, and encouraging restoration could lead to significant co-benefits for biodiversity, climate stability, and the health and well-being of local and indigenous communities.^{16,23}

International Waters

Transboundary boundary water system issues—such as the increasing presence of vectors of disease, chemical and waste (namely plastic) pollution, and microbiological contamination—present a formidable challenge to human health. The Lancet Commission on Pollution and Health estimated that an annual 1.8 million deaths worldwide are attributable to the water-related disease burden, demonstrating the significant role that the water-related exposome plays as a determinant of health.^{4,26} This disease burden is comprised of communicable diseases as well as pollution-related non-communicable diseases. This pollution enters the water system by several pathways across sectors, as water is used in various phases of industrial processes and is, in many instances, discharged untreated or inadequately treated.⁴ Another issue deleterious to human health is the rise in harmful algal blooms (HABs). These HABs are a natural phenomenon but when exacerbated by anthropogenic factors, they can affect the provision of coastal ecosystem services. Biomagnification of HAB toxins contaminate seafood and cause both acute and chronic health effects in humans, which can also lead to reduced coastal tourism and socioeconomic well-being.³ Health co-benefits can be realized through integrated water management interventions that incorporate health dimensions into planning and management, such as the implementation of sound biomonitoring protocols.^{3,4}

Land Degradation

As population growth and per capita consumption continue to rise, so too will the significant strain on the global environment due to agricultural demand. This strain is already associated with extensive global environmental degradation. In meeting this increasing demand, further expansion and intensification of agricultural production will lead to profound effects on the environment and human health. Agricultural expansion, which necessitates deforestation, as well as agricultural intensification, which necessitates the utilization of significant resources and

degrades soil quality, are typified by monocultures. Overreliance on monocultures may threaten the maintenance of future agrobiodiversity, the resilience and productivity of agricultural systems, and food security.^{19,30} Due to climate change, effects on agriculture, such as changes in crop productivity, could have significant implications on human health and well-being. “Agriculturally-mediated changes in dietary and weight-related risk factors” may lead to an estimated 529,000 climate-related deaths between 2010 and 2050.³³ Sustainable agricultural practices and sound land-use management (in addition to climate-stabilization policies) may help reduce the threat to food availability and would prevent such losses.^{30,33}

Chemicals and Waste

As a result of globalization and the spread of the chemical manufacturing industry, the burden of disease due to pollution is significant and increasing in lower and middle-income countries. This trend is due in large part to expanding demand for products and lax regulations and enforcement.^{26,36} It is conservatively estimated that observable pollution-related diseases accounted for 9 million (16% of total) deaths in 2015, which is “three times more deaths than from AIDS, tuberculosis, and malaria combined and 15 times more than from all wars and other forms of violence.”²⁶ This pollution burden disproportionately affects specific subpopulations across the globe, most concerning children, many of whom may already be vulnerable due to malnutrition or lack of access to clean water. Children are specifically vulnerable to pollution, as they are in a susceptible developmental stage and are more prone to exposure.^{26,36} There is also increasing literature linking the development or exacerbation of risk factors for non-communicable disease to pollutants.³⁶ The WHO estimates regarding health co-benefits associated with the sound management and reduction of chemicals in the environment are approximately 1.6 million lives and 45 million disability-adjusted life years saved.⁴⁰

3. Project Overview and Objectives

The GEF has had a longstanding role and measured impact in protecting global environmental health through its initially specialized and now integrated C&W focal area.¹⁴ Implicit in the motivating objectives of its projects and following the conventions by which it is given authority, the GEF has been focused on improving human health and well-being in addition to providing GEBs. Naturally, reductions in tonnage of releases of mercury emitted or disposal of obsolete stockpiles of pesticides, for example, have significant socioeconomic and health co-benefits.

This may also be the case for other GEF focal areas or impact projects, as shown by the recent evaluation of value for money of GEF interventions in Sustainable Forest Management, which indicated a positive correlation between GEF interventions and socioeconomic co-benefits at the portfolio level and in a specific case study in Uganda.¹⁶ However, to date, there has been limited attention given to characterizing the impact that the GEF has had in the area of health co-benefits.

Therefore, the purpose of this project is to provide an account of health co-benefits associated with GEF interventions. Human health issues are part of the greater nexus of the environmental agenda and the work done at the GEF, spanning all focal areas, as discussed in brief in the previous section. However, comprehensively assessing the interrelations between global environmental benefits and community health outcomes is outside of the scope of this project. Instead, the study will delve into the C&W portfolio, which provides the most direct causal linkages with respect to human health.

C&W interventions also provide good examples of synergies across focal areas, as there are inherent multifocal dynamics to the exposure pathways of the chemicals and waste they address.^{32,40} Importantly, human health factors are intimately linked with these dynamics. For example, by nature of its exposure pathways, plastic pollution poses a wicked problem for transboundary water system management, as it is present in all oceans from the surface to the deep ocean. Microplastics can also be persistent in soil.² Additionally, plastic production and degradation contribute to CO₂ emissions, and plastic litter can be ingested by, and leads to entanglement of aquatic and terrestrial species, resulting in suffering and death and damaging biodiversity. It has been suggested that the adoption of a circular economy approach and sound waste management can help to reduce these multifocal and health risks.^{2,54}

This study is in part motivated by the success that has been achieved through the mainstreaming of socioeconomics, gender equity, and climate risk throughout the GEF project cycle. These initiatives serve as proof of concept that investing resources into maximizing co-benefits can lead to more sustained impact.¹⁵ For example, according to OPS6, policies and requirements to mainstream gender in the project cycle have, although implemented fairly recently, led to modest

improvements in gender scores, especially for those increasing number of projects that conducted gender analyses.^{12,15} Importantly, these efforts are not just directed towards acknowledging gender inequities, but require identification of the specific context, analysis of need, and tangible actions to be implemented to address them.⁴²

This study also recognizes recent GEF focus on the concept of additionality and how identification of value for money and incremental reasoning can be expanded into screening for broader and sustained impact.¹³ The expanded definition did not explicitly incorporate health dimensions within the recommendations. Therefore, this project represents an expansion on this type of systems-thinking and was designed to supplement future GEF interventions. The goal of the project is to develop an understanding of the nature of health co-benefits of GEF C&W interventions and how to maximize them. The study was directed by three objectives:

1. Determine the characteristics or dynamics of the GEF C&W Portfolio vis-à-vis health co-benefits
2. Assess the capacity to target vulnerable populations and the scope and scale of health co-benefits
3. Develop an understanding of the potential benefit in human health and well-being mainstreaming during the C&W project cycle and identify a concrete example of such a mechanism

4. Methodology

This study employed three phases of analysis to offer a preliminary account of the characteristics and types of impact of GEF C&W interventions vis-à-vis health co-benefits. The study was conducted over a period of two months, from June to July of 2019.

The first phase was a process of information gathering, the main portion of which was a literature review of relevant resources and documents from academic journals, research centers, international agencies, and GEF offices, such as the Independent Evaluation Office (IEO) and the Scientific and Technical Advisory Panel (STAP). The purpose of this review was to get a sense of the state of toxic chemicals and hazardous waste within the environmental health and

development space, the current trends of international conventions regarding C&W, and the science and scholarship on these substances and their effects on the environment and health. Additionally, relevant individuals from within the GEF were identified and interviewed following lines of questioning formulated around the three analytical objectives for this project (see Annex A for the guidance note for these interviews and Annex B for a list of individuals consulted).

The second phase consisted of an analysis of a representative cohort of projects within the C&W portfolio based on data from the GEF's Project Management Information System (GEF PMIS), IEO annual performance report (APR) and terminal evaluation (TE) ratings, and a review of all relevant GEF project documents retrieved from PMIS (i.e. PIF, PPG, PAD, PIR, MR, TE, TER). This cohort of projects was identified by the C&W Team to narrow the scope of this study to projects that were more representative of substantive health co-benefits. This is not to say they all were fully successful or achieved high impact with regard to health co-benefits. This cohort of projects serves as a starting place for understanding the dynamics related to health co-benefits within the C&W portfolio, the scale and scope of project design, the activities carried out to achieve project objectives, and the stakeholders involved. Insights into these dynamics may provide useful lessons for future GEF endeavors not only for C&W interventions but also for the GEF portfolio as a whole. The team initially suggested projects in following areas:

- Phase-out of dichlorodiphenyltrichloroethane (DDT) in India, the last producer of DDT globally
- Sound management of chemicals in Africa
- Global health care waste management
- Disposal of stockpiles of obsolete pesticides in Africa
- Artisanal and small-scale gold mining (ASGM) interventions predating the ratification of the Minamata Convention
- GEF-funded projects related to the Global Monitoring Plan of the Stockholm Convention (GMP)

An initial set of 17 projects was narrowed down within six identified topic areas to 11 projects, of which 9 are completed and 2 have received approval (see Annex C for a list of these projects

and Annex D for summary statistics). These projects were analyzed for their expected or realized impact regarding health co-benefits. A summary of relevant information and a rough typology of health co-benefits associated with GEF activities in these areas was created.¹ Next, results from this analysis in conjunction with findings from the review of associated project documents were weighed against seven multifactor criteria and were subjectively scored by the author using the literature for reference (see Annex E for a detailed breakdown of this methodology). The seven criteria considered are relevance, effectiveness, efficiency, equity, measurement and evaluation (M&E), sustainability, and additionality. The factors within each of these criteria were created by the author based on the relevant literature and examples from evaluations. The findings of this criteria analysis are meant to provide insight into the various dynamics of health co-benefits in the C&W portfolio and how they can be considered going forward with previous and GEF-7 programming.

Third, the criteria analysis would facilitate the identification a project or two that would serve as a concrete example of health co-benefits related to GEF interventions in C&W. Applying insights from the literature, interviews, and the review of associated project documents, an assessment of how these health co-benefits were achieved within the context of this case study is provided in the form of lessons learned.

5. Analytic Body

5.1 Health Co-Benefits in the Chemical and Waste Focal Area

According to the 2019 Global Chemicals Outlook II (GCO II) from the United Nations Environmental Programme (UNEP), the global community is not on track to meet the goals of the 2030 Sustainable Development Agenda in relation to sound management of chemicals and waste. Current efforts are inadequate, and these issues will only be exacerbated with the increase in demand for food and water, growth in the chemical industry, and climate change. These

¹ This analysis, in the form of a worksheet labeled Cohort Analysis in an excel file called HealthCoBenefits_CWPortfolio, is provided in the accompanying folder of supplemental documents.

developments have profound implications for human health and well-being.^{14, 26,27,40,49} It is in this context that the GEF C&W portfolio operates.^{14,37}

Well-evidenced and growing consensus in the literature and among practitioners suggests that C&W-related burden of disease is substantially underestimated, especially among vulnerable populations in LMICs.^{24,36,40} Current scholarship and reports released by international organizations are clear on the significant relationship between environmental health risks and poor health outcomes, as well as health equity and environmental justice concerns.^{20,26, 40,49,50} Whether it be through exposure to ambient air pollution, plastic pollution, lead, toxic chemicals, or hazardous waste, to name a few examples, there is documented evidence of stress and cumulative impacts burdening local populations—not only in high-income countries, but also and increasingly in LMICs, and disproportionately so for vulnerable groups.^{24,36}

Initial GEF attention and investment, directed by the 1995 operational strategy, was allocated towards helping countries in transition meet the obligations of the Montreal Protocol, which aimed to rapidly and substantially reduce emissions of ozone depleting substances (ODS). Attention from the scientific community perked up in the mid-1980s, as the infamous hole in the ozone layer in the Antarctic stratosphere was widening at an alarming rate. ODS, which are greenhouse gases (GHGs), include chlorofluorocarbons (CFCs), hydro-chlorofluorocarbons (HCFCs), and methyl bromide. These ODS were present in common aerosols and coolants, such as air conditioners, deodorants, fire extinguishers, and refrigerators, among other products and were dispersed widely around the world. Once in earth's atmosphere, ODS break down the ozone layer in the lower stratosphere, which prevents 93-99% of ultraviolet (UV) rays from the sun from reaching earth. This process has severe consequences on human health and the environment, as increased UV-B radiation leads to crop damage and reduced biodiversity, as well as skin cancer and immune-system suppression in humans.¹⁰

Thanks to a strong framework within the Montreal Protocol and significant ownership and action from the international community, the production and consumption of ODS were almost entirely reduced. In 2010, it was estimated that GEF investments in countries in economic transition contributed to the phase-out of 29,000 ozone depletion potential (ODP)-tonnes and 20,000 ODP-tonnes from production and consumption, respectively. Although significant progress has been

made, hydrofluorocarbons (HFCs) have replaced HCFCs and CFCs. In response, The Kigali Amendment, which came into force at the beginning of 2019, encourages a similar response to protect the ozone layer, the global environment, and human health.^{10,14,52}

In GEF-3, the POPs focal area was introduced, directed by the Stockholm Convention, for which the GEF is the financial mechanism. The Stockholm Convention recognized the significant toxic properties of POPs, their capability for long-range transport through air, water, and migratory species, and their accumulation and persistence in aquatic and terrestrial ecosystems, in flora and fauna, and in humans.¹⁴ For example, polychlorinated biphenyls (PCBs) even persist at high concentrations in animals at the deepest depths of the ocean in the Mariana and Kermadec trenches.⁴⁰ The convention also acknowledged the differential negative impacts from exposure to POPs, as women, children, and indigenous communities are especially vulnerable.³⁹ Biomagnification of POPs through the marine food web is an issue of high concern especially in the Antarctic and Sub-Arctic trophic levels—the latter supports the subsistence and traditional livelihoods of millions of local and indigenous peoples.⁵

Although the convention aims to protect human health and the environment, the mechanism through which health is addressed is indirect or secondary, involving activities that reduce, dispose, or prevent the release of POPs from the environment. The convention initially covered 12 chemicals and, as of 2017, 16 additional POPs have been added and 181 Parties have ratified the Stockholm Convention.³⁵ POPs have serious carcinogenic, immunological, hormonal, reproductive, neurotoxic, and developmental effects. Exposure to POPs can even cause birth defects and greater susceptibility to disease. There are significant negative health effects due to exposure, although they depend on the type of chemical, the pathway of exposure, the dosage, and other factors. For example, acute exposure to dioxins may result in afflictions from skin lesions to altered liver function.^{35,43,51} DDT alone is associated with adverse neonatal and early childhood outcomes, thyroid dysfunction, and neurocognitive and behavioral issues. DDT as well as PCBs, polychlorinated dibenzo-p-dioxins, and polychlorinated dibenzo-furans can be transferred through human milk, which present a brutal decision for mothers—whether or not to breastfeed knowing the toxicological disadvantages. Empirical evidence from WHO global surveys of human milk suggest that the benefits far outweigh these disadvantages.⁴³ However,

the choice demonstrates the disparity associated with exposure to these chemicals. In this case, women who are poorer and disproportionately live closer to contaminated areas may not be able to afford formula and are therefore more likely to have to face this decision.

In GEF-4, some projects related to mercury exposure as well as international waters issues were initiated. In GEF-5, a more unifying framework was provided, which in addition to ODS and POPs, addressed mercury and the sound management of chemicals. In GEF-6, the two focal areas and other commitments were aggregated to form a single C&W focal area. The new integrated C&W focal area also incorporated programming for mercury—as the Minamata Convention was soon to come into force—and the Strategic Approach to International Chemicals Management (SAICM).^{11,14} An example of crucial initiatives to address emerging chemical issues identified in SAICM guidelines is the rise in electronic waste (e-waste). In 2014 it was estimated that e-waste produced globally is approximately 41.8 million tonnes. The potential consequences of e-waste exposure include thyroid, cellular, and lung dysfunction, adverse neonatal outcomes, and changes in temperament and behavior.^{18,22} In GEF-6, programmatic support for least developed countries (LDCs) and SIDS were also established.¹⁴ This integrated focal area presented opportunities to develop enabling environments, economic models, and financial mechanisms to effectively achieve objectives for sound management of chemicals and incentive private sector involvement. Therefore, projects focused on facilitating systemic and transformative change instead of small-scale interventions targeting single chemicals.^{11,14}

During GEF-6, the Minamata Convention came into effect, ushering in a new paradigm for the international C&W agenda. Unlike its predecessors, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Rotterdam Convention, and the Stockholm Convention, the Minamata Convention not only put forward the goal of protecting human health and the environment and acknowledged the linkage between health and mercury pollution, but also contained a specific section, Annex 16, on health.³⁸ This section calls for the identification of populations at risk of exposure to mercury, the development of science-based health guidelines and capacity building for the health sector to address mercury-related health issues, increased ownership and contributions from the health sector. This section also calls for health promotion and education.⁴⁸ The Minamata Convention represents a crucial

development, as mercury pollution worldwide has significant effects on human health. The pathways of exposure include biomagnification up the food chain, use of skin products containing mercury, the breakage or improper disposal of mercury-containing medical devices, and the release of mercury vapor and direct exposure to mercury of ASGM.^{41,45,46,47,48} Mercury exposure may lead to permanent damage to the brain, kidneys, and the development of fetuses, miscarriages, developmental problems in children, psychotic reactions, respiratory failure, gastrointestinal distress, cardiovascular disease, neurological damage, genotoxicity, cancer, and death.^{1,6,29,41,48} Importantly, the Minamata Convention demonstrates an encouraging and strong framework for incorporating health and socioeconomic concerns within the environmental development agenda.

In OPS6, the first comprehensive evaluation of the C&W portfolio was conducted and presented encouraging findings and areas for further improvement. The portfolio remained highly relevant, continued to adequately facilitate the obligations of its conventions, and embraced synergies between the various conventions on C&W. The evaluation found that 78% of projects reviewed had overall outcome ratings in the satisfactory range and most achieved reductions in environmental stress. However, the evaluation also noted challenges in incorporating scalability as well as lacking measurement and evaluation. In fact, a major challenge to conducting the evaluation was the lack of reliable data on the aggregate impact of closed chemical and waste projects regarding quantitative indicators, such as tons of chemicals removed.¹⁴

The OPS6 evaluation also highlighted the potential for more sustained impact through multifocal projects. The evaluators recommended more focus on transformative change and integrated projects which provide multifocal benefits by nature.^{14,56} For example, plastic litter pollution is an emerging threat to the health of marine, freshwater, and terrestrial ecosystems, as well as to human health. Plastic pollution is getting more attention from the GEF and other international organizations—in fact, many of the chemicals used to make plastics are POPs. As a result, there have been calls to add plastics to the Stockholm Convention.^{2,54} It is not clear in the literature what effects this pollution has had on human health, which may be in part due to technical limitations. Humans may inhale or ingest microplastics and nanoplastics, which leech chemical additives and transfer POPs that have been accumulated on them. These microplastics raise

concern of chronic exposure and adverse health effects, as they have been reported in seafood and processed products.⁵⁴

For GEF-7 C&W programming, there is limited incorporation of health dimensions in the strategy. However, much of the new focus on integrated programs, the life-cycle of chemicals, and sector-level responses have inherent linkages with health co-benefits. These programs are the Industrial Chemicals Program, the Agricultural Chemicals Program, the LDC and SIDS Program, and Enabling Activities. GEF-7 C&W strategy specifically identifies the synergies with the International Waters focal area, citing plastic pollution as an increasing concern for sound waste management.¹¹ These developments in the strategy of C&W programming, namely the sector-driven programs, incorporate stronger systems-thinking and represent a significant step towards building the capacity within the GEF to substantially address the linkages between GEBs and other co-benefits such as health and well-being.

5.2 Cohort Analysis

5.2.1 Criteria Analysis

Below are the results from the analysis of cohort projects. For each project, the salient points for each criterion are provided. Although projects ID 4612 and 9080 have not been completed, expected results are reviewed. As projects ID 3663, 3673, 3674, and 3778 were all part of the Global Monitoring Plan for POPs and had one terminal evaluation, they were aggregated. All associated project documents that inform this analysis are listed in Annex F. A breakdown of all available APR and TE ratings are provided in Annex G. A criteria analysis matrix (CAM Matrix) summarizing these results is provided in Annex H. The potential health co-benefits for each project are brought up under the effectiveness criteria.

5.2.1.1 GEF ID 4612: Development and Promotion of Non-POPs alternatives to DDT

Status: IA Approved

Participating Country: India

Chemical Addressed: DDT

This project addresses the continued use of DDT in India. India is the last producer of DDT globally, also exporting to other countries in Africa, despite increased mosquito resistance to

DDT with no viable vector management alternative. There is a high burden of malaria and mortality in the country. The goal of the project is to introduce bio- and botanical pesticides and other viable alternatives to DDT, while engaging in a reduction and eventual phase-out of DDT, ensuring food safety, enhancing livelihood, and protecting human health and the environment.

Relevance: Highly Satisfactory

The project is highly relevant, as it aligns with Stockholm Convention, GEF, and Government objectives. Of specific note is the symbolic closure of the last known producer of DDT.

Effectiveness: Highly Satisfactory

The project will have significant positive health implications not only in terms of reduced exposure to DDT, but also in the development and adoption of more effective and non-toxic alternatives. These alternatives will also lead to the prevention of pesticide resistance; reduced incidence and burden of malaria; reduced malaria-related mortality; and enhanced socioeconomic well-being and health equity.

Efficiency: Satisfactory

There are clear benefits to piloting and developing these alternatives. However, there are many assumptions within the TOC that need to be met. One such assumption is adoption by farmers and the local community, with whom the level of engagement is unclear based on document review.

Equity: Satisfactory

There are clear benefits to vulnerable communities that live in close proximity to the sources of pollution and therefore have higher exposure. However, although crucial details on the incidence and mortality of malaria were provided, no robust baseline assessment of these beneficiaries was not conducted.

M&E: Satisfactory

With regard to the M&E design, there is a clear logical framework with verifiable and viable indicators. Two health and well-being indicators are included (no new malaria incidence; improved living standards of village communities), but the former is not sufficient to assess impact and the latter is too vague. There is no tracking of beneficiaries or sustained reporting indicated.

Sustainability: Likely

The project is designed to build capacity for integrated vector pest management and local economic mechanisms for sustainable alternatives to DDT.

Additionality: Highly Satisfactory

This project employs a model of transformative change, which leverages health, socioeconomic, and multifocal co-benefits to add further value. Without GEF intervention, production and reliance on DDT as well as the burden of malaria would persist with no viable alternative for vector control.

5.2.1.2 GEF ID 9080: Integrated Health and Environment Observatories and Legal and Institutional Strengthening for the Sound Management of Chemicals in Africa (African ChemObs)

Status: CEO Endorsed

Participating Countries: Ethiopia, Gabon, Kenya, Madagascar, Mali, Senegal, Tanzania, Zambia, and Zimbabwe

Chemicals Addressed: POPs and highly hazardous pesticides, PCB, e-wastes, flame retardants such as PBDE and related compounds used in the textiles and building products sectors, mercury waste, and lead acid batteries

This project addresses the lack of sound management of chemicals in Africa and the ongoing cumulative exposure of populations to various chemicals and toxins. African ChemObs aims to improve human health and the environment in participating countries through the institutionalization of national observatories and strengthening national and regional institutions to implement priority chemicals and waste-related interventions in project countries.

Relevance: Highly Satisfactory

This project is aligned with SAICM priorities for emerging priority chemicals and toxins as well as GEF, regional, and national priorities.

Effectiveness: Highly Satisfactory

African ChemObs has an ambitious goal to establish a coordinated and network of observatories to monitor these emerging priority chemicals and toxins. It has a strong TOC and will establish harmonized monitoring and information systems within a network of institutions that will be capable of supporting them. The project may lead to a reduction in cumulative exposure to a variety of harmful chemicals and toxins, reduced emissions, improved health equity through targeted intervention in priority locations, and improved health literacy.

Efficiency: Satisfactory

The project aims to first identify pathways of chemical exposure and then implement policy and interventions to address priority hotspots. However, there may be many logistical and administrative hurdles to go through in order to set up such a network of observatories.

Equity: Highly Satisfactory

The project framework specifically identifies the need to establish areas of highest vulnerability and highest need in order to prioritize implementation of interventions.

M&E: Satisfactory

Although there is a strong logical framework, especially in relation to community health and well-being, some of the indicators are not specific enough, which may make monitoring and evaluation difficult.

Sustainability: Likely

Health and well-being are sufficiently mainstreamed in the project framework. This project aims to build a network of observatories that have the capacity to maintain their M&E systems and have promising replicability and scaling-up potential for the future.

Additionality: Highly Satisfactory

This project would provide substantial foundations for sustained impact in addressing cumulative exposure to these persistent hazardous chemicals in countries where such capacity does not exist currently.

5.2.1.3 GEF ID 1802: Demonstrating and Promoting Best Techniques and Practices for Reducing Health-care Waste to Avoid Environmental Releases of Dioxins and Mercury

Status: Completed

Participating Countries: Argentina, India, Lebanon, Latvia, Philippines, Senegal, Tanzania, and Vietnam

Chemicals Addressed: U-POPs: polychlorinated dibenzo-P-dioxins [“dioxins”] and dibenzofurans [“furans”], mercury

This project addressed the release of dioxins through incineration or open burning of health-care waste and the release of mercury from breakage or improper disposal of mercury-containing medical devices, such as thermometers and sphygmomanometers. The project demonstrated and promoted best practices for medical waste management, which reduced the environmental releases of unintentional POPs (U-POPs) and mercury, prevented the spread of waste-borne diseases in healthcare facilities, and laid the groundwork for replicable and sustainable utilization of best available techniques and best environmental practices (BAT/BEPs).

Relevance: Highly Satisfactory

All countries had signed the Stockholm Convention the objectives of which this projected aligned well with, namely, the reduction of POPs and other harmful chemicals in the environment. The project was aligned with the objectives of the GEF and participating countries.

Effectiveness: Satisfactory

Overall, there were mixed results with regard to achievements of expected outputs. However, the project did benefit the health of patients and hospital personnel, reduced emissions, enhanced the quality and effectiveness of health care delivery, and limited the risks of hospital-generated infections.

Efficiency: Satisfactory

Overall, there were mixed results with regard to achievements of expected outputs due to a lack of quantitative indicators as well as a relatively limited budget given the high administrative burden.

Equity: Moderately Satisfactory

The project did not specifically address health equity concerns, nor did it provide a mechanism for the estimation of beneficiaries and the distribution of benefits.

M&E: Moderately Unsatisfactory

The project did not have health-specific components, did not track reductions, and did not present adequate baseline data.

Sustainability: Moderately Likely

This project was mainly focused on establishing the foundation for improved management of health care waste through training and capacity building but did not successfully establish a mechanism for sustained impact or replication.

Additionality: Satisfactory

Without the provided awareness-raising, technology and management trainings, and revised policies, there would be an increasing amount of improperly disposed of health care waste and resultant releases of dioxins and mercury within these facilities.

5.2.1.4 GEF ID 1348: Africa Stockpiles Program, P1

Status: Completed

Participating Countries: Ethiopia, ~~Morocco~~,² Mali, Nigeria, Tunisia, Tanzania, and South Africa

Chemicals Addressed: POPs waste (largely obsolete pesticides): aldrin, dieldrin, endrin, chlordane, heptachlor, DDT, mirex, hexachlorobenzene, and toxaphene

This project addressed the environmental and human health threats posed by stockpiles of obsolete pesticides across selected African countries. It was part of the first phase of the Africa Stockpiles Program which aimed to dispose of current stockpiles of obsolete pesticides in seven countries, to establish or strengthen as necessary prevention programs to help ensure that the problem did not recur, and to prepare an additional eight to ten countries for undertaking clean up and disposal operations under the second phase of the project.

Relevance: Highly Satisfactory

This project was aligned the objectives of the GEF, participating countries, and several multilateral conventions, such as the Bamako Convention, Rotterdam Convention, Convention on Biological Diversity, and the Stockholm Convention.

Effectiveness: Unsatisfactory

Although this project did raise awareness of the health and hazards of obsolete pesticides, encouraged sound management, and provided trainings, it did not meet its goal of removing the stockpiles nor did it prevent the accumulation of more. Therefore, the expected health co-benefits targets were similarly not met.

Efficiency: Moderately Unsatisfactory

There were long delays and conflict among stakeholders. Reducing the scope of the project and administrative burden would have likely led to more reductions in obsolete stockpiles.

Equity: Unsatisfactory

The components of this project did not meaningfully incorporate health equity concerns.

² Morocco was removed from the project by the World Bank due to lack of progress.

M&E: Moderately Unsatisfactory

Baseline data assessments on affected populations, species and ecosystems were not conducted at appraisal. No mechanism for the estimation of beneficiaries and the distribution of benefits.

Sustainability: Unlikely

Although it did spread some awareness and provided education, the project did not build sufficient capacity to achieve sustained impact and did not mainstream health and well-being concerns.

Additionality: Moderately Unsatisfactory

The project did aim to build a robust framework for the identification of and disposal of obsolete stockpiles. However, it did not succeed in making transformational change, nor did it achieve its objectives.

5.2.1.5 GEF ID 4569: Improve the Health and Environment of Artisanal and Small Scale Gold Mining (ASGM) Communities by Reducing Mercury Emissions and Promoting Sound Chemical Management

Status: Completed

Participating Countries: Burkina Faso, Mali,³ Senegal

Chemicals Addressed: mercury

This project aimed to strengthen national and local capacity in mercury management in participating countries to effectively manage and reduce mercury use, emissions, and exposure in ASGM communities, as well as to reduce the impacts of mercury on human health and the environment.

Relevance: Highly Satisfactory

³ Mali was removed from the project due to difficulties in implementation as a result of conflict within the country.

All three participating countries aimed to fulfill their obligations towards the Minamata Convention and project objectives were in line with those of the GEF, the countries, and the Minamata Convention.

Effectiveness: Moderately Unsatisfactory

This project did not achieve its expected outcomes, namely developing National Action Plans (NAPs). However, it did establish a monitoring system and conduct health education and technology training programs. These did contribute to some reduced mercury exposure and contamination of ground water, the air, and the environment; improved health education and health equity; and incentives to use low/mercury-free practices.

Efficiency: Moderately Unsatisfactory

Despite trainings, miners did not adopt practices suggested and were too heavily reliant on technical experts, which prevented use of alternatives to mercury. Miners also indicated that they would need more financial assistance in order to implement these methods and acquire the necessary equipment.

Equity: Moderately Unsatisfactory

The project did not adequately consider health equity implications and did not succeed in some expected outcomes, which would have made significant impact in this area.

M&E: Moderately Satisfactory

Several of the indicators used were not formulated in a way that would help evaluate impact, as some targets were not specified, and others were too vague.

Sustainability: Moderately Likely

The project succeeded in providing some training and spreading awareness of health implications. However, it is unclear to what degree it was replicable or scalable. NAP development projects were funded, which should lead to more sustained impact.

Additionality: Unsatisfactory

The project did not achieve its expected outcomes, which resulted in miners reverting back to old practices.

5.2.1.6 GEF ID 5216: Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions

Status: Completed

Participating Country: Philippines

Chemicals Addressed: mercury

This project aimed to reduce the impacts of mercury on the health of ASGM communities and the environment in the Philippines by promoting sound chemical management and strengthening local and national capacity to effectively reduce mercury use, emissions, and exposure.

Relevance: Highly Satisfactory

The Philippines had signed the Minamata Convention and aimed to fulfill its contribution to reducing mercury exposure and formalizing the industry. Project objectives, especially formalizing of the industry, were in line with GEF and Minamata Convention objectives.

Effectiveness: Highly Satisfactory

Although not every expected outcome was attained, this project achieved significant progress in moving away from the use of mercury for gold mining and reducing exposure to mercury pollution. The project led to the development of community health care workers' capacity to address effects of exposure to mercury; social development through livelihood improvement, education, training, and other interventions; poverty reduction; improvements in health equity and environmental justice issues; and perceived lower number of illnesses among family members (from interviews with miners). A community health approach was crucial in ensuring the adoption and sustained impact of this project.

Efficiency: Highly Satisfactory

This project had a significant amount of co-financing and coordinated support in execution and monitoring from highly relevant stakeholders. These stakeholders, such as Ban Toxics were already working on this issue before the creation of this project.

Equity: Highly Satisfactory

Clear awareness of the socioeconomic factors associated with exposure to mercury and efforts made to improve the capacity of the community, namely health workers, in protecting the health of those vulnerable. The project was focused on two pilot sites in order to demonstrate a proof of concept for a community-based approach to addressing mercury use in gold mining.

M&E: Satisfactory

Although more health specific indicators could have been incorporated, the project seems to have tracked well the progress made, especially with regard to trainings and the extent to which potential beneficiaries were reached. Due to partnerships with local coalition and NGOs, ongoing reporting quality and compliance is encouraging.

Sustainability: Likely

Due to a holistic TOC and a community-level approach to addressing mercury use and exposure, there is a strong likelihood of replication and scale-up of these pilots.

Additionality: Highly Satisfactory

The project scope and scale were such that these pilots in two communities not only demonstrated a strong proof of concept, but also focused on horizontal development via a community-level and community health-focused approach. This approach laid the foundations for transformative change and sustained health and other co-benefits that otherwise would not have been realized.

5.2.1.7 GEF ID 4799: Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining

Status: Completed

Participating Countries: Ecuador and Peru

Chemicals Addressed: mercury

This project aimed to protect human health and the environment by implementing integrated measures aimed at minimizing mercury releases (>40%) from ASGM activities affecting the Puyango River basin in Ecuador and the Tumbes River basin in Peru. Additionally, it promoted more cost-effective gold recovery and income enhancement through an integrated series of measures, which included capacity building, technology transfer, and policy/legal reforms.

Relevance: Highly Satisfactory

Transboundary water resources management was an ongoing issue between the countries, but in 2013 they came together to address the growing threat of mercury pollution to human health and the environment. The project objectives were in line with those of the GEF.

Effectiveness: Moderately Unsatisfactory

According to voluntary disclosures, the project exceeded its target of abatement due mainly to a ban on mercury use and switching to cyanidation processes. However, without an affordable alternative for many miners, an illegal market for mercury was created. These miners, although now aware of health effects, are forced to hide their activities, burning amalgams indoors, essentially exacerbating mercury-related afflictions for the poor.

Efficiency: Moderately Satisfactory

This project had some limitations, as results were not disseminated to communities involved and there may have been insufficient engagement of local stakeholders, especially of those negatively affected by the ban.

Equity: Highly Unsatisfactory

The ban on mercury use, without an affordable alternative for many miners, led to significant harm for those most vulnerable. These miners, although now aware of health effects, are forced to buy mercury in the illegal market and hide their activities, burning

amalgams indoors. This project may have helped many miners avoid mercury use and exposure, but also exacerbated mercury-related afflictions for the poor.

M&E: Unsatisfactory

Despite inclusion in the logical framework of specific outputs and indicators that reflected socioeconomic and health concerns, no mechanism for M&E was created. Thus, voluntary disclosures of reduction are the only marker of success.

Sustainability: Moderately Unlikely

Although there was some training and awareness-raising, there was limited indication that sustained positive impact would be achieved. Additionally, there was no mechanism for replication or scale-up.

Additionality: Moderately Unsatisfactory

Although a ban on mercury use was a significant step towards protecting human health and the environment, without providing vulnerable alternatives to mercury use, it further marginalized and harmed those most vulnerable.

5.2.1.8 GEF ID 3663, 3673, 3674, 3778: Supporting the Implementation of the Global Monitoring Plan of POPs in the four Sub-Regions: Eastern Southern Africa, West Africa, Latin America and Caribbean, and Pacific islands

- **GEF ID 3663: PAS: Supporting the POPs Global Monitoring Plan in the Pacific Islands Region**
Status: Completed
Participating Countries: Fiji, Kiribati, Niue, Palau, Solomon Islands, and Samoa
- **GEF ID 3673: Supporting the Implementation of the Global Monitoring Plan of POPs in Eastern and Southern African Countries**
Status: Completed
Participating Countries: Ethiopia, Kenya, Mauritius, Uganda, and Zambia
- **GEF ID 3674: Supporting the Implementation of the Global Monitoring Plan of POPs in West Africa**

Status: Completed

Participating Countries: Ghana, Mali, Nigeria, Senegal, Togo, and Congo DR

- **GEF ID 3778: Supporting the Implementation of the Global Monitoring Plan of POPs in Latin America and Caribbean States (GRULAC)**

Status: Completed

Participating Countries: Antigua And Barbuda, Barbados, Brazil, Chile, Ecuador, Honduras, Mexico, Peru, and Uruguay

Status: Completed

Chemicals Addressed: POPs

This project addressed the lack of monitoring and evaluation of POPs globally by building regional capacity on analysis and data generation for POPs in core matrices. Countries in four sub-regions were provided support to develop the capacity to contribute to global report submitted to the Stockholm Convention. The GMP initially focused on the core media of mothers' milk/human blood to examine human exposure and ambient air to examine long-range transport of POPs.

Relevance: Highly Satisfactory

This project was designed to facilitate participating country efforts to meet the obligations of the Stockholm Convention and provide reporting for the first evaluation of the convention as well as for the WHO 4th Round of Breast Milk study on POPs. Most countries had completed or were in the process of completing National Implementation Plans (NIPs) and in regional workshops, identified what needs, actions, and responsibilities were necessary to meet these goals. The goals of the project were aligned with those of the GEF.

Effectiveness: Satisfactory

The project established a sound framework for monitoring and analyses of POPs, with the capability to be built upon over time. This framework would help improve identification and targeting of vulnerable populations and would allow for the addition of new POPs and matrices. However, there were no direct health co-benefits.

Efficiency: Highly Satisfactory

Despite some project delays, the projects were able to move forward thanks to strong coordination and partnerships with institutions, namely the WHO.

Equity: Moderately Satisfactory

Although the project help build up capacity in participating countries, there was no specific focus on concerns of health equity.

M&E: Highly Satisfactory

There was a clear and robust logical framework with a sound M&E component.

Sustainability: Likely

This baseline data on POPs contamination informed national and international efforts to reduce POPs, contributed to WHO studies on POPs contamination, built a foundation for the addition of more chemicals and matrices to be monitored, and spread of awareness of the extent of the issue and magnitude of the harm.

Additionality: Highly Satisfactory

The project ensured that participating countries would have the capacity to meet their obligations under the Stockholm Convention.

5.2.2 Discussion of Results

Overall, analysis of this cohort of projects suggests that there are significant health co-benefits that can be associated with GEF interventions in the C&W portfolio. For example, the primary objective of the typical GEF C&W intervention is the elimination of harmful chemicals from the environment, which translates into direct impacts on health and well-being—namely decreased disease burden and mortality. This is not a trivial finding, as the conservative global estimate of observable pollution-related deaths in 2015 is 9 million (16% of total deaths).²⁶

Although not all projects had direct health co-benefits, the majority of these projects did have some component of health promotion, education, or training, which spread awareness of the

adverse health effects of exposure to harmful C&W and built capacity to address the consequences of exposure. This information was an invaluable contribution to the health of vulnerable populations, as there were barriers to accessing this knowledge. Groups most vulnerable to C&W exposure lived in close proximity to contaminated sites, are typically poor, and have limited adaptive capacity to prevent, minimize, and recover from acute or chronic exposure.³⁷ Technical trainings on BAT/BEPs, the provision of equipment, and the development of alternatives to harmful practices and uses of chemicals, such as open-burning of medical waste or the use of DDT in vector control, provided stakeholders and beneficiaries with the knowledge and capabilities to reduce exposure to harmful chemicals and their associated adverse health effects. Enhancing the agency of vulnerable populations and building capacity for sustained impact were crucial mechanisms for breaking the pathways of exposure to C&W pollution.

These improvements were present in projects that successfully engaged local stakeholders and beneficiaries and had sound TOC that incorporated health dimensions into the logical framework. The degree to which these health dimensions were incorporated depended on the scope and scale of the project, but the most direct and easily attributable impacts were realized in projects that dealt with community-level development, as opposed to solely institutional infrastructure. For example, DDT project in India (GEF ID 4612) has not been completed, but its logical framework centers on educating the community about the harms of DDT and replacing DDT with safe and sustainable alternatives to vector control management. These alternatives will be developed within the community, and they will contribute to the local economies and increase the resilience of the community to further exposure, so long as there is ownership of this alternative approach. The adoption of this alternative approach is likely, as the community now is aware of the harm and has the tools to protect itself, which is big motivating factor and leads to more sustained, albeit lagged, impact.

Significant improvements in breaking down health inequity and addressing concerns of environmental justice were attained by the projects that had or generated sound baseline data and used this information to target hotspots of pollution, which are more likely to be located near vulnerable populations. This was the case even if these impacts may have taken years to manifest

or health dimensions were less incorporated into the project components. The types of projects that induced longer-term and larger-scale health co-benefits were those that focused on legal, regulatory, governmental, and institutional capacity building. If successful, they were more likely to have more robust TOCs and demonstrated the additionality of GEF interventions. However, without strong partnerships and co-financing, the administrative burden and large scope was detrimental to the performance of such a project, as evidenced by GEF ID 1348, “the Africa Stockpiles Program.” The Global Monitoring Program, on the other hand, developed an ambitious monitoring program but did not attempt to start from scratch. Instead, it leveraged the resources of the WHO. Although impacts on health and well-being for these projects were likely less apparent or lagged, they may have created better mechanisms for sustainability and scale-up. Additionally, on a case-by-case basis the mainstreaming of gender equity and socioeconomic concerns seemed to be well integrated in the development of projects, even if there was not much focus on these concerns. This suggests that there is increasing ownership from the GEF and agency sides and that mainstreaming did not put an undue burden on the project cycle but was in fact an effective tool.

Although the findings from the review of this cohort cannot characterize the entire scope of the impact the GEF C&W portfolio has attained regarding health and well-being, this study has demonstrated the range of impact that interventions can have and provides a preliminary typology of health co-benefits. Although many of the projects did not provide adequate reporting on the environmental benefits attained, such as reduction in tonnage, thus precluding a comprehensive analysis of impacts, all projects within the cohort did have substantial potential health co-benefits associated with their activities. This is an encouraging finding because it confirms that the linkages between health and the environment are present in realizing GEBs in GEF C&W interventions. These dynamics influenced project performance and additionality, and they were moderated by the degree of health mainstreaming throughout the project cycle. Additionally, the projects that incorporated broader systems-thinking designed to elicit transformative change also scored better in the criteria analysis. Ultimately, the sustainability of these projects was an important driver for the potential of health co-benefits to be maximized.

Although only one project within the cohort (GEF ID 4799) was multifocal (C&W and International Waters), the overlap in each project with other focal areas was underestimated in project documents. This suggests that further and more detailed investigation of the linkages between issue areas within the portfolio could lead to more effective and integrated projects as well as transformative change. There is limited incorporation of health dimensions within the TOC and M&E frameworks of projects, but there was potential for extracting more adequate measures of health co-benefits that would have demonstrated the value-added and likelihood of sustained impact. For example, instead of indicators such as number of trainings conducted, the number of attendees or beneficiaries would have been a more useful measure.

A significant challenge identified in this review of projects was the difficulty in getting quantitative measures of environmental benefits, and especially in extracting measures of health co-benefits. The OPS6 review of the C&W portfolio also found that the overall M&E of C&W projects needs improvement and that there is limited availability of data for quantitative indicators, such as tonnage reduced or the number of beneficiaries of the interventions. Primary limiting factors in extracting these health co-benefits seem to be the expertise of the GEF and the executing agencies regarding health dimensions, their capacity to develop and collect baseline data, and the resources apportioned to measurement and evaluation, including tracking tools and evaluations.

Additionally, it is important to acknowledge that the GEF was created as, and is an environmental organization. This means that the GEF's entry point for projects is GEBs—in other words, the objectives of the conventions are prioritized. The lack of attention to health co-benefits is in large part due to the assumption that producing environmental benefits de facto protects human health. The initial work of the GEF in C&W was in enabling activities and capacity building in order to collect baseline data and assess issues at the country level. Based on the established inventory of pollution, it was then easier to address these issues such as releasing POPs through the open-burning of obsolete stockpiles in a concrete manner. These efforts were strengthened by legislation and the development of NIPs or NAPs for meeting obligations to the conventions. Convention guidelines, which are designed to protect human health and the environment through the elimination of harmful C&W in the environment, inform GEF strategy.

In the project development, these NIPs and NAPs also inform project objectives. Therefore, the primary objective of GEF interventions is to eliminate harmful C&W, especially with limited resources. In other words, for the time being there are still a substantial amount of low-hanging fruits which can produce significant health co-benefits. An analysis of whether the opportunity cost of resources needed to identify and maximize health co-benefits outweigh the potential for these benefits is a question that merits further investigation.

5.3 Case Study of GEF ID 5612: Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions

5.3.1 Project Overview

This medium-size project under GEF-5 was designed to protect the health and environment of two ASGM communities in the Philippines and in so doing, provide a successful proof of concept for replication across the country. The project (GEF ID 5612), titled “Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions” stood out in the cohort analysis, as a review of its associated project documents revealed the likelihood of substantial health co-benefits attained (the project documents consulted for this review can be found in Annex F). It received predominantly highly satisfactory scores for the health co-benefits criteria, performing markedly better than the two other ASGM projects, despite having the smallest scale of the three projects. It was scored highly satisfactory for relevance, effectiveness, efficiency, equity, and additionality. M&E was found satisfactory, and sustainability was found likely. It also received high TE and APR ratings (see Annex G for a breakdown of these ratings). The project’s scope proved to have substantial depth, as a robust TOC prioritized the crucial step of formalizing the ASGM industry and incorporated a community health approach to address the use of mercury and its associated consequences. The project recognized the importance of engaging community stakeholders and the health sector as well as centering the design around the needs of the miners and their community. In so doing, it was able to achieve more sustained impact in the environment and in the health of beneficiaries.

ASGM is a major anthropogenic source of mercury in the environment, which has severe adverse health effects for humans and is transported through several media, including air, water, and soil. Mercury has transboundary implications because it can travel long distances and persist

in the environment, as it is a heavy metal. It is used in ASGM to help separate gold from sediments using rudimentary processing methods. Elemental mercury is combined with gold-laden silt to form an amalgam, which is heated, often in or near homes, to evaporate the mercury and leave behind gold. In this burning process, mercury vapor is released into the air, where it is directly inhaled by miners and their families, even reaching nearby communities.^{6,48} There is a likelihood of indirect exposure from the mercury vapor through contaminated surfaces and foodstuffs, harming those who do not even participate in ASGM activities. Direct exposure also occurs during panning and straining, which contaminates river and soil sources. Bacteria can transform elemental mercury into methylmercury, a far more toxic form, which bioaccumulates in the fatty tissues of a fish and up the food chain.^{1,29}

The inhalation of mercury vapor and the ingestion of contaminated fish and seafood is the main route of exposure for most ASGM communities. The severity of mercury poisoning and the route of exposure depends on the chemical state of the mercury, each of which has different toxicity and characteristics. Even low exposure can cause severe damage to systems within the body. The types of adverse health effects from exposure to mercury include permanent damage to the brain, kidneys, and development of fetuses, miscarriages, developmental problems in children, psychotic reactions, respiratory failure, gastrointestinal distress, cardiovascular disease, neurological damage, genotoxicity, cancer, and death.^{1,6,29,48}

In the Philippines, according to the project documentation, ASGM occurs in more than 40 provinces as a subsistence-level income. This informal sector supplies roughly 80% of country's yearly gold supply, with an estimated 70 to 140 tonnes release of mercury (3.6 to 7.2% of emissions worldwide). ASGM has been a traditional livelihood in the country and with the rise in value of gold, more participation has been encouraged, especially from miners from socially and economically marginalized communities.⁴⁸ The project provided estimates that 300,000 miners and their families were involved in the sector in the Philippines. Men are usually in charge of the extraction and the mercury handling, while women process the ore, are involved in amalgamation and burning, and manage the community. In some cases, children, who are particularly vulnerable, may be involved in these processes.^{1,48}

The development objective of this project was to reduce the impacts of mercury on the health of ASGM communities and the environment in the Philippines by promoting sound chemical management and strengthening local and national capacity to effectively reduce mercury use, emissions, and exposure. The project piloted interventions in two communities, Diwalwal, Compostela Valley and Labo, Camarines Norte, facilitating government efforts to develop, test, and replicate mercury reduction and elimination projects across the country. In order to reduce use and exposure, mercury-free technology was introduced to the two pilot communities, along with technical workshops. Awareness raising, peer-to-peer education, and the dissemination of knowledge were highly prioritized activities. Health training in the proper diagnosis of mercury poisoning was also provided to rural health care workers (HCWs), and health manuals and policies at the national level were updated. Most importantly, this project helped to induce the formalization of ASGM within the Philippines and strengthen national capacity to replicate these interventions.

The Philippines had signed the Minamata Convention in 2013 and was undertaking activities for an early ratification, also following a NAP developed in 2011 on mercury to reduce releases including in the ASGM sector. The project's main executing agency, the United Nations Industrial Development Organization (UNIDO), with Ban Toxics, a non-governmental organization (NGO) based in the Philippines already doing good work in this area, were jointly responsible for the overall project implementation. There was also a strong relationship with Dialgos, a Danish medical NGO, the Philippines Department of Environmental and Natural Resource (DENR), and the Philippines Department of Health (DOH). The DOH committed to providing health education to national and local health specialists, actively being involved in assessing monitoring and reporting data, and recommending any necessary public health intervention measures. DENR and Ban Toxics were involved in providing support to the formation of the national ASGM institution, which promoted the formalization of the industry and pushed for policy reform to reduce mercury use, emissions, and exposure in the country. Because of the lack of recognition from the government, Ban Toxics helped form the Philippine National Coalition for Artisanal and Small-Scale Mining, formalizing the industry through this coalition, which was a collection of ASGM stakeholders. The coalition actively participated in

pushing for formalization, poverty reduction, responsible environmental stewardship, gender equity, and policy reform.

Although not every expected outcome was attained, this project achieved significant progress in moving away from the use of mercury for gold mining and reducing exposure to mercury. The project helped facilitate the formalization of industry through the creation of the Philippine National Coalition for Artisanal and Small-Scale Mining, which became an important voice in advocating for miners and those most vulnerable, especially women who had an important role in the coalition. The use of mercury for gold mining was significantly reduced (potential reductions of 7,620kg of Hg in Diwalwal, Compostela Valley and 462kg of Hg in Labo, Camarines Norte). The communities were made aware of the dangers of mercury and trained in using mercury-free alternatives. HCWs were extensively trained on identifying and adequately dealing with mercury poisoning. The proof of concept was established, improvements were made to the content and scope of health guidelines, and initial biomonitoring was conducted with over 100 participants. The likely health co-benefits of these results included reduced exposure to mercury pollution, decreased burden of mercury-related disease, social development through livelihood, training, and other interventions, poverty reduction, improvements in health equity and environmental justice concerns, improved capacity of community HCWs in diagnosing and addressing exposure to mercury, and perceived lower number of illnesses among family members (from interviews with miners).

5.3.2 Lessons Learned

Lesson 1: Appropriate Scale and Scope of Intervention

As discussed in the previous section, although the scale of this project was small (only two pilot communities), the scope of the intervention had significant depth. This depth came from a robust TOC, the significant co-financing mobilized, and the substantial engagement of local stakeholders and beneficiaries. Although this intervention was very localized, it demonstrated proof of concept not only of project design and implementation, but also of community-level engagement. These pilots created the foundation for successful replication across the country and stood out among the cohort, which was typified by much larger and programmatic initiatives. This was in part due to the relevance of and coordination among stakeholders.

Lesson 2: Formalization of the ASGM Industry is Key

Local stakeholder engagement and the efforts of Ban Toxics demonstrated that the priority for action was the formalization of the industry under the coalition with government support. This step was a crucial advancement of community-level issues and advocacy. The project's facilitation of improved government ownership of regulating ASGM and protecting the environment and the health of miners and their communities helped to bring this formalization within a national and local framework. Supporting the formalization of this economy is a manifestation of a more robust TOC because it considers that once the funding stops, the project closes, and the population is in need, the government has to step in and take ownership, especially as many of these mining communities are in rural or more difficult to reach areas.

Lesson 3: Enhancing Local Agency Through Awareness-raising, Education, and Dissemination of Knowledge

Personal health impacts are a great motivating factor to individuals on the ground. Awareness-raising, education, and the dissemination of knowledge helped to break down exposure pathways and inequities in health. In this project, gender-based differences in exposure were identified from the beginning and women were not only recognized as particularly vulnerable, but the local women's councils were included in planning to address needs and priorities. This project's efforts to raise awareness were quite unique by addressing health equity concerns in other ways. For example, short films were produced to communicate the daily life of children living among ASGM activities so as to communicate their vulnerability and specific needs. Providing education about new technologies and the dangers of mercury through peer-to-peer learning was also a crucial aspect of this project, as it established trust within the community and thus effectively disseminated more accessible knowledge. The engagement with beneficiaries was summarized well in a lesson learned provided in the project's terminal evaluation. The terminal evaluation noted that despite initial hesitation to participate in the project, once the "communities were informed about the health problems that they might suffer from if exposed to mercury, they gradually started to change their mind. In particular, the women, knowing that they will be particularly affected if exposed, convinced the miners to participate in the project. Engaging

proper awareness-raising activities and building their confidence are the basis to secure the commitment of the communities.”

Lesson 4: A Community Health Approach and Engaging the Health Sector Helps Target Intervention to Those Most Vulnerable

The development of community HCWs was crucial to the success of project. The DOH partnered with the University of Philippines – National Poison Management and Control Center to deliver this training. Four modules were prepared: 1) “Environmental sources and fate: Chemical properties of mercury,” 2) “Human exposure to mercury, toxicology of exposure,” 3) “Public health aspects of mercury exposure,” and 4) “Hands-on training on the application of health assessment protocols for doctors, barangay health workers.” These trainings provided HCWs with the capacity to assess cases of mercury poisoning in a timely fashion and to effectively manage them. HCWs did bring up the concern that a diagnosis may sometimes be unclear, as checklists provided for mercury poisoning included symptoms that were common such as colds, coughs, or fevers. However, instead of ignoring these symptoms, a protocol was established to send any unclear diagnoses to the hospital. This success in building proper community health surveillance well supplemented efforts to raise awareness of the health consequences of mercury use and exposure, mobilizing the community and leading to more sustained impact.

Lesson 5: The Burden of Disease Related to Mercury is Significant and Underestimated

A 2017 Global Burden of Disease of Mercury Used in ASGM study, despite lacking data, conservatively estimated the global burden of disease from mercury use in artisanal small-scale gold mining (ASGM), a priority area of GEF intervention following the Minamata Convention on Mercury. This burden is between 1.22 to 2.39 million disability-adjusted life years (DALYs) lost due to chronic metallic mercury vapor intoxication (CMMVI). The authors of the study note that in comparison, “the Global Burden of Disease... 2015 study yielded 2.45 million DALYs as a result of hepatitis B and 2.06 million DALYs for Parkinson’s disease,” suggesting that this burden from ASGM is not insignificant.³⁴

In addition to a global estimate, the study also provided country-level estimates. For the Philippines, the burden of disease of mercury used in ASGM for approximately 366,000 miners

is between 31,915 and 46,139 DALYs. Largely due to the informal nature of ASGM and the resultant lack of reliable data, the estimates of mercury-related disease burden in ASGM was limited to CMMVI and only to male miners (excluding women, children, and gold dealers), meaning it is substantially underestimated.³⁴ Although the specific health co-benefits of the two pilots may have been only a fraction of this amount and were very localized, they too were significant for those communities. Moreover, assuming the GEF intervention is replicated in all ASGM mining communities across the country, the secondary health co-benefits that may result from establishing this proof of concept are significant and may potentially offset some of the costs associated with implementation.

Going Forward with ASGM Interventions: GEF GOLD

In GEF-6, the GEF invested \$141 million in a novel endeavor, The GEF Global Opportunities for Long-term Development in the ASGM sector (GOLD) program in seven countries, Burkina Faso, Colombia, Guyana, Indonesia, Kenya, Mongolia, Peru, and the Philippines. The objective was “to design and deploy ways in which [miners] can obtain loans to switch from mercury-based extraction techniques to cleaner and more efficient ones. Regulations and policies will also be strengthened, and mercury-free mining communities will be connected to global markets and associated supply chains.”¹⁴ GEF GOLD represents the “first significant step in the direction of mobilizing private and other public resources to tackle mercury for the ASGM sector by working at the sector level rather than treating it as a chemicals issue.”¹¹

Therefore, the GOLD project is encouraging because it brings together these elements: appropriate scale and scope of project design by establishing Minimata Initial Assessments (MIAs) and NAPs; a formalized economy with linkages to the private sector and support from the government; awareness-raising, education, and the dissemination of knowledge; and the acknowledgement of the significant burden of disease and vast potential value in reduction and elimination of mercury in ASGM. Programs, in general, also lend themselves to integration across focal areas, better dissemination of knowledge and results, and more robust systems-thinking. Importantly, GEF GOLD aims to reduce the use and exposure to mercury *and* to break linkages in the pathways of exposure by providing economic benefits, an alternative source of income and new jobs. Additionally, due to the nature of ASGM, the GEF GOLD TOC inherently

addresses health inequity and environmental justice issues, as mostly marginalized and poor groups are involved in ASGM.

However, it remains to be seen the extent to which community health is mainstreamed and engagement with the health care sector is incorporated in programming. Environmental dimensions are a crucial component of this new program, but they are only one component of a complex system. The science and BAT/BEPs are clear, but a successful framework that provides these miners and communities the support and agency to reduce these cumulative impacts, socioeconomic pressures, and adverse health effects necessitates integrating specific health dimensions within the TOC. As vast resources are being invested into this program, the incorporation of broader health systems-thinking would contribute to maximizing the impact on health and well-being for the beneficiaries of these activities.

6. Conclusion and Recommendations

This evaluation presents the first attempt to characterize the health co-benefits of GEF interventions. Due to limitations in scope, the study focuses on the C&W portfolio, which has the most direct linkage to health co-benefits. Findings of this exploratory research study of the C&W portfolio were based on three phases of analysis: a literature review of the relevant scholarship and agency reports on the linkages between the environment and health, as well as interviews with relevant GEF personnel; a review of project documents and a health co-benefit criteria analysis of a cohort of representative C&W projects; and a case study of effective health mainstreaming. Overall, this study and the review of the representative cohort of projects found there is encouraging and clear potential for attaining substantial improvements in health and well-being from GEF interventions in C&W and across the portfolio.

The primary limiting factors in measuring these benefits are the lagged and indirect nature of their manifestation, availability of baseline data and counterfactuals, quantitative reporting of GEBs realized in interventions, resources apportioned for measurement and evaluation, overall funding and co-financing, the capacity within the GEF and executing agencies to measure and track these co-benefits, engagement with the health care sector, public health community, and intervention beneficiaries. These limiting factors have translated into the systematic lack of attention to the magnitude of environmentally-related threats to health and to the linkages

between health and all focal areas (C&W in particular). The GCO II reported that the global community is not on track to meet the goals of the 2030 Agenda for Sustainable Development with regard to the sound management of chemicals.⁴⁰ In 2015 it was conservatively estimated that pollution-related diseases lead to 9 million deaths every year, disproportionately affecting vulnerable populations in LMICs.^{26,36} In the meantime, the production and use of chemicals worldwide is exponentially increasing, and the chemicals industry is worth \$4.1 trillion (2017 estimate).^{14,37,40} As the degradation of human health and the environment due to C&W persists, it is clear that the burden of disease and mortality associated with pollution is unequitable, underrecognized, underestimated, and significant.

Although there is much work to be done in building a framework for identifying and maximizing health co-benefits in GEF C&W interventions, there is a growing impetus to catalyze transformational change in this area. The science regarding the adverse health effects of C&W despite limited data is clear, BAT/BEPs have been identified, and public health professionals and academics have made calls for adequately addressing environmental health and equity concerns.^{26,36,40,44,49} An institutional push to leverage these health co-benefits may not only lead to more sustained impact for beneficiaries of GEF interventions, but also would demonstrate the additionality of GEF involvement.

Recommendations for maximizing and incorporating health co-benefits of GEF C&W interventions, with general application to the larger GEF portfolio, are as follows:

Recommendation 1: Explore the additionality of GEF interventions vis-à-vis health co-benefits

The GEF is first and foremost an environmental organization seeking GEBs, and the entry point of all C&W projects are the conventions' objectives. This means, for example, that the reduction or elimination of harmful C&W is prioritized over concerns about health. Therefore, the primary objective of GEF interventions is to reduce or eliminate harmful C&W, especially in contexts with limited resources or capacity. However, an analysis of whether the opportunity cost of resources needed to identify and maximize health co-benefits outweigh the potential for these benefits is a question that merits further investigation. Valuing reductions in the burden of

disease, risk of death, and overall well-being is not clear-cut.²⁷ Similarly difficult to value is the dissemination of knowledge and improvement of health literacy among stakeholders and beneficiaries. Communicating the extent and magnitude of pollution as well as the potential health co-benefits of prevention and abatement are crucial for ensuring ownership and action.⁷ Incremental responses to environmental issues do not necessarily lead to structural change or equitable and effective interventions.^{20,44} Therefore, the application of broader systems-thinking to an exploration of health and well-being dimensions of the additionality of GEF interventions would be an important first step.

Recommendation 2: Mainstream health and well-being

Importantly, not every GEF intervention—even within the C&W profile—has substantial implications on health. Nonetheless, the environment is a determinant of health, and an incomplete assessment of need or lacking baseline data on exposure and vulnerability put in question the benefits and effectiveness of GEF interventions, especially when vast resources are being invested. Therefore, there is promise in further exploring the way in which the GEF can maximize health co-benefits by integrating objectives for improved health and well-being into all phases of the project cycle. Gender mainstreaming thus far has demonstrated proof of concept with regard to the effectiveness of broader systems-thinking and incorporating equity dimensions within the model TOC.¹²

In 2017, the WHO published the Chemicals Road Map, which was designed to facilitate the integration of sound chemicals management within the agenda of the health sector. The road map “identifies concrete actions where the health sector has either a lead or important supporting role to play in the sound management of chemicals, recognizing the need for multi-sectoral cooperation. The actions are organized into four areas: risk reduction; knowledge and evidence; institutional capacity; and, leadership and coordination.”⁴⁹ This road map provides key guidance on health mainstreaming in GEF C&W interventions and is very explicit in the importance of this integration. For example, one of the main components of its leadership and coordination area is “health in all chemicals policies.”⁴⁹

Recommendation 3: Engage more closely with the health sector and public health community

The WHO Chemicals Road Map identifies promising and structured ways in which the health sector can be involved in C&W interventions.⁴⁹ Establishing partnerships and facilitating the health sector and public health community taking ownership of chemicals management issues can play an important role in the sustainability of an intervention. The health sector and public health community can be trained or may already have the capacity to raise awareness, provide education, and disseminate knowledge effectively, which is an important aspect of many GEF C&W interventions.⁶ Health professionals can more effectively communicate the extent and magnitude of harm to their patients as well as help to establish trust within a community or an health care institution, ensuring higher levels of adoption and participation.⁵⁰ Therefore, providing health care or public health professionals with the information, training, equipment, or infrastructure they need to more effectively manage risk, conduct biomonitoring and surveillance, promote health protection strategies, or educate the public with regard to C&W can substantially larger-scale and longer-term impact.⁴⁹ Additionally, establishing effective partnerships with the health sector or public health community, such as ministries of health or universities, already engaged in this work to some degree can reduce the administrative and resource burden of an intervention. This may also help to advance the reach and quality of monitoring and evaluation systems, research, and assessments of need. Additionally, the capacity of countries to meet obligations and report to conventions, such as the Stockholm Convention, may be improved.

Recommendation 4: Adopt a community health approach when appropriate, prioritizing equity, creating sustainable partnerships, and promoting the agency of beneficiaries

Personal health impacts are a great motivating factor to individuals on the ground. A community health approach may also supplement any international, national, or local efforts to address C&W by providing ground-truthing, investigating linkages between exposure and health impacts and assessing the burden of disease. Additionally, this approach may result in improved targeting of those most vulnerable, enhancing health equity and promoting environmental justice, as the well-being of these communities is central to the TOC.²⁰ Outreach and education have consistently proved to be substantial markers for success in C&W projects, as giving people the

knowledge to protect themselves significantly reduces their risk of exposure. Facilitating the creation of sustainable partnerships among community HCWs and CSOs, as well as including beneficiaries of C&W interventions within the planning process—especially those most vulnerable, including indigenous peoples, youth, and women’s groups—can help target initiatives, allocate resources effectively, and encourage better monitoring and valuation. As evidenced by community-based projects for C&W within the GEF Small Grants Programme (SGP), promoting the agency of beneficiaries and combining efforts to attain GEBs with poverty reduction and other sustainable development efforts can improve the effectiveness of C&W management.³⁷ Further, as demonstrated by the ASGM pilots that were replicated in the Philippines (GEF ID 5612), a focus on localized community health benefits does not necessarily hinder up-scaling efforts.

Recommendation 5: Develop capacity within the GEF and its implementing agencies to mainstream health and well-being

If something isn’t measured, then it cannot be evaluated meaningfully. Currently, M&E of C&W interventions stops at the amount of chemicals reduced or eliminated or the number of trainings— in some cases the number beneficiaries reached may be provided. However, these indicators do not provide enough information to analyze localized or global environmental benefits of an intervention, such as the impact on the pathway of exposure, let alone health co-benefits. Additionally, baseline data and reliable estimates of the indicators that are identified are not consistently available (at appraisal, during, at closure).¹⁴ There is also limited, if any, follow up reporting after project closure. Without this information, the concerns of whether the pathway of exposure was broken down, what benefits were distributed to beneficiaries, and how these benefits were distributed cannot be evaluated. Drilled down indicators or measures could be the reduction of in exposure, the reduced prevalence of diseases linked to C&W, or—even more granular—the number of children born without deformity, to name a few. Conducting baseline measures of exposure and the burden of disease would also help to establish impact and demonstrate value-added.

Although building this capacity within the GEF Secretariat or within implementing and executing agencies would take dedicated effort and resources, it is a barrier that is surmountable,

as the science is clear and BAT/BEPs have been identified. There should be some personnel or a health expert within the GEF or GEF C&W Team that could be a liaison to implementing and health agencies that have this capacity. Alternatively, engagement and co-execution with ministries of health, the health sector, and the public health community that have the capacity to address health co-benefits could also prove to be effective, as evidenced by the partnership with the WHO and their 4th Human Milk study of POPs in the GMP projects (GEF ID 3663, 3673, 3674, and 3778). The WHO already had created guidelines for conducting biomonitoring and analysis and had mobilized resources for another round of their study, which the GMP contributed to by design, so the project mainly focused on enabling activities. However, as noted in the review of gender mainstreaming, appointing a dedicated specialist within the GEF is not enough, as the “position is insufficient on its own to build wider staff competencies and capacities to support gender mainstreaming across GEF programming and processes.”^{12,15} This will have to be considered for mainstreaming health co-benefits as well.

Finally, the model TOC of GEF C&W interventions should be re-evaluated to map how health co-benefits can be achieved by assessing C&W drivers of health outcomes. Health mainstreaming will greatly improve the way that projects are designed by asking the right questions, incorporating the elements that need to be measured, identifying the appropriate indicators to measure the elements, and establishing a M&E system to track and analyze the indicators. A major challenge to how this M&E will be done is the fact that for some of the benefits, results do not materialize in the lifetime of a project—they may even take several years to do so. However, it is possible to require reporting and evaluation after project closure by allocating resources to do so within the project design. Nonetheless, the proper method for this tracking remains unclear and merits investigation. The realization of health co-benefits and enhanced sustainability may offset the costs of building this capacity and may also demonstrate that investment in meeting convention objectives is delivering results. However, it could also detract from the attainment of GEBs and stretch thin resources.

Recommendation 6: Promote systems-thinking and encourage the development of multifocal projects and integrated programs

Multifocal projects, by design, lend themselves to co-benefits. Increasing scientific and academic literature, reports from international organizations and agencies, and even GEF IEO evaluations and STAP publications suggest that there may be significant potential in expanding systems-thinking, acknowledging the multifocal nature of environmental interventions, and integrating programs across focal areas.^{14,26,37,40,49,56} For example, an evaluation of C&W and Climate Change projects within the GEF portfolio demonstrated that there was a linkage between project performance and attainment of long-term goals and more robust TOCs.⁵⁶ Overall, the C&W portfolio has thus far been narrowly focused and standalone despite its many interlinkages with other focal areas and the Sustainable Development Goals (multifocal projects represent 2% of approved projects in the C&W portfolio).^{14,49} However, this relationship has increasingly been recognized in scholarship, reports from health organizations, and even within the GEF.^{14,26,37,40,49} Currently, STAP is developing a report on an integrated approach to C&W, which will detail the scientific and technical evidence of these interlinkages. More attention should be given to the way in which health dimensions underlie this nexus, as C&W is often a source for degradation across all focal areas and has implications on health and well-being.^{37,40}

Recommendation 7: Encourage the development of synergies at the convention level and push for the integration of human health dimensions within international and national frameworks

Systemic change in the global management of C&W to integrate health dimensions requires efforts at the local and institutional levels, but ultimately depends on international agreements and multilateral conventions, which are the driving force for change. There remains a significant amount of work to be done at the international and national levels to address health and equity within the C&W agenda.^{40,49,50} However, in recent years there have been promising developments and encouraging examples of such integration. In the declaration from the third session of the United Nations Environment Assembly (UNEA), UNEP was requested to prepare an implementation plan regarding the session's theme ("Towards a Pollution-Free Planet") for the fourth session in 2019. This decision and resultant implementation highlighted the need for an international and integrated approach to addressing pollution, of which C&W management and human health were key dimensions.⁴⁰

The Basel, Rotterdam, and Stockholm Conventions have a common directive to protect human health and the environment from C&W. In recent years they have engaged in a so-called “synergies process,” which has resulted in such decisions as aggregating the secretariats of the conventions. This focus on synergies is meant to improve coordination and co-operation while maintaining legal autonomy, reduce administrative burden, allocate resources more efficiently, and create more effective guidance and policies at the global, regional, and national levels. The synergies process has been crucial in promoting more sound management of C&W and has influenced the scale and scope of integration within national plans.³²

The Minamata Convention represents a significant step towards mainstreaming health within the environmental development agenda. It heavily relied on the work of the Global Mercury Partnership and contributions from the scientific and public health community.⁴¹ The Minamata Convention not only put forward the goal of protecting human health and the environment and acknowledged the linkage between health and mercury pollution, but also contained a specific section, Annex 16, on health. This section provides an entry point for GEF intervention to pilot and test proof of concept that mainstreaming health not only maximizes health co-benefits, but also leads to more equitable and sustained GEBs.^{38,48} The GEF occupies a unique role as the financial mechanism of the Minamata Convention, and in that capacity, it can help to push for further integration of and innovation in health and multifocal dimensions, while prioritizing the reduction and elimination of mercury. Similarly, the GEF could benefit from applying health systems-thinking across all focal areas and impact programs, acknowledging and amplifying the contribution of improvements in health and well-being to the sustainability and additionality of GEF interventions.

7. References

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8. Annexes

Annex A: Interview Guidance Note

Interview Guidance Note

Project Overview

The GEF has had a longstanding role and measured impact in protecting global environmental health through its initially specialized and now integrated Chemicals and Waste (C&W) focal area. Implicit in the motivating objectives of its projects and following the conventions for which it is given authority, the GEF has been focused on improving human health and well-being in addition to providing global environmental benefits. Naturally, reductions in tonnage of releases of mercury or obsolete stockpiles of pesticides, for example, have significant socioeconomic and health co-benefits. However, there has been limited attention given to characterizing the impact that the GEF has had in this area.

Therefore, there is promise in further exploring the way in which the GEF can maximize these co-benefits by integrating objectives for improved health and well-being into all phases of the project cycle. This study will delve into a subset of the C&W portfolio, which provides the most direct causal linkages with respect to human health.

Purpose of Interview

The focus of the interview is to explore the health co-benefits of GEF interventions, with specific focus on the C&W portfolio, through a series of questions pertaining to a cohort of representative projects, which were identified by the C&W Team. Additionally, specified questions relating to the [case study]. The purpose of such a study is to provide a concrete example that highlights the potential for improving targeting of vulnerable populations and maximizing health (and socioeconomic) co-benefits.

The interview should take no longer than 1 hour. The information collected will solely be used to provide context for and to supplement the review of this cohort and the [case study]. There will be no attribution without consent.

The main analytical objectives covered in the below questions are as follows:

1. What are the characteristics or dynamics of the GEF C&W Portfolio vis-à-vis health co-benefits?
2. How could the targeting of vulnerable populations and the scope and scale of health (and socioeconomic) co-benefits be improved?
3. What potential benefit could there be in human health and well-being mainstreaming during the C&W project cycle, if implemented?

GENERAL QUESTIONS:

- Could you describe the impetus for the aggregation of the C&W focal area?

- How would you describe the overlap of C&W with other focal areas or impact programs?
- In what way are GEF interventions designed to protect human health and well-being?
 - Given guidance from conventions (example below) to protect human health and well-being, how do these concerns translate into GEF policy and project objectives?

STOCKHOLM CONVENTION ON PERSISTENT ORGANIC POLLUTANTS

The Parties to this Convention,

Recognizing that persistent organic pollutants possess toxic properties, resist degradation, bioaccumulate and are transported, through air, water and migratory species, across international boundaries and deposited far from their place of release, where they accumulate in terrestrial and aquatic ecosystems,

Aware of the **health** concerns, especially in developing countries, resulting from local exposure to persistent organic pollutants, in particular impacts upon women and, through them, upon future generations,

Acknowledging that the Arctic ecosystems and indigenous communities are particularly at risk because of the biomagnification of persistent organic pollutants and that contamination of their traditional foods is a public **health** issue,

Conscious of the need for global action on persistent organic pollutants,

Mindful of decision 19/13 C of 7 February 1997 of the Governing Council of the United Nations Environment Programme to initiate international action to protect **human health** and the environment through measures which will reduce and/or eliminate emissions and discharges of persistent organic pollutants,

- Does the GEF consider health to be a co-benefit of C&W interventions?
- What are the types of activities that the GEF has financed in the C&W portfolio that provide health co-benefits?
 - What types of chemicals and waste are being addressed in these projects and what adverse health effects are they associated with?
- What health co-benefits arise from GEF interventions in the C&W portfolio
 - What implications do they have on socioeconomic well-being and equity/justice concerns?
 - What objectives/outcomes/indicators, if any, are used to measure this impact?
 - What measures should be used?
 - What kind of health co-benefit information can be extracted from GEF C&W initiatives that mainly address national, institutional, and policy frameworks?
 - How can the value of these co-benefits be measured?
- Who are the vulnerable populations that are beneficiaries of these C&W interventions?
 - How is vulnerability measured?

- How do the benefits get distributed among these populations?
 - What is done well and what could be improved in this process?
 - Do we have any monitoring or evaluative mechanisms in place for tracking long-term benefits?
 - Are projects targeting the most vulnerable groups?
- How have socioeconomic, gender, and climate risk mainstreaming been integrated into the project cycle?
 - How would you see health co-benefit mainstreaming implemented?
 - How could GEF interventions maximize these health co-benefits?
 - [In light of existing limitations,] how would you see the improvement of monitoring and evaluation to accommodate this?
- What potential for improving targeting of vulnerable populations and maximizing health (and socioeconomic) co-benefits is there for ongoing or future GEF interventions?

PROJECT-SPECIFIC QUESTIONS:

- Why did the C&W Team identify these projects as particularly representative of positive health co-benefits?
 - How were the projects designed and how well did they achieve their objectives?
- What can we learn from the implementation and evaluation of these projects, specifically with regard to their performance on objectives and measured impacts?
 - If there are projects that maximized these benefits, what mechanism enabled this?
- [What can't we learn from a review of these projects?] Where are the gaps in identifying, monitoring, and assessing health co-benefits?
 - What were the challenges associated with these projects?
- How are health co-benefits factored into these projects? [Were they implicitly or explicitly incorporated into the program design?]
 - How could these projects become more robust and be scaled-up?
- How are lessons learned and M&E incorporated into ongoing or future GEF interventions?
- What is the comparative advantage and value added in terms of health co-benefits from GEF C&W interventions?
 - How do these projects interact with other existing initiatives and stakeholders, such as executing agencies, implementing agencies, and community organizations (i.e. capitalize on or aid other existing interventions, foster interactions with other institutions, leverage sustainable funding, etc.)?

Annex B: Interviewees

Name	Position	Organization	Interview Date	Location
Ibrahima Sow	Sr. Environmental Specialist	GEF Secretariat	7/24/19	Washington, D.C.
Sara El Choufi	Evaluation Analyst	GEF IEO	7/15/19	Washington, D.C.
Sunday Leonard	Program Officer	STAP Secretariat	7/26/19	Washington, D.C.

Annex C: Cohort of Representative Projects

Source: GEF PMIS, GEF project documents

The cohort of representative projects identified by the C&W Team includes:

- Africa Stockpiles Program
 - ID 1348 Africa Stockpiles Program, P1
- ASGM
 - ID 4569 Improve the Health and Environment of Artisanal and Small-Scale Gold Mining (ASGM) Communities by Reducing Mercury Emissions and Promoting Sound Chemical Management
 - ID 5216 Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions
 - ID 4799 Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining
- ID 4612 Development and Promotion of Non-POPs alternatives to DDT
- ID 9080 Integrated Health and Environment Observatories and Legal and Institutional Strengthening for the Sound Management of Chemicals in Africa (African ChemObs)
- ID 1802 Demonstrating and Promoting Best Techniques and Practices for Reducing Health-care Waste to Avoid Environmental Releases of Dioxins and Mercury
- Global Monitoring Program (GMP)
 - ID 3663 PAS: Supporting the POPs Global Monitoring Plan in the Pacific Islands Region
 - ID 3673 Supporting the Implementation of the Global Monitoring Plan of POPs in Eastern and Southern African Countries
 - ID 3674 Supporting the Implementation of the Global Monitoring Plan of POPs in West Africa
 - ID 3778 Supporting the Implementation of the Global Monitoring Plan of POPs in Latin America and Caribbean States (GRULAC)

Annex D: Project Cohort Details and Summary Statistics

Source: GEF PMIS, GEF project documents

GEF_ID	Agency	Region	Country	List of participating countries	Title	Status	Focal Area	GEF replenishment phase	Type	Grant	Co-Financing
4612	UNIDO/UNEP	Asia	India	Ethiopia, Gabon, Kenya, Madagascar, Mali, Senegal, Tanzania, Zambia, Zimbabwe	Development and Promotion of Non-POPs alternatives to DDT	IA Approved	POPs	GEF - 5	FP	\$10,000,000.00	\$43,147,167.00
9080	UNEP	AFR	Regional	Senegal, Mali, Senegal, Tanzania, Zambia, Zimbabwe	Integrated Health and Environment Observatories and Legal and Institutional Strengthening for the Sound Management of Chemicals in Africa (African ChemObs)	CEO Endorsed	Chemicals and Waste	GEF - 6	FP	\$10,500,000.00	\$20,352,000.00
1802	UNDP	CEX	Global	Argentina, India, Lebanon, Latvia, Philippines, Senegal, Tanzania, Vietnam	Demonstrating and Promoting Best Techniques and Practices for Reducing Health-care Waste to Avoid Environmental Releases of Dioxins and Mercury	Project Completion	POPs	GEF - 3	FP	\$10,326,455.00	\$12,970,494.00
1348	World Bank/FAO	AFR	Regional	Ethiopia, Morocco, Mali, Nigeria, Tunisia, Tanzania, South Africa	Africa Stockpiles Program, P1	Project Completion	POPs	GEF - 3	FP	\$25,000,000.00	\$35,000,000.00
4569	UNIDO	AFR	Regional	Burkina Faso, Mali, Senegal	Improve the Health and Environment of Artisanal and Small Scale Gold Mining (ASGM) Communities by Reducing Mercury Emissions and Promoting Sound Chemical Management	Under Implementation	POPs	GEF - 5	MSP	\$ 990,000.00	\$ 2,450,000.00
5216	UNIDO	Asia	Philippines		Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions	Under Implementation	POPs	GEF - 5	MSP	\$ 550,000.00	\$ 1,081,070.00
4799	UNIDO	LAC	Regional	Ecuador, Peru	Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining	Under Implementation	Multi Focal Area	GEF - 5	MSP	\$ 999,900.00	\$ 2,676,764.00
3663	UNEP	Asia	Regional	Fiji, Kiribati, Niue, Palau, Solomon Islands, Samoa	PAS: Supporting the POPs Global Monitoring Plan in the Pacific Islands Region	Project Completion	POPs	GEF - 4	MSP	\$ 517,000.00	\$ 534,000.00
3673	UNEP	AFR	Regional	Ethiopia, Kenya, Mauritius, Uganda, Zambia	Supporting the Implementation of the Global Monitoring Plan of POPs in Eastern and Southern African Countries	Project Completion	POPs	GEF - 4	MSP	\$ 484,000.00	\$ 531,250.00
3674	UNEP	AFR	Regional	Ghana, Mali, Nigeria, Senegal, Togo, Congo DR	Supporting the Implementation of the Global Monitoring Plan of POPs in West Africa	Project Completion	POPs	GEF - 4	MSP	\$ 583,000.00	\$ 610,600.00
3778	UNEP	LAC	Global	Antigua And Barbuda, Barbados, Brazil, Chile, Ecuador, Honduras, Mexico, Peru, Uruguay	Supporting the Implementation of the Global Monitoring Plan of POPs in Latin America and Caribbean States (GRULAC)	Project Completion	POPs	GEF - 4	MSP	\$ 845,000.00	\$ 845,300.00

Cohort Summary Statistics													
GEF Replenishment	Region	Countries (with >1 project)			Focal Area		Agency		Type	Status			
GEF - 3	2	AFR	5	Mal	4	POPs	9	UNEP	5	MSP	7	Project Completion	6
GEF - 4	4	Asia	4	Senegal	4	Chemicals and Waste	1	UNIDO	3	FP	4	Under Implementation	3
GEF - 5	4	LAC	2	Ethiopia	3	Multi Focal Area	1	UNDP	1			IA Approved	1
GEF - 6	1	CEX	1	Tanzania	3			UNIDO/UNEP	1			CEO Endorsed	1
	New Region			Ecuador	2			WORLD BANK/FAO	1				
	SIDS		3	India	2								
	LDC		7	Kenya	2								
				Nigeria	2								
				Peru	2								
				Zambia	2								

Annex E: Detailed Methodology

After review of PMIS data, APR and TE ratings, and all relevant documents retrieved from PMIS (i.e. PIF, PPG, PAD, PIR, MR, TE, TER), the cohort projects were analyzed for their impact on outcomes viz-à-viz health co-benefits. Information extracted from the review includes:

- Problem(s) project sought to address
- Global development objective
- Chemicals addressed
- Exposure pathway(s)
- Associated health issues
- Vulnerable populations
- Baseline
- Country ownership
- Measures (components/outcomes/outputs/indicators) of interest in project framework
- Relevant activities
- Results expected/achieved
- Health co-benefits expected/achieved
- Lessons learned

Results from this analysis as well as from the earlier review of relevant project documents were weighed against seven multifactor criteria and were subjectively scored by the author using the literature for reference. The seven criteria are relevance, effectiveness, efficiency, equity, measurement and evaluation (M&E), sustainability, and additionality. Due to the range of projects, some of which are regional, the complex systems in which they are intervening in, and the number and breadth of these health co-benefits-focused criteria, the score was subjectively assigned by the author based on the analysis of project documents, review of the literature, the perspective of those interviewed for the study. For completed projects, if available, TE and APR ratings were considered when scoring for health co-benefits (see Annex F for these ratings). Below is a bulleted breakdown of each criteria and the respective scoring scales.

Criteria

- Relevance

- Country ownership
- Complementarity with other initiatives in the area
- Objectives align with convention goals
- Project design/objectives align with consensus of health and academic literature
- *6-point scale: 1 = Highly Unsatisfactory; 2 = Unsatisfactory; 3 = Moderately Unsatisfactory; 4 = Moderately Satisfactory; 5 = Satisfactory; 6 = Highly Satisfactory*
- Effectiveness
 - Attainment of outcomes
 - Led to the reduction/safeguard/disposal of chemicals and waste in the environment
 - Was the impact direct, indirect, or secondary?
 - Health co-benefits: impact of improved health and well-being
 - Was the impact direct, indirect, or secondary?
 - Extent to which the pathways of exposure were broken
 - *6-point scale: 1 = Highly Unsatisfactory; 2 = Unsatisfactory; 3 = Moderately Unsatisfactory; 4 = Moderately Satisfactory; 5 = Satisfactory; 6 = Highly Satisfactory*
- Efficiency
 - Cost-effectiveness – extent to which there would have been more prudent ways of achieving the same level of health co-benefits with the same resources
 - Extent to which the burden was adequately distributed among stakeholders, both in terms of ownership and co-financing
 - Stakeholder engagement – involvement of stakeholders necessary to achieve health co-benefits (e.g. community health workers, ministry of health, etc.)
 - Perceived usefulness by beneficiaries and stakeholders
 - *6-point scale: 1 = Highly Unsatisfactory; 2 = Unsatisfactory; 3 = Moderately Unsatisfactory; 4 = Moderately Satisfactory; 5 = Satisfactory; 6 = Highly Satisfactory*
- Equity
 - Acknowledgement of potential equity or environmental justice concerns

- Identified vulnerable/targeted beneficiaries
- Had/provided a mechanism for the estimation of beneficiaries and the distribution of benefits
- Achieved improvements regarding health equity or environmental justice
 - Extent to which the pathways of exposure were broken for those most vulnerable
- *6-point scale: 1 = Highly Unsatisfactory; 2 = Unsatisfactory; 3 = Moderately Unsatisfactory; 4 = Moderately Satisfactory; 5 = Satisfactory; 6 = Highly Satisfactory*
- M&E
 - Had/provided a mechanism for reporting of baseline data on the extent and magnitude of the issue
 - Extent to which the project logical framework/TOC incorporated dimensions of health and well-being
 - Had objectively verifiable indicators
 - Had/provided a mechanism for tracking measures of health co-benefits
 - Reporting quality and compliance
 - *6-point scale: 1 = Highly Unsatisfactory; 2 = Unsatisfactory; 3 = Moderately Unsatisfactory; 4 = Moderately Satisfactory; 5 = Satisfactory; 6 = Highly Satisfactory*
- Sustainability
 - Capacity building and training
 - Replication and scaling-up – the extent to which GEF intervention provided a mechanism for replication and/or scaling-up
 - Mainstreaming of health and other co-benefits
 - Rose awareness, provided education or training, and disseminated knowledge
 - Involvement of the health care sector or public health community
 - *4-point scale: 1 = Unlikely; 2 = Moderately Unlikely; 3 = Moderately Likely; 4 = Likely*
- Additionality

- Health and well-being – the extent to which GEF intervention enabled the attainment of health well-being co-benefits
- Socioeconomic – the extent to which GEF intervention enabled the attainment of socioeconomic co-benefits
- Multifocal– the extent to which GEF intervention enabled the attainment of co-benefits across focal areas
- Transformative Change
 - Legal/Regulatory – the extent to which GEF intervention enabled the legal and regulatory reform
 - Institutional/Governance – the extent to which GEF intervention enhanced the capacity or willingness of institutions/stakeholders to achieve GEBs
 - Innovation – the extent to which GEF intervention spurred innovation in relevant sectors/markets
- *6-point scale: 1 = Highly Unsatisfactory; 2 = Unsatisfactory; 3 = Moderately Unsatisfactory; 4 = Moderately Satisfactory; 5 = Satisfactory; 6 = Highly Satisfactory*

6-point scale for criteria: Relevance, Effectiveness, Efficiency, Equity M&E, Additionality

Highly Satisfactory (HS): The project had no shortcomings in the achievement of its objectives, in terms of _____.

Satisfactory (S): The project had minor shortcomings in the achievement of its objectives, in terms of _____.

Moderately Satisfactory (MS): The project had moderate shortcomings in the achievement of its objectives, in terms of _____.

Moderately Unsatisfactory (MU): The project had significant shortcomings in the achievement of its objectives, in terms of _____.

Unsatisfactory (U) The project had major shortcomings in the achievement of its objectives, in terms of _____.

Highly Unsatisfactory (HU): The project had severe shortcomings in the achievement of its objectives, in terms of _____.

4-point scale for criteria: Sustainability

Likely (L): There are no risks affecting this project's sustainability.

Moderately Likely (ML). There are moderate risks that affect this project's sustainability.

Moderately Unlikely (MU): There are significant risks that affect this project's sustainability.

Unlikely (U): There are severe risks that affect this project's sustainability.

Annex F: List of Project Documents Consulted

ID	Project Title	Document	Date (provided by PMIS or from document)	Citation
4612	Development and Promotion of Non-POPs alternatives to DDT	a. Project Identification Framework (PIF)	9-13-2011	FAO, UNIDO, UNEP. 2011. Project Identification Framework. GEF Project ID 4612. Retrieved from GEF PMIS.
		b. 2007 India Vector Susceptibility Test Results	9-13-2011	Results of Adult Susceptibility Tests Received from Various States During 2007. 2011. Retrieved from GEF PMIS.
		c. 2010 India Vector Susceptibility Test Results	9-13-2011	Results of Adult Susceptibility Tests Received from Various States During 2010. 2011. Retrieved from GEF PMIS.
		d. Project Preparation Grant (PPG)	2012	FAO, UNIDO, UNEP. 2012. Project Preparation Grant. GEF Project ID 4612. Retrieved from GEF PMIS.
		e. STAP Review	1-30-2012	STAP. 2012. STAP Review. GEF Project ID 4612. Retrieved from GEF PMIS.
		f. Tracking Tools	2014	UNIDO. 2014. Tracking Tools. GEF Project ID 4612. Retrieved from GEF PMIS.
		g. Request for CEO Endorsement	3-11-2015	UNIDO, UNEP. 2015. Request for CEO Endorsement. GEF Project ID 4612. Retrieved from GEF PMIS.
9080	Integrated Health and Environment Observatories and Legal and Institutional Strengthening for the Sound Management of Chemicals in Africa (African ChemObs)	a. STAP Review	5-4-2015	STAP. 2015. STAP Review. GEF Project ID 9080. Retrieved from GEF PMIS.
		b. Project Review	3-7-2015	GEF Secretariat. 2015. GEF-6 GEF Secretariat Project Review. GEF Project ID 9080. Retrieved from GEF PMIS.
		c. PIF	3-25-2015	UNEP. 2015. Project Identification Framework. GEF Project ID 9080. Retrieved from GEF PMIS.
		d. Logical Framework	3-25-2015	UNEP. 2015. Logical Framework. GEF Project ID 9080. Retrieved from GEF PMIS.
		e. UNEP Response	2-22-2017	UNEP. 2017. UNEP Responses to GEF-6 GEF Secretariat Project Review. GEF Project ID 9080. Retrieved from GEF PMIS.
		f. Annex 11 and Theory of Change	Nov. 2016	UNEP. 2016. Annexes. GEF Project ID 9080. Retrieved from GEF PMIS.
		g. Request for CEO Approval	3-22-2017	UNEP. 2017. Request for CEO Endorsement. GEF Project ID 9080. Retrieved from GEF PMIS.
1802	Demonstrating and Promoting Best Techniques and Practices for Reducing Health-care Waste to Avoid Environmental Releases of Dioxins and Mercury	a. Final Concept UNDP	6-11-2003	UNDP. 2003. UNDP Concept Document for GEF Pipeline Entry. GEF Project ID 1802. Retrieved from GEF PMIS.
		b. Project Appraisal Document (PAD) A	N/A	UNDP. Project Appraisal Document A. GEF Project ID 1802. Retrieved from GEF PMIS.
		d. Annual Progress Implementation Report (PIR)	2010	UNDP. 2010. Annual Progress Implementation Report. GEF Project ID 1802. Retrieved from GEF PMIS.
		e. PIR	2012	UNDP. 2012. Annual Progress Implementation Report. GEF Project ID 1802. Retrieved from GEF PMIS.
		f. Terminal Evaluation (TE)	3-26-2013	UNDP. 2013. Terminal Evaluation. GEF Project ID 1802. Retrieved from GEF PMIS.
		g. Terminal Evaluation Review (TER)	2-5-2014	GEF IEO. 2014. Terminal Evaluation Review. GEF Project ID 1802. Retrieved from GEF PMIS.
1348	Africa Stockpiles Program P1	a. World Bank Concept Note	9-25-2002	World Bank. 2002. Concept Note for GEF Pipeline Entry. GEF Project ID 1348. Retrieved from GEF PMIS.
		b. PAD	8-2-2005	World Bank. 2005. Project Appraisal Document. GEF Project ID 1348. Retrieved from GEF PMIS.
		c. Midterm Tracking Tools	2010	World Bank. 2010. Midterm Tracking Tools. GEF Project ID 1348. Retrieved from GEF PMIS.
		d. World Bank ICR	N/A	World Bank. Implementation Completion and Results Report. Report No: ICR00002682. GEF Project ID 1348. Retrieved from GEF PMIS.
		e. TER	Apr. 2013	GEF IEO. 2013. Terminal Evaluation Review. GEF Project ID 1348. Retrieved from GEF PMIS.
		f. FAO TE	2014	FAO. 2014. Terminal Evaluation of the Technical Support Unit to the Africa Stockpiles Programme (ASP) –

				GCP /INT/979/GFF. Office of Evaluation. GEF Project ID 1348. Retrieved from GEF PMIS.
4569	Improve the Health and Environment of Artisanal and Small Scale Gold Mining (ASGM) Communities by Reducing Mercury Emissions and Promoting Sound Chemical Management	a. UNIDO PAD	8-12-2011	UNIDO. 2011. Project Appraisal Document. GEF Project ID 4569. Retrieved from GEF PMIS.
		b. Request for CEO Approval	8-12-2011	UNIDO. 2011. Request for CEO Approval. GEF Project ID 4569. Retrieved from GEF PMIS.
		c. Mercury Factsheet	2017	UNIDO. 2017. Mercury Factsheet: West Africa. GEF Project ID 4569. Retrieved from GEF PMIS.
		d. TE	Dec. 2017	UNIDO. 2017. Independent Terminal Evaluation: Improve the Health and Environment of Artisanal Gold Mining Communities by Reducing Mercury Emissions and Promoting Sound Chemical Management. GEF Project ID 4569. UNIDO Independent Evaluation Division. Retrieved from GEF PMIS.
5216	Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions	a. Request for CEO Approval	12-12-2012	UNIDO. 2012. Request for CEO Approval. GEF Project ID 5216. Retrieved from GEF PMIS.
		b. PIR	2014	UNIDO. 2014. UNIDO Annual Project Implementation Report. GEF Project ID 5216. Retrieved from GEF PMIS.
		c. PIR	2015	UNIDO. 2015. UNIDO Annual Project Implementation Report. GEF Project ID 5216. Retrieved from GEF PMIS.
		d. PIR	2016	UNIDO. 2016. UNIDO Annual Project Implementation Report. GEF Project ID 5216. Retrieved from GEF PMIS.
		e. Summit Briefing Paper	2016	Philippine National Coalition for Artisanal and Small-Scale Miners. 2016. 5216 Envi Summit Briefing Paper. Retrieved from GEF PMIS.
		f. PIR Presentation of Results	2016	Ban Toxics! 2016. Project Results. Summative Outcomes from 2013. GEF Project ID 5216. Retrieved from GEF PMIS
		g. June 2015 to July 2016 Progress Sheet	2016	UNIDO. 2016. June 2015 to July 2016 Extension Period. GEF Project ID 5216. Retrieved from GEF PMIS.
		h. TE	Mar. 2017	UNIDO. 2017. Independent Terminal Evaluation: Improve the Health and Environment of Artisanal and Gold Mining Communities in the Philippines by Reducing Mercury Emissions. GEF Project ID 5216. Independent Evaluation Division. Retrieved from GEF PMIS.
4799	Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining	a. Request for CEO Approval	3-14-2012	UNIDO. 2012. Request for CEO Approval. GEF Project ID 4799. Retrieved from GEF PMIS.
		b. PIR	2014	UNIDO. 2014. UNIDO Annual Project Implementation Report. GEF Project ID 4799. Retrieved from GEF PMIS.
		c. PIR	2015	UNIDO. 2015. UNIDO Annual Project Implementation Report. GEF Project ID 4799. Retrieved from GEF PMIS.
		d. TE	Sept. 2017	UNIDO. 2017. Independent Terminal Evaluation: Implementing integrated measures for minimizing mercury releases from artisanal gold mining. GEF Project ID 4799. Independent Evaluation Division. Retrieved from GEF PMIS.
3663	PAS: Supporting the POPs Global Monitoring Plan in the Pacific Islands Region	a. UNEP Chemicals Pacific Islands Regional Based Assessment of Persistent Toxic Substances	Dec. 2002	UNEP Chemicals. 2002. Pacific Islands Regional Based Assessment of Persistent Toxic Substances. Retrieved from GEF PMIS.
		b. UNEP Project Document	4-11-2008	UNEP. 2008. Project Document. GEF Project ID 3663. Retrieved from GEF PMIS.
		c. Request for CEO Endorsement/Approval	4-11-2008	UNEP. 2008. Request for CEO Approval. GEF Project ID 3663. Retrieved from GEF PMIS.
		d. TE	Dec. 2013	UNEP. 2013. Terminal Evaluation of the Four UNEP GEF Medium Size Projects: GEF ID GFL/2328-2760-4A37/4A76/4A77/4A80. Supporting the Implementation of the Global Monitoring Plan of POPs in the four Sub-Regions: Eastern Southern Africa, West Africa, Latin America and Caribbean, and Pacific Islands. Retrieved from GEF PMIS.

3673	Supporting the Implementation of the Global Monitoring Plan of POPs in Eastern and Southern African Countries	a. UNEP Chemicals Sub-Saharan Africa Regional Based Assessment of Persistent Toxic Substances	Dec. 2002	UNEP Chemicals. 2002. Sub-Saharan Africa Regional Based Assessment of Persistent Toxic Substances. Retrieved from GEF PMIS.
		b. PIF	2-22-2008	UNEP. 2008. Project Identification Form. GEF Project ID 3673. Retrieved from GEF PMIS.
		c. TE	Dec. 2013	UNEP. 2013. Terminal Evaluation of the Four UNEP GEF Medium Size Projects: GEF ID GFL/2328-2760-4A37/4A76/4A77/4A80. Supporting the Implementation of the Global Monitoring Plan of POPs in the four Sub-Regions: Eastern Southern Africa, West Africa, Latin America and Caribbean, and Pacific Islands. Retrieved from GEF PMIS.
3674	Supporting the Implementation of the Global Monitoring Plan of POPs in West Africa	a. UNEP Chemicals Sub-Saharan Africa Regional Based Assessment of Persistent Toxic Substances	Dec. 2002	UNEP Chemicals. 2002. Sub-Saharan Africa Regional Based Assessment of Persistent Toxic Substances. Retrieved from GEF PMIS.
		b. PIF	2-29-2008	UNEP. 2008. Project Identification Form. GEF Project ID 3674. Retrieved from GEF PMIS.
		c. Request for CEO Endorsement/Approval	2-2-2009	UNEP. 2009. Request for CEO Approval. GEF Project ID 3674. Retrieved from GEF PMIS.
		d. UNEP Project Document	2-2-2009	UNEP. 2009. Project Document. GEF Project ID 3674. Retrieved from GEF PMIS.
		e. TE	Dec. 2013	UNEP. 2013. Terminal Evaluation of the Four UNEP GEF Medium Size Projects: GEF ID GFL/2328-2760-4A37/4A76/4A77/4A80. Supporting the Implementation of the Global Monitoring Plan of POPs in the four Sub-Regions: Eastern Southern Africa, West Africa, Latin America and Caribbean, and Pacific Islands. Retrieved from GEF PMIS.
3778	Supporting the Implementation of the Global Monitoring Plan of POPs in Latin America and Caribbean States (GRULAC)	a. UNEP Chemicals Eastern and Western South America Regional Based Assessment of Persistent Toxic Substances	Dec. 2002	UNEP Chemicals. 2002. Eastern and Western South America Regional Based Assessment of Persistent Toxic Substances. Retrieved from GEF PMIS.
		b. UNEP Chemicals Central America and the Caribbean Regional Based Assessment of Persistent Toxic Substances	Dec. 2002	UNEP Chemicals. 2002. Central America and the Caribbean Regional Based Assessment of Persistent Toxic Substances. Retrieved from GEF PMIS.
		c. PIF	9-12-2008	UNEP. 2008. Project Identification Form. GEF Project ID 3778. Retrieved from GEF PMIS.
		d. Project Document	3-13-2009	UNEP. 2009. Project Document. GEF Project ID 3778. Retrieved from GEF PMIS.
		e. Request for CEO Endorsement/Approval	3-13-2009	UNEP. 2009. Request for CEO Approval. GEF Project ID 3778. Retrieved from GEF PMIS.
		f. TE	Dec. 2013	UNEP. 2013. Terminal Evaluation of the Four UNEP GEF Medium Size Projects: GEF ID GFL/2328-2760-4A37/4A76/4A77/4A80. Supporting the Implementation of the Global Monitoring Plan of POPs in the four Sub-Regions: Eastern Southern Africa, West Africa, Latin America and Caribbean, and Pacific Islands. Retrieved from GEF PMIS.

Annex G: Project Cohort APR and TE Ratings

Selected APR Ratings for Completed Projects

GEF ID	Project Title	Year of Project Completion	APR Year	APR_outcomes_sixpoint	APR_sustainability_overall_numeric	APR_m&e_design	APR_m&e_implementation	APR_implementation_quality	APR_execution_quality
1802	Demonstrating and Promoting Best Techniques and Practices for Reducing Health-Care Waste to Avoid Environmental Releases of Dioxins and Mercury	2012	2013	4	2	5	5	5	5
1348	3A-Africa Stockpiles1 MMT GEF (FY07)	2013	2013	3	2	4	3	3	3
4569	Improve the Health and Environment of Artisanal and Small-Scale Gold Mining (ASGM) Communities by Reducing Mercury Emissions and Promoting Sound Chemical Management	2017	2018	N/A	3	4	5	5	4
5216	Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions	2016	2017	5	3	4	5	5	5
4799	Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining	2016	2017	4	2	5	2	N/A	3

Source: GEF IEO TER Dataset_APR 2019 5-23-19

Selected TE Ratings for Completed Projects

GEF ID	Project Title	Year of Project Completion	TE Year	TE_relevance	TE_effectiveness	TE_efficiency	TE_attainment_of_planned_results	TE_overall_sustainability	TE_implementation_approach_and_management	TE_m&e_design	TE_m&e_implementation	TE_overall_rating
1802	Demonstrating and Promoting Best Techniques and Practices for Reducing Health-Care Waste to Avoid Environmental Releases of Dioxins and Mercury	2012	2013	5	5	5	5	3	5	5	5	N/A
1348	3A-Africa Stockpiles1 MMT GEF (FY07)	2013	2013	6	3	4	3	2	N/A	N/A	N/A	5
4569	Improve the Health and Environment of Artisanal and Small-Scale Gold Mining (ASGM) Communities by Reducing Mercury Emissions and Promoting Sound Chemical Management	2017	2017	5	4	4	5	3	5	4	5	4
5216	Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions	2016	2017	6	5	5	N/A	4	5	4	5	5
4799	Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining	2016	2017	6	5	3	4	3	4	5	2	4
3663	PAS: Supporting the POPs Global Monitoring Plan in the Pacific Islands Region	2012	2013	6	5	6	6	4	6	6	6	6
3673	Supporting the Implementation of the Global Monitoring Plan of POPs in Eastern and Southern African Countries	2018	2013	6	5	6	6	4	6	6	6	6
3674	Supporting the Implementation of the Global Monitoring Plan of POPs in West Africa	2012	2013	6	5	6	6	4	6	6	6	6
3778	Supporting the Implementation of the Global Monitoring Plan of POPs in Latin America and Caribbean States (GRULAC)	2012	2013	6	5	6	6	4	6	6	6	6

Source: GEF project terminal evaluations

For all APR/TE ratings except sustainability: (6-point scale: 1 = Highly Unsatisfactory; 2 = Unsatisfactory; 3 = Moderately Unsatisfactory; 4 = Moderately Satisfactory; 5 = Satisfactory; 6 = Highly Satisfactory)

For APR/TE sustainability ratings: (4-point scale: 1 = Unlikely; 2 = Moderately Unlikely; 3 = Moderately Likely; 4 = Likely)

N/A = data not available

Annex H: Criteria Analysis Matrix (CAM Matrix)

ID	Title	Relevance	Effectiveness	Efficiency	Equity	M&E	Sustainability	Additionality
4612	Development and Promotion of Non-POPs alternatives to DDT	6	6	5	5	5	4	6
9080	Integrated Health and Environment Observatories and Legal and Institutional Strengthening for the Sound Management of Chemicals in Africa (African ChemObs)	6	6	5	6	5	4	6
1802	Demonstrating and Promoting Best Techniques and Practices for Reducing Health-care Waste to Avoid Environmental Releases of Dioxins and Mercury	6	5	5	4	3	3	5
1348	Africa Stockpiles Program, P1	6	2	3	2	3	1	3
4569	Improve the Health and Environment of Artisanal and Small Scale Gold Mining (ASGM) Communities by Reducing Mercury Emissions and Promoting Sound Chemical Management	6	3	3	3	4	3	2
5216	Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions	6	6	6	6	5	4	6
4799	Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining	6	3	4	1	2	2	3
3663	PAS: Supporting the POPs Global Monitoring Plan in the Pacific Islands Region	6	5	6	4	6	4	6
3673	Supporting the Implementation of the Global Monitoring Plan of POPs in Eastern and Southern African Countries	6	5	6	4	6	4	6
3674	Supporting the Implementation of the Global Monitoring Plan of POPs in West Africa	6	5	6	4	6	4	6
3778	Supporting the Implementation of the Global Monitoring Plan of POPs in Latin America and Caribbean States (GRULAC)	6	5	6	4	6	4	6

Relevance, Effectiveness, Efficiency, Equity, M&E, Additionality	6-point scale: 1 = Highly Unsatisfactory; 2 = Unsatisfactory; 3 = Moderately Unsatisfactory; 4 = Moderately Satisfactory; 5 = Satisfactory; 6 = Highly Satisfactory
Sustainability	4-point scale: 1 = Unlikely; 2 = Moderately Unlikely; 3 = Moderately Likely; 4 = Likely