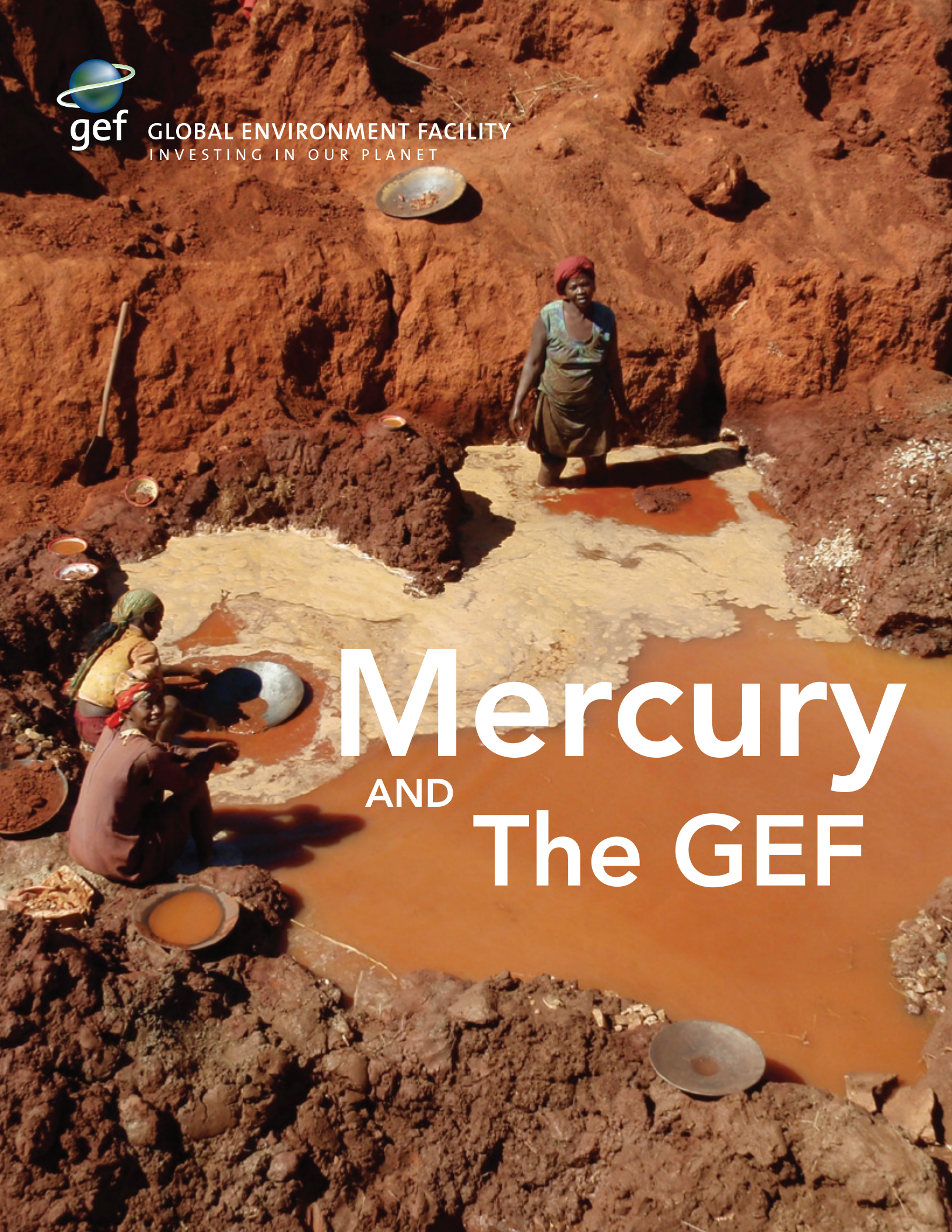

gef
GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET
Mercury
AND
The GEF

*Almost from its inception, the Global Environment Facility has been supporting significant efforts to address the challenges of managing and eliminating the use of mercury, in a number of key sectors including the health sector and the artisanal and small scale gold mining sector. On January 19, 2013, the fifth meeting of the Intergovernmental Negotiating Committee, selected the GEF to fund the implementation of a new international treaty committed to the reduction and eventual elimination of mercury contamination: The Minamata Convention on Mercury.*

*The Convention is named for a fishing village, in my home country of Japan, which suffered tragically due to mercury contamination. In the coming years, the GEF will utilize its convening power to promote innovation in the design and scaling up of mercury programs to prevent such a tragedy from ever happening again.*

*The appointment of the GEF as a financial mechanism of the Minamata Convention reinforces our unique role in funding a range of interconnected environmental programs addressing chemical pollution, land degradation, climate change, and threats to biological diversity and water resources. This brochure outlines current GEF activities in reducing mercury contamination and points the way to stepped up efforts under the new Convention.*

— Naoko Ishii, CEO and Chairperson, The Global Environment Facility

## About Mercury

Mercury is a naturally occurring metal in earth's crust at small quantity. Usually mercury is extracted out of an ore, called cinnabar (HgS). Mercury is the only metal that exists as a liquid at room temperature and it easily evaporates into the air. Because of its unique characteristics, mercury is widely used in many instruments such as thermometers, barometer, fluorescent lights, electric switches, and amalgams for filling teeth.

## Mercury Effects

### ENVIRONMENTAL IMPACTS

Like persistent organic pollutants (POPs), mercury remains in the environment for decades, it is transported long distances and is deposited in the air, water, sediments, soil, and biota in various forms. Atmospheric mercury can be transported long distances, incorporated by microorganisms and concentrated up the food chain.

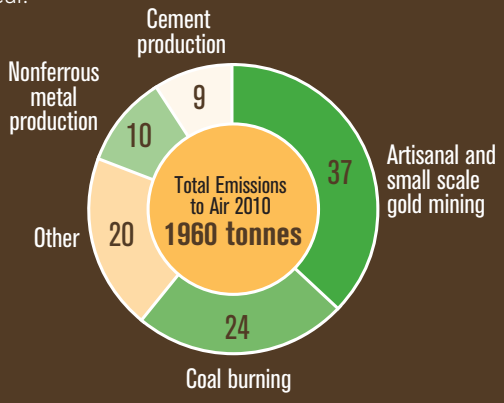
### HUMAN HEALTH IMPACTS

Mercury is a neurotoxin. Exposure to elemental mercury, mercury in food, and mercury vapors may pose significant health problems including kidney, heart and respiratory problems, tremors, skin rashes, vision or hearing problems, headaches, weakness, memory problems, and emotional changes.

## Sources of Mercury Emissions

According to the United Nations Environment Programme (UNEP) Global Mercury Assessment 2013, 1960 tonnes of mercury was emitted globally into the atmosphere in 2010 as a direct result of human activity. Artisanal and small-scale gold mining (ASGM) emissions are the major source of emissions into air (37 % of the total emissions), followed by coal burning (See Figure 1). On the other hand, global releases to the aquatic environment from point sources are estimated to be 185 tonnes per year.

**FIGURE 1 SOURCES OF MERCURY EMISSIONS TO AIR (%, 2010)**



# GEF-5 Mercury Strategy

During its fifth phase, GEF developed a strategy to support and inform the negotiations for the global mercury agreement that funded mercury projects and programs. The projects helped to advance the development of the global mercury instrument and improve the ability of countries to implement the provisions of the instrument.

GEF-5 supported project proposals, consistent with the strategy, in the following areas:

- Reducing mercury use in products
- Reducing mercury use in industrial processes
- Reducing mercury use and exposures in artisanal and small-scale gold mining
- Enhancing capacity for mercury storage
- Reducing atmospheric emissions of mercury
- Improved data and scientific information at the national level
- Enhancing capacity to address waste and contaminated sites

CASE STUDY

# Peru/Ecuador

*Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining in Peru and Ecuador.*

Quimbalete – used in the grinding of gold containing ore

Gold and mercury amalgam. This will be heated to evaporate the mercury leaving behind gold

The mining communities of Servilleta and San Sebastian are a two hour drive from Piura in northern Peru through a semi-arid countryside which has diverse agriculture ranging from rice to corn. These are just two of the project sites covered by this GEF regional project that is working with severalmining communities in EcuadorIn Servilleta gold is extracted from ore found in the rocky landscape. The miners tunnel into the hard rock and process tonnes of raw ore to extract gold. The mining conditions are precarious and descending into one of the mine shafts is a pleasant experience.

The extraction process is quite simple.

Miners grind the rock in a *quimbalete* which looks like a large mortar and pestle that a person is required to move the pestle part of the device. Water and mercury are mixed in with the rock. This grinding process simultaneously breaks down the ore and amalgamates the gold and mercury. The mercury-gold amalgam is then separated from the lighter sediments by panning and the extra mercury is squeezed out through cheesecloth leaving the amalgam which is heated to evaporate the mercury leaving behind the gold.

This practice is what the GEF project is seeking to change since there are direct harmful effects to the miners who are exposed to the mercury through contact and inhalation. Once the mercury is released in this process it gets into the environment where it persists forever.

The project will introduce better methods and help miners reduce and eventually eliminate the use of mercury in the processing of the ore.
The second site is a good example of an economically appropriate alternative to mercury and how the use of the alternative is helping to improve the development of the mining community.

At the second mining community of San Sebastian gold extraction is done by using cyanide. In this process the use of mercury has been completely eliminated and the efficiency of extraction has been increased. Instead of using mercury miners use cyanide to amalgamate the gold. The cyanide is later displaced by zinc and the resulting gold zinc mixture is heated until the zinc evaporates leaving the gold behind. Although cyanide is an acute toxinif its use is carefully controlled it is a suitable replacement for mercury. Additionally, at the end of the process, cyanide can also be re-used.

The UNIDO GEF project is looking at artisanal mining in both Peru and neighboring Ecuador and it's aiming to introduce economically appropriate technologies to reduce the use of mercury.

In the global effort to eliminate the use of mercury, every gram of this chemical eliminated is a step in the right direction.

# GEF-5 Investments in Mercury

| COUNTRY | PROJECT TITLE | AGENCY | KEY OUTCOMES |
|---|---|---|---|
| Reducing Mercury Emissions in Artisanal and Small Scale Gold Mining (ASGM) | | | |
| 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 | UNIDO | These projects will promote sound management of mercury in ASGM. This will be accomplished by providing relevant health information, and developing policies/programs that support the use of financial tools for miners. Moreover, they will enable a reduction of 50% mercury use, emissions and exposure to introduce low-mercury or mercury free technologies at local pilot sites. |
| Regional (Ecuador, Peru) | Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining | UNIDO | |
| Philippines | Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions | UNIDO | |
| Reducing Atmospheric Mercury Emissions in Healthcare | | | |
| Regional (Ghana, Madagascar, Zambia,Tanzania) | Reducing UPOPs and Mercury Releases from the Health Sector in Africa | UNDP | These projects aim to address emissions of mercury from the healthcare sector by implementing best environmental practices for non-incineration waste treatment technologies and also replacing of mercury containing devices with mercury-free ones, with development of national policy and regulatory framework for mercury-phase-out in healthcare sector. |
| Kazakhstan | NIP Update, Integration of POPs into National Planning and Promoting Sound Healthcare Waste Management in Kazakhstan | UNDP | |
| Kyrgyz Republic | Protect Human Health and the Environment from Unintentional Releases of POPs and Mercury from the Unsound Disposal of Healthcare Waste in Kyrgyzstan | UNDP | |
| Vietnam | Hospital Waste Management Support Project | World Bank | |
| Development of Mercury Inventories | | | |
| China | Pilot project on the development of a mercury inventory in China | UNEP | A detailed mercury releases inventory undertaken at a provincial level in China and comprehensive overview of mercury management in the key industrial sectors of Russian Federation will provide good quality data on mercury, enhancing national capacity for decreasing mercury emission. |
| Russian Federation | Pilot Project on the Development of Mercury Inventory in the Russian Federation (RF) | UNEP | |

| COUNTRY | PROJECT TITLE | AGENCY | KEY OUTCOMES |
|---|---|---|---|
| Delivering the Transition to Energy Efficient Lighting (Multi-Focal Area) | | | |
| Chile | Delivering the Transition to Energy Efficient Lighting | UNEP | These projects aim at conducting technical training of collection and recycling process to effectively manage mercury content, involving awareness raising and communication campaigns to promote collection and recycling of spent lamps. |
| Yemen | Delivering the Transition to Energy Efficient Lighting | UNEP | |
| Bolivia | Delivering the Transition to Energy Efficient Lighting | UNEP | |
| Others | | | |
| Uruguay | Environmental Sound Life-Cycle Management of Mercury Containing Products and their Wastes | UNDP | This project takes a life-cycle approach at managing a number of mercury containing products and wastes, including lighting, dental sources, and hospital waste. The project will address the issue of mercury storage as well. |
| Kyrgyz Republic | Reducing Global and Local Environmental Risks from Primary Mercury Mining in Khaidarkan the Kyrgyz Republic | UNEP | In addition to environmental and health risks assessment and guidelines for remediation of highly contaminated mining areas, this project will examine and provide options for alternative livelihoods which will allow for the closure of the mine and eliminate the supply of primary mined mercury. |
| China | Reduction of Mercury Emissions and Promotion of Sound Chemical Management in Zinc Smelting Operations | UNIDO | The project will demonstrate BAT and BEP for cleaner zinc production in two pilot sites. The project will also establish coordination and monitoring system and policy for mercury management in zinc smelting sector. |
| Argentina | Preparatory Project to Facilitate the Implementation of the Legally Binding Instrument on Mercury (Minamata Convention) | UNIDO | The project is designed for Argentina to be equipped with tools for the smooth adaptation and implementation of the upcoming Minamata Convention by establishing Online Clearing House on mercury and a multi sectoral Steering Committee. |
| Mongolia | Reduce Exposure of Mercury to Human Health and the Environment by Promoting Sound Chemical Management in Mongolia | UNIDO | The following project will implement sound mercury remediation and stabilization technique at pilot scale in mercury hot-spot areas, including development of national guidelines for environmentally sound management of mercury containing waste. |
| The majority of mercury projects funded in GEF-5 fell in the range of $50,000 - $1,000,000 | | | |


CASE STUDY

# UNDP Global Medical Waste Project in Tanzania

*Better waste practices are helping to minimize the spread of disease while the use of autoclaves reduces toxic releases from the burning of waste and mercury containing waste is properly managed*

**Dar-es-Salaam, Tanzania**. Children who were born with clubfeet often have nowhere to turn to obtain the care they need. The treatment they receive at Comprehensive Community Based Rehabilitation in Tanzania (CCBRT), the largest indigenous provider of disability and rehabilitation services in Tanzania, though has brightened their future, something that they and their parents could have never hoped for.

Although healthcare facilities like CCBRT aim to improve the health of their patients, they can at the same time also be an important source of pollution and health hazards that can put staff, patients as well as surrounding communities at risk.

Mercury contained in medical equipment like thermometers coming from medical waste can be a local and global threat if not properly managed.

Another risk is posed by healthcare waste, which is infectious and can spread diseases, like HIV, to anyone who comes in contact with the waste and handles it improperly. This is a major challenge for many healthcare facilities.

However, for many healthcare facilities across sub-Saharan Africa, it is often too costly to install the right type of equipment to dispose of infectious and hazardous waste in an environmentally safe manner. Often facilities dispose of such waste along with household waste, burn it in the open air, bury it or use a low technology incinerator that produces significant pollution. When healthcare waste is disposed like that, POPs are unintentionally produced as part of the burning process, and can impact the health of anyone who's staying or working at the facility, living close by or even far away. Mercury is also released into the environment if not properly managed.

To help facilities like CCBRT get access to safe solutions that are simple to maintain, cost-effective and can be produced in Africa, the GEF funded UNDP/WHO global health care medical waste project is helping to design such technologies in partnership with the University of Dar-es-Salaam.

To test the technologies, CCBRT has received an autoclave and waste compactor that have been manufactured in Tanzania, even the reusable waste containers have been produced by a local artisan. Since the new technology has been installed, CCBRT staff has been trained in its use and now have to rely less on the polluting incinerators installed on the hospital premises. CCBRT is hopeful that when the technology has been fully tested, they can stop the use of the incinerators altogether and serve as an example to other facilities.

At the same time, training on good waste management practices in the hospital, has contributed to a reduction in the spread of infections. Patients will receive even better care in the future, knowing that waste issues will not jeopardize their newly acquired health.

# GEF Pre-Ratification Program

The Minamata Convention on Mercury is scheduled to be presented for adoption and opened for signature at the Diplomatic Conference in Minamata and Kumamoto, Japan, in October 2013.

To support early entry into force of the Convention, the GEF Council decided to allocate during GEF-5 up to $10 million of additional funding for an early action pre-ratification program for the Convention , upon request by eligible signatory countries. The program aims to help countries to:

- Assess use and production of mercury and mercury containing products within the country.
- Determine the sources of mercury emissions and releases, and assess contaminated sites.
- Determine the extent to which mercury is used in artisanal and small scale gold mining.
- Identify policy and regulatory changes necessary to implement a mercury program at the national level, and define the steps needed to affect these changes.
- Determine the institutional and capacity enhancement needs that would be required to implement the convention at the national level.

# GEF Future in Reducing Mercury

The GEF's future work on mercury will support countries preparing to participate in the Convention, including supporting early actions on mercury. As part of their ratification process, countries will also need to identify control measures they may need to put in place to meet their obligations under the convention, ensuring their effectiveness and sustainability. Countries will also likely undertake reviews of current regulatory regimes and, where necessary, develop new legislation or regulations.

GEF-6 supported activities will likely include:

1) Support for national assessments of mercury issues and, where necessary, the preparation of plans to address priority concerns
2) Actions to reduce the use of mercury in products and processes;
3) Actions to reduce emissions and releases of mercury from industrial processes;
4) Actions towards the sound management of mercury;
5) Actions to address mercury use in artisanal and small-scale gold mining.

## BEHIND THE SCENE

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## PRODUCTION CREDITS

Robert Dixon, Ibrahima Sow, Evelyn Swain, Anil Sookdeo, Hiroaki Takiguchi, Sun Young Lim, Patrizia Cocca.

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## ABOUT THE GEF

The Global Environment Facility unites 183 countries in partnership with international institutions, civil society organizations (CSOs), and the private sector to address global environmental issues while supporting national sustainable development initiatives. Today the GEF is the largest public funder of projects to improve the global environment. An independently operating financial organization, the GEF provides grants for projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. Since 1991, the GEF has achieved a strong track record with developing countries and countries with economies in transition, providing $11.5 billion in grants and leveraging $57 billion in co-financing for over 3,215 projects in over 165 countries. Through its Small Grants Programme (SGP), the GEF has also made more than 16,030 small grants directly to civil society and community based organizations, totaling $653.2 million. The GEF partnership includes 10 Agencies: the UN Development Programme, the UN Environment Programme, the World Bank, the UN Food and Agriculture Organization, the UN Industrial Development Organization, the African Development Bank, the Asian Development Bank, the European Bank for Reconstruction and Development, the Inter-American Development Bank, and the International Fund for Agricultural Development. The Scientific and Technical Advisory Panel provides technical and scientific advice on GEF policies and projects.

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