
FEASIBILITY STUDY



Health and Pollution Fund

October 2011

FEASIBILITY STUDY

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Acronyms and Abbreviations

ADB	Asian Development Bank
BI	Blacksmith Index
EC	European Commission
GCS	Green Cross Switzerland
HPF/the Fund	Health and Pollution Fund
ISA	Initial Site Assessment
MDB	Multilateral Development Bank
NGO	Nongovernmental Organization
RETA	Regional Technical Assistance 7395: Improving the Health Status of Vulnerable Communities Threatened by Legacy or Artisanal Pollution
TA	Technical Assistance
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
USEPA	Environmental Protection Agency (USA)
WHO	World Health Organization

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EXECUTIVE SUMMARY

Pollution from industry, mining and agriculture exposes up to 100 million people in low- and middle-income countries to toxins that have negative health consequences. Acute environmental health risks that have been uncovered through a global inventory assessment of polluted sites require a coordinated international response. Governments are eager to intervene but lack the technical and financial resources to respond adequately. The international donor community is gradually becoming aware of the breadth of the problem, and seeks to include the issue in actions to reduce poverty. As potential donors and recipients move closer to consolidated action, there is a clear need to discuss the viability of a proposed global response—a Health and Pollution Fund.

The viability of a multilateral effort, or fund, to address these problems was investigated in *RETA 7395: Improving the Health Status of Vulnerable Communities Threatened by Legacy or Artisanal Pollution*. Potential parameters of the Fund have been informed by risk assessments carried out as part of the inventory, as well as by consultations with governments, bilateral and multilateral agencies.

The Fund fills gaps in the current international response to toxins.

Existing multilateral environmental agreements do not adequately cover site-specific pollution exposures, environmental emergencies or occupational exposures to toxins. Despite considerable international efforts on environmental problems, there is currently no funding or regulatory framework to protect people from acute pollution sources. Research assessments conducted under the RETA revealed that the worst exposures generally result from the following sources:

- Legacy industrial pollution: industrial or mining activities at sites that are no longer active still pose a threat to human health. Improperly stored waste materials in these areas continue to contaminate water and soil, but the polluter is either unidentifiable or insolvent, rendering the “polluter pays” principle non-applicable.
- Artisanal and subsistence livelihoods: activities such as small-scale mining, electronic waste recycling, and leather tanning produce significant occupational hazards. Small-scale operators often lack resources to prevent exposures to themselves and their families.
- Environmental emergencies: emergencies that require a quick and steady response have no clear mechanism for support. As was the case in Cote D’Ivoire in 2007, Senegal in 2008 and Nigeria in 2010, the slow mobilizing of resources led to illnesses and death that could have been prevented.

Potential shapes of the Fund: A consolidation of international support.

Various opportunities exist for multilateral and bilateral agencies to participate in addressing these issues at scale. The structure can benefit from lessons learned from other funds seeking to address global problems. A free-standing trust fund, similar to the Global Fund to Fight AIDS, Tuberculosis and Malaria, is straightforward to administer and would raise the profile of toxic pollution¹ and its health implications. Another favorable option could be a “vertical fund”

¹ The definition of toxic pollution adhered to by the Fund is the following: Contamination of local areas or bodies of water by chemicals or metals from industrial, mining or agricultural sources that pose an exposure risk to a given

housed in the World Bank (or distributed across the World Bank and regional development banks), such as the Climate Investment Funds. Additionally, a dedicated funding mechanism in the form of line items in donor country budgets could manifest more quickly, but would require more complex oversight controls.

A Health and Pollution Fund is attractive to donors.

Data gathered from sites assessed during the RETA indicates that financing for the Fund may approach \$1 billion. This estimate includes sites in China, India and Russia. Given the size of their economies, these three countries will most likely be eligible for technical assistance only, which would drop the estimate to around \$400-500 million.² This issue is attractive to funding agencies for a variety of reasons:

- Unlike the ongoing efforts to reduce or treat infectious diseases, remediating toxic sites is often a one-time intervention that removes the health risk.
- Funding requirements are finite, and will decrease as capacity is built within governments to regulate existing industries and prevent new contaminated sites.
- All remediation efforts will require local ownership and involvement. Projects are lead by nationals, and are designed to build local capacity to replicate similar interventions.

Recipient countries are demanding support.

Site assessments revealed data that have urgent implications for national governments struggling to develop their priorities for pollution remediation. This information makes it possible to understand public health risks associated with toxic pollution, make strategic decisions, and prioritize sites for intervention. Under the RETA, national workshops were held in India and the Philippines to prioritize sites for intervention based on data collected as part of the inventory.

Next steps toward the Health and Pollution Fund.

Research conducted under the RETA has made major headway in assessing the logistical and financial viability of a Health and Pollution Fund. There is an apparent consensus among donor agencies that more work must be done to increase the inventory of hotspots in Africa, the Middle East, Central and Eastern Europe, and Latin America where the assessments currently lack funding. Additionally, feedback from both donors and recipients indicates that there is value in advocating a coordinated multilateral effort to mitigate acute health risks from industrial sources. There is commitment from a variety of stakeholders to gather more data, promote the research undertaken thus far and agree on a global response. Over the course of the RETA, this multilateral effort has taken critical steps towards the creation of a consolidated funding mechanism.

population and are hazardous to human health. This definition applies to all discussion of toxic pollution throughout this feasibility study.

² Various levels of support from the Fund on a country-by-country basis will be discussed in more detail in the body of this study.

1.0 GENERAL INFORMATION

1.1 Purpose

This Feasibility Study is submitted to the Asian Development Bank to illustrate the viability of the proposed Health and Pollution Fund. The objectives of the Fund are based on needs identified during the research supported by *RETA 7395: Improving the Health Status of Vulnerable Communities Threatened by Legacy or Artisanal Pollution*. This study analyzes critical findings, potential funding frameworks, organizational structures, operating principles, stakeholder participation, and the capabilities of potential funding partners.

1.2 Background

Toxic pollutants from industry, mining and agriculture affect the lives of millions in low- and middle-income countries. Legacy wastes from inactive sites and ongoing pollution from artisanal activities pose long-term environmental and health risks that can significantly impede economic and social development.

Since 2009, Blacksmith Institute, a US-based NGO, has been conducting an inventory of sites that demonstrates the adverse health impacts of toxic hotspots on human populations. This inventory assessment work has been carried out in 47 countries, collecting data on more than 2,200 sites.

RETA 7395 added critical resources to the inventory assessment by identifying 428 additional sites in 17 countries in Asia and the Pacific Region. The RETA also provided support to a critical supposition that a systematic, global response was needed to turn the assessment of these dangerous sites into action.

An important part of the RETA activities has been the promotion of this concept among international funding agencies, as well as within recipient countries. As inventory assessment data has been made available, governments have expressed a direct need for international assistance in this area. Additionally, there is growing international consensus that the remediation of polluted sites needs to be supported by significant resources from industrialized nations (with local, counterpart funding in recipient countries).

Presently, these activities have been conducted on an ad-hoc basis, without a more systematic, global assessment of the problems and their impacts. The proposed Health and Pollution Fund will provide an integrated, global framework for a sustained and reliable effort to mitigate the health threats from exposure to toxins in low- and middle-income countries.

1.3 Summary of Critical Findings and Observations

This overview presents key findings uncovered through both site assessments and the systematic consultation of multilateral agencies and country governments. These critical findings summarize the impetus for a Health and Pollution Fund that has coalesced through the RETA process.

1.3.1 Global Pollution Overview

Toxins in the environment pose long-term environmental and health threats. Illness caused by exposure to toxins can hinder the achievement of the Millennium Development Goals (MDGs), particularly those related to poverty, environmental sustainability and maternal health.

Exposure to toxic pollution causes immense harm to humans, especially children. Health impacts include physical and mental disabilities, organ dysfunction, neurological disorders, cancers, reduced life expectancy, and in some cases, death. These pollutants also exacerbate other health problems by weakening the body's immune system, rendering it more susceptible to disease. This can be particularly dangerous for children, whose smaller bodies absorb toxic chemicals at higher rates than adults. An initial exposure to a toxin can be the undocumented cause of subsequent illnesses, including respiratory infections, tuberculosis, gastrointestinal disorders, and maternal health problems. In addition, while most toxic pollution is localized, some pollutants, such as mercury, are transboundary and end up in the global food chain.

The RETA assessment of toxic hotspots has been instrumental in compiling information that is crucial to demonstrating the need to address toxic pollution problems. Although the database of sites is still growing, current data indicate that more than 100 million people are likely affected by toxic pollution. For example, in low- and middle-income countries, mixed-use industrial areas are often adjacent to residential neighborhoods, exposing large populations to harmful pollution emissions.

A recent WHO article in *Environmental Health Perspectives* states that more data are needed to accurately assess the total disease burden related to chemicals, especially for policy decisions, actions and priority-setting³. Based on a review of existing literature, the article asserts that the global burden of disease attributable to toxic exposure amounts to at least 4.9 million deaths per year, representing 8.3% of total deaths and 5.7% of the total burden of disease in Daily-Adjusted Life Years (DALYs) worldwide.⁴ The article highlights that 54% of this burden is carried by children under the age of 15. Pruss-Ustin cautions that these statistics are likely underestimated, due to limited data and research demonstrating quantifiable exposure-response relationships between chemicals and health hazards.

1.3.2 Current International Response to Toxic Pollution

The international community is just beginning to understand and acknowledge the scope of toxic pollution in low- and middle-income countries as it relates to human health. Existing multilateral environmental agreements such as the Basel and Stockholm POPs Conventions, the Montreal Protocol and the Strategic Approach to International Chemicals Management (SAICM) are excellent initiatives, but they attempt to regulate toxins from an environmental, rather than a human health perspective.⁵ Additionally, these agreements frequently do not have sufficient funding for implementation, as many receive finances through voluntary donor contributions.

1.3.3 Gaps in the International Response to Toxins

³ Pruss-Ustin, Annette, Carolyn Vickers et al. "Knowns and Unknowns on Burden of Disease Due to Chemicals: A Systematic Review." *Environmental Health Perspectives*. 2011 10:9 doi: 10 1186. World Health Organization.

⁴ For an explanation of DALYs, see Appendix 1.

⁵ For a longer list of multilateral environmental programs or agreements, see Appendix 3.

Pollution remediation is a thriving mainstream industry throughout high-income countries, but is highly limited or even non-existent in low- and middle-income countries. Although there are varying reasons for this, countries generally lack the regulatory capacity for enforcement needed to hold the private sector accountable, there are many competing and pressing priorities for limited government funds, and the technical capacity necessary to clean up polluted sites is small. Additionally, site research conducted throughout the RETA revealed that the worst pollution problems are often not caused by large international companies, but rather by smaller, unregulated industries with essentially no resources that can be directed to clean up contamination they created.

Based on the needs identified so far, a Health and Pollution Fund will address gaps related to the human health impacts of toxic exposures in some of the following areas:

- Clean-up of legacy sites. Many toxic sites contain legacy pollution, where industrial or mining activities are no longer occurring, but improperly stored waste materials are still contaminating water and soil. Most often, these are small to medium enterprises where the original polluter can no longer be identified to pay for the remediation. This may be the case at sites where the polluter is a defunct state-owned entity or a private company that has long since ceased operations and can no longer be held responsible, negating the effectiveness of the “polluter pays” principle. Legacy pollution is often less visible because it is not coming from an active factory. Current residents may have little or no knowledge of the previous contaminating activity. Some sites have both active and legacy components. Where this is the case, ongoing pollution must be addressed before remediation activities can occur.
- Rapid response to environmental emergencies. Currently, there is no clear international mechanism for support in cases of environmental emergencies involving toxins. In 2010, the international community provided an emergency response to an unprecedented case of severe lead poisoning in Northern Nigeria. At this site, artisanal gold mining operations inadvertently caused the death of hundreds of children under age five, and an emergency environmental remediation was required to stop further casualties. However, as emergencies require a quick response, the lack of support for this issue led to a slower mobilization of resources, contributing to further illnesses and death. Similar cases have occurred numerous times in recent history, such as the cases in Cote D’Ivoire in 2007 and Senegal in 2008. Rapid response to emergency pollution disasters is necessary to minimize exposure risks, and is particularly important in low-income countries, which often lack both financial and technical expertise to manage a response. Thus, it is critical that there is an established resource to draw upon in an emergency setting.
- Addressing artisanal industry and livelihood related pollution. Artisanal and subsistence livelihoods such as small-scale mining, electronic waste recycling, lead-acid battery recycling, and leather tanning produce significant toxic contamination. In some communities, there is often a lack of knowledge about occupational risks and how to avoid them. In these cases, interventions require not only financing and technical expertise, but also an appropriate development response.

1.3.4 Comparative Assessment for Donor Support

Current interventions that address health and disease are assessed through their ability to decrease the number of Disability-Adjusted Life Years (DALYs) for recipients. This figure represents the years of “healthy life” lost due to the impacts of a particular cause or disease, in a specified area. Once this measure of health impact has been estimated, the benefits and cost-effectiveness of different interventions and projects can readily be evaluated. This methodology has been developed and refined by the WHO as part of their “Burden of Disease” program and is widely accepted by both the health sector and the regulatory agencies that make investments in disease prevention. The approach is commonly used to estimate the economic impacts of air pollution (by the World Bank, for example) although its application to water and soil contamination is more complex.

A peer-reviewed paper sponsored by the John’s Hopkins School of Public Health assessed the economic costs generated within the last 10 years of cleaning up polluted sites in low-income countries. The data for this study was taken from Blacksmith Institute projects that showed measurable reductions in toxic exposure to humans through the remediation of legacy sites. This research has shown favorable results compared to other public health measures; that is, the cost/benefit ratio for money spent on toxic contamination site remediation, as measured by DALYs, is similar to or better than some other common public health initiatives related to disease prevention and sanitation.

In addition, the costs of site remediation and clean-up are expected to be much lower than the potential costs associated with the health and economic impacts caused by toxic pollution. A true analysis of pollution remediation, compared to its counterfactual of no clean up activities, has not yet been completed, but the results of such a comparison are estimated to show that the benefits far outweigh the costs of any remediation programs.

Current estimates from inventory assessments indicate that the amount of financing needed to clean up the worst of the polluted legacy sites may approach one billion dollars, including sites in middle-income countries such as Brazil, China, India and Russia. However, if middle-income countries pay for their own remediation and require only technical assistance, this estimate drops to around \$400-500 million.

Financing the clean up of polluted sites is attractive to donors for several reasons:

- Unlike vector and communicable diseases, remediation for a toxic site is a one-time intervention, providing the source of the contamination has ceased operation or has been controlled. Once local investments have been made to clean a site, it is unlikely that the site will become re-contaminated. Remediated land will once again be valuable, and can be put to productive use.
- Interventions are conducted with local authorities and build capacity within the country to regulate active polluters, design and implement remediation activities and enforce current laws.
- Funding requirements are finite. Once sites are cleaned, capacity will have been built into the government agencies to avoid re-contamination.

- The cost of remediation per person has been calculated in the \$5-50 range per DALY, comparable to other major public health initiatives, such as providing bed-nets and vaccinations.

1.4 Growing Consensus for an International Response to Toxins (logic for a Health and Pollution Fund)

In 2007, representatives from governmental agencies of the United States, Germany, China, Russia, Mozambique, Kenya, the Philippines, the World Bank, the United Nations Industrial Development Organization, Green Cross Switzerland and Blacksmith Institute gathered at a conference hosted by the Rockefeller Foundation in Bellagio, Italy to discuss toxic pollution and its human health effects. The conference assessed the international awareness and interest in the issue, and outlined principles for a strategic response. As a result of the meeting, a Health and Pollution Fund was proposed to address legacy pollution caused by industrial, mining, agricultural and military operations in low and middle-income countries. The Fund would assist those countries and others to reduce human health impacts by providing technical expertise and finances to clean up contaminated sites.

However, there was a general lack of knowledge among the participants of the actual extent of the global problem. In order to address this knowledge gap, site assessments were conducted between 2008 and 2010 to gather health and environmental data related to toxic hotspots around the world. As more comprehensive data became available, country-specific information was compiled and shared with national governments. This information was shared via meetings and workshops featuring presentations on the scope of toxic pollution in a given country, recommendations for priority setting and examples of successful remediation.

In September 2010, Blacksmith Institute was invited back to the Bellagio Conference Center to present this new data. This conference, titled “Legacy Pollution in Developing Countries,” was hosted by Blacksmith Institute in collaboration with the Asian Development Bank. The detailed agenda and list of participants are included in the Annex.

At the conference, 31 senior-level participants gathered from 16 different organizations to discuss toxic pollution and health risk in developing countries. In attendance were five Ministries of Environment from developing countries (Indonesia, Mexico, the Philippines, Senegal and Ukraine), three multilateral development banks (World Bank, Asian Development Bank and Inter-American Development Bank), three donor agencies (Canadian International Development Aid Agency [CIDA], Japanese International Cooperation Agency [JICA] and the European Commission), and three UN agencies (UNEP, UNIDO and WHO). The representatives at the conference concluded that, given the data presented, an international response to deal with toxic pollution issues was urgently needed.

2.0 PROPOSED SYSTEM AND MANAGEMENT SUMMARY

2.0 Proposed System And Management Summary

The interim research process detailed above has included significant consultations with relevant bilateral and multilateral donors as well as recipient country governments. This management summary is a synthesis of recommendations made by various interested agencies to support this work on a global level.

2.1 Funding Framework

Various modalities offer opportunities for multilateral and bilateral agencies to participate in addressing this issue at scale. These include:

2.1.1 Free-Standing Trust Fund. A free-standing trust fund, similar to the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) or the Global Alliance for Vaccines and Immunisation (GAVI). A fund of this nature would effectively raise the profile of toxic pollution and its health implications. It is straightforward in concept, and relatively easy to manage and administer. If, as in the case of GAVI, it is envisaged as a public-private partnership, such a fund also accommodates the possibility of leveraging additional financing from non-government sources (such as foundations and high-net-worth individuals).

The two trust funds cited above differ slightly in their funding approaches but both have been successful in mobilizing large amounts of financing for their respective causes. The Global Fund (at first administered by the WHO but now an autonomous organization) operates traditionally, pooling pledges from governments (donors and recipients) and foundations (principally the Bill and Melinda Gates Foundation) and providing grants for eligible programs and projects. So far, more than 45 countries, the European Commission, and others have committed \$21 billion to the Global Fund. It provides financing only, and does not act as an implementing entity.

GAVI is also based on commitments from governments and private foundations. It operates two financing mechanisms. The Advanced Market Commitment (AMC) defrays the disproportionately high costs of developing and adapting vaccines for low-income countries to make them affordable. The International Finance Facility for Immunization (IFFIm) collects long-term (5-20 year) commitments from governments, on the strength of which it issues bonds. The proceeds provide immediate and predictable program funding.

In the foreseeable future, it is unlikely that governments and others would come together to establish a trust fund to clean up toxic pollution along the lines of the Global Fund or GAVI. The primary reason being that the issue does not yet command strong international attention. Also, the funding requirements are nowhere near as large as those of these other public health issues, so may not warrant the kind of administrative overheads such a free-standing entity would entail.

2.1.2 Multilateral Vertical Fund. A “vertical fund” housed in the World Bank (or distributed across the World Bank and regional development banks). Climate change may be the field that has seen the largest number of vertical funds (with a cumulative total so far of \$26.8 billion). Examples are the Climate Investment Funds of the World Bank, and the Global Environment Facility (GEF) replenishment of \$1.4 billion (for 2010-2014). Although these funds are located at the World Bank and GEF, respectively, other multilateral institutions, such as UNDP, UNEP and the regional development banks, participate in their operations as implementing agencies. Interestingly, the largest such vertical fund is bilateral: the Japanese Hatoyama Initiative (\$15 billion). This helps developing countries working to reduce greenhouse gas emissions to achieve economic growth in ways that contribute to climate stability.

One advantage of a multilateral (or bilateral) vertical fund, as compared to a free standing trust fund, is that related overhead costs are limited. However, as in the case of the latter, the low profile of the issue in question makes it difficult to establish a vertical fund, at least in its current state of publicity and awareness. In the event that increased international funding for toxic pollution interventions can be mobilized over the next few years, the feasibility of a vertical fund housed at the World Bank and/or the regional development banks could be considered.

2.1.3 Funding Mechanism Residing in Donor Country Budgets (facility). A committed and dedicated funding mechanism, residing as various line items in the budgets of donor countries. A funding mechanism of this nature (i.e., a facility rather than a fund) may be easier to establish. However, it will call for a coordinating Secretariat, answerable to the donors. This Secretariat would be designated as the key entity for implementation of clean up projects financed by each donor country concerned. Donor countries would allocate resources for projects as well as providing small amounts of core funding for an efficient working Secretariat. This unit would prepare submissions to each donor program, aligned with the specific requirements of recipient and donor countries, and manage projects within appropriate guidelines. Such a facility may also include the possibility of attracting private funding for specific projects.

The line item allocations should, in principle and practice, be untied. Nevertheless, the Secretariat should endeavor to ensure that as much of these resources as possible flow back to national consultants and contractors of the donors concerned. They could, for example, be involved as members of individual project consortiums. Doing so would both bolster public support for the budget allocations and build vested interests (as well as expertise and experience) in favor of action on toxic hotspots.

One possibility is to start with a funding mechanism that remains in donors’ own budgets, wait to gain confidence in the operation of the facility, and then upgrade to a vertical or more free-standing fund.

2.1.4 Additional Options. The current cost estimates of a Health and Pollution Fund are considerably less than the funds mentioned above. As a result, it is useful to consider the effectiveness of providing (i) actual funding (direct allocation) to specific projects or (ii) guarantees against which the funding mechanism can raise money from the market. The

implications of market borrowing for grant financing will, of course, have to be examined.

2.2 Financing

The implementation of Health and Pollution Fund activities will be guided by recipient countries, but coordinated with significant input from donor agencies.

Financing for the structures outlined in Section 2.1 will be sought from the following kinds of entities:

- Multilateral donor agencies. This includes agencies that have already expressed a preliminary interest such as the World Bank (WB), the Asian Development Bank (ADB), the Inter-American Development Bank (IDB), and the Global Environment Facility (GEF). These agencies are key in providing financing for the Fund, but will also be involved in program implementation due to their high levels of technical expertise.
- Bilateral donor agencies. This includes agencies that have already expressed a preliminary interest such as the US Department of State, US Department of Treasury, US Agency for International Development, German International Development Agency (Deutsche Gesellschaft für Internationale Zusammenarbeit -GIZ), and the Swedish International Development Agency (SIDA). Other important bilateral agencies will likely include French Environmental Facility (Fonds Francais pour l'Environnement Mondial – FFEM), French Development Agency (Agence Française de Développement – AFD) UK Aid Agency (DFiD), and the Swiss Development Cooperation (SDC), among others. While these agencies are key to providing technical expertise and financing for the Fund, they will be less involved in implementation than the multilateral agencies.
- Private companies or industry associations. Companies such as Dow Chemical or Rio Tinto, or industry associations such as the International Council of Chemical Associations (ICCA), and the International Council on Mining and Metals (ICMM), along with other companies with relevant mandates, could provide technical expertise and/or financing for the Fund. Specific corporations could be involved depending on their ability to raise awareness for the effort and provide financing, as well as alignment with company social responsibility efforts.
- Private foundations. This could include foundations such as Green Cross Switzerland and the Rockefeller Foundation, the Bill & Melinda Gates Foundation, Clinton Foundation, and others. These agencies will primarily assist in financing the Fund, but may also be involved in its design where relevant.

As outlined above, the plan will focus on funding the clean up of the worst polluted legacy sites in eligible countries. It should be noted that this financing is intended primarily for project implementation and not research. As such, allocations will be in the form of grants, not loans. Remediation interventions restore health (of people and land) but do not by themselves generate income to repay loans. That said, grant funding for clean up would be appropriate only for those sites with the most compelling public health exposures, and where other resources are not available. However, this would not exclude opportunities with multilateral agencies for interest-

free or low-interest loans. Grant financing will be reserved primarily for projects in the least developed countries and for facilitated borrowing mechanisms for low- and middle-income countries.

The Fund should be constructed in collaboration with existing mechanisms such as SAICM and the GEF, as well as UNEP's International Chemicals Financing Initiative and the international treaties (Basel, Stockholm, Montreal Protocol) so as not to duplicate efforts. The Fund could facilitate exploration of such opportunities for low- and middle-income countries for relevant projects that fall within the mandate of such agencies.

2.3 Additional Stakeholders

The various activities of the RETA have provided opportunities to consult with stakeholders across a spectrum of interests in environmental health, industrial pollution and children's health. Although financing partners are critical, the Fund implementation depends largely on the input of recipient countries, and successful projects will only be achieved through donor and recipient collaboration. Therefore, it is anticipated that the following agencies/organizations will be essential to promoting the need for the Fund as well as guiding its implementation. This list is not exhaustive.

- UN agencies and ongoing international initiatives including the UN Industrial Development Organization (UNIDO), the UN Environment Program (UNEP), the World Health Organization (WHO), the Basel Secretariat, the Montreal Protocol, SAICM, the Stockholm Convention, and UNEP's International Chemicals Financing Initiative.
- Ministries of Environment, Health, Industry and Mining from recipient countries such as India, Indonesia, Mexico, the Philippines, Senegal, Ukraine, Uruguay, and Zambia, among others. Many of these agencies will be the primary implementers of Fund activities.
- Industrial sectors in recipient countries. Manufacturing, processing and mining associations are critical to implementing Fund activities. The work will be collaborative, at times relying on public-private partnerships to implement remediation and occupational interventions.
- Other international and national organizations including the Artisanal Gold Council, Ban Toxics, the International Lead Management Council, Green Cross Switzerland and others.

2.4 Organizational Structure and Governance

As the funding mechanism detailed in Section 2 is still unknown, organizational structure and governance policies cannot be specifically detailed. However, based on consultations and research through the RETA, the following recommendations should be factored into any funding mechanism to achieve the desirable outcome:

- An Executive Council. A board comprised of representatives from recipient countries, as well as the largest Fund contributors and stakeholders, would meet at regular intervals and would be responsible for governance of the Fund and approval of grants of \$250,000 and above (this threshold is subject to change). The Executive Council would also be responsible for establishing strategies, framing policies, reviewing annual operations, raising/mobilizing resources, providing general oversight and considering matters referred to it by the Secretariat.
- A Technical Advisory and Review Board. This is an independent panel of technical experts in the field of toxic pollution, environmental health and other relevant fields, who

would provide strategic guidance and expertise for the policies and operations of the Fund.

- A Health and Pollution Fund Secretariat. Many sites do not require large sums of money to effectively mitigate health risks. As a result, a Secretariat would be required to administrate projects for funding that are too small for the Executive Council. The duties of a Secretariat would include; approving grants of \$250,000 and below; submitting grant proposals above \$250,000 to the Executive Council; coordinating and managing grant implementation with project sponsors, including disbursement of funds and performance-based monitoring and evaluation; and providing regular reports to the Executive Council on all operational and accounting matters.

2.5 Operating Principles

Regardless of structure, certain principles will be incorporated into the Fund design and implementation. Important principles established during consultations with recipient country governments and the international community are summarized below:

- The highest standards of transparency and accountability will be adhered to in all operations, including sources of funding, management of funds, all accounts and accounting, procurement, project implementation, information and results. All grantees will be held accountable to the same standards. Independent audits and evaluations of the Fund's performance and operations will be publically available.
- A comprehensive conflict of interest policy will be implemented to protect the integrity of the Fund's decision-making processes, particularly in regard to the allocation and disbursement of funds and selection/approval process of projects. Procurement and contracting procedures will adhere to internationally accepted standards.
- Eligibility guidelines, selection criteria, priorities/priority setting and application procedures will be clear and promote the utmost efficiency possible (both in terms of time and overhead costs). They will be designed to avoid lengthy approval processes and bottlenecks.
- Monitoring and evaluation will be key to maintaining and improving efficiency. Project results and lessons learned during implementation will be used to guide these policies and procedures to further streamline the implementation process. Projects will be required to produce specific, measureable and timely results (SMART indicators).

2.6 Identification, Prioritization, and Remediation Process

The implementation of all programs and remediations under the Fund will generally follow a similar process, as outlined in the flow chart in Appendix 2. The basic steps to move from site assessment to a response plan may include the following:

- Reviewing site assessments in the inventory and discussing possible action plans with country agencies and officials

- Establishing priority sites with input from governments, communities, and donors
- Constructing cost estimates for remediation and developing plans for funding
- Developing detailed, site-specific plans for remediation and clean-up targets, including a specific execution plan
- Developing technical mechanisms for quality control and management, and establishing a long-term plan for any necessary action following the remediation
- Implementing the remediation plan

An integral part of this action plan involves outreach to various stakeholders in order to involve them in the decision-making process and gain their support for remediation programs. In countries where many sites have been identified and assessments have been very thoroughly completed, there exists the possibility of holding federally supported technical conferences in order to discuss remediation options. These conferences can lead to unified national strategies (NTAPs) that lay the groundwork for site prioritization, funding stream options, and the commencement of actual remediation projects.

Each country and pollution site will be different, so flexibility is important during all aspects of project design and implementation. In addition, projects may need to be revised in response to new information acquired through the remediation process, or changes in government or donor capabilities.

2.6.1 Project Implementation

Whenever possible, governments (either national, regional, or local) should be given the opportunity to lead and manage remediation projects. Governments are often in the best position to do so, as they are responsible for maintaining public health and environmental safety, commonly have the necessary legal authority, and understand country-specific legal requirements, contracting procedures, and options for waste disposal or treatment, among others. The Fund will provide various levels of support throughout the implementation process, including offering technical assistance, providing terms of reference (TORs) to solicit contractor proposals, and assisting with management of contractors and quality control for the remediation project. The Fund may also assist in developing prioritization efforts within countries in compliance with its general framework.

The level of Fund involvement in project implementation will also depend on the size of the site and the source of the pollution. Many of the sites that are identified for assessment and prioritization are small to medium size legacy pollution sites that continue to threaten human health, but that can often be remediated rather easily. Larger sites that have both legacy and active pollution components require substantial resources and technical expertise. Sites consisting of industrial estates with many sources of pollution, or abandoned mines with unstable tailings ponds and acid drainage will need larger-scale involvement, funding, and cooperation. In these cases, government support is very important for the successful completion of a project, but the Fund will also offer necessary assistance.

2.6.2 Building Capacity

Though the RETA has identified many pollution sites for assessment, there continue to be many other sites that have not yet been evaluated. In addition, it is likely that new pollution problems

will occur in areas that were previously assessed. In order to ensure that the Fund has the most up-to-date and comprehensive inventory possible, local, regional and national government officials can be trained in the site assessment process. In cases where this training program has been implemented on a national level, the inventory has been translated into the local language, and data that already exists in the inventory is provided to the government. This kind of training and data transfer has been implemented during technical review workshops in the participating country, which usually last for two days and are run by Blacksmith Institute, and local and national technical experts. In the future, the Fund Secretariat would oversee these workshops.

Remediation implementation can also provide opportunities for capacity building. Contracts for remediation work, for example, can be used as a guide to inform other successful contracts in the future. Technical guidance provided during the clean-up process can also be used for subsequent projects. One of the more important capacity building practices during project implementation is that the Fund will, in some cases, provide technical advisors to assist government officials in thinking through and understanding public health risks, how to assess sites and determine priorities, and how to successfully manage action plans. This will allow for country governments to manage more of their own projects independently in the future.

2.7 Levels of Participation in the Programs of the Fund

There will likely be various levels of government participation in the programs of the Fund on a country-by-country basis. Though site assessments and Fund resources will be available for all low- and middle-income countries, there will be some form of sliding scale that determines the extent of assistance to be provided from the Fund.⁶ For example, countries with significant financial resources and capabilities will not need as much support as other, less financially stable and technologically advanced countries. Some countries will need support from the Fund in all steps of the identification, prioritization, funding and remediation process, while others may only need technical assistance from the Secretariat. Countries that only receive technical assistance for site assessments and remediation will not require as much financial assistance as others. As the Fund is developed, the varying levels of participation and guidelines for establishing these criteria will need to be thoroughly discussed with stakeholders and maintained as consistently as possible.

⁶ For a complete list of low- and middle-income countries, as defined by the World Bank using gross national income per capita data, please see Appendix 4.

3.0 INTERIM STRUCTURE AND PROCESS

3.1 Interim Activities

A major outcome of the ADB-hosted Bellagio Conference in 2010 was a consensus that interim solutions should be implemented while a longer-term strategy (to create a Fund) is developed. These activities help to further assess the feasibility of a coordinated international response. The global inventory of toxic hotspots has been instrumental in providing the data crucial to demonstrating the need to address toxic pollution problems worldwide.

3.1.1 Site Assessments

428 site assessments in 17 countries in the Asia Pacific region were conducted through the RETA. Sites were chosen for assessment and inclusion in the inventory based on several important factors. One of the most important factors considered when deciding whether or not to perform a site assessment is the type of pollutant at the site. The RETA focused on pollutants that have been identified as severely dangerous, toxic, and most relevant from a human health perspective by Blacksmith Institute's Technical Advisory Board (TAB). These pollutants include, but are not limited to, asbestos, cyanides, fluorides, heavy metals, poly-aromatic hydrocarbons (PAHs), radionuclides, volatile organic compounds (VOCs), and persistent organic pollutants (POPs) such as several types of pesticides and polychlorinated biphenyls (PCBs). Other pollutants are included on a case-by-case basis as determined by the TAB. Blacksmith Institute is aware that this classification excludes other very important, widespread, and dangerous pollution problems such as: carbon dioxide and other greenhouse gases; SO₂, NO_x, and acid discharges; bacterial contamination of water; chemical and biological oxygen demand; many types of oil contamination; and indoor air pollution. These pollution issues are not generally included when identifying sites for assessment either because the TAB believes them to be non-toxic, or the sites where these problems exist cannot be properly evaluated under current assessment protocols.

Another important factor determining whether or not a site can be assessed is the source of the pollution. Blacksmith aims to identify sites that have very clear, point source pollution with definable impacted areas that can be efficiently isolated and addressed. Sites with pollution that has an unknown or unclear source, or where pollution is widely distributed—such as ambient air pollution, automobile emissions, and water contamination from a range of sources or runoffs—are generally excluded from the assessment process. Though non-point source pollution problems impact millions of people, it is very difficult to target and effectively clean up these issues or areas.

A final and important bias for inclusion in the inventory was the possibility for some sort of intervention based on the size of a pollution problem. Very small artisanal or home-based industries or activities, for example, fell outside the scope of the inventory due to the difficulty in identifying and addressing extremely small-scale operations or processes. Some small scale artisanal activities like lead battery recycling or artisanal gold mining using mercury have enough of a community impact and are typically clustered enough to be included. Other activities, such as indoor air pollution in scattered and individual homes, were not feasible for assessment.

The resulting database of sites largely profiles small industrial facilities or artisanal activities. The most common industrial sources of pollution identified were: industrial mining; leather tanning; chemical manufacturing; dye manufacturing; pesticide manufacturing; artisanal mining (primarily gold); power generation; lead-acid battery recycling; and agriculture. Artisanal mining is particularly a problem in Indonesia and the Philippines, while tanning and dye production are prevalent in South Asia. The top pollutants identified at these sites were: chromium; lead; mercury; arsenic; cadmium; and pesticides. Chromium is often found near tanning and dye production facilities, and is also associated with some pesticides. Mercury is commonly used by artisanal gold miners and is therefore a common problem in Indonesia and the Philippines. The presence of arsenic in the list is primarily due to naturally occurring arsenic found in groundwater in Bangladesh, Nepal and parts of India.

While the inventory has identified many sites, further work on the assessment process is necessary to contribute to a more accurate picture of the global scope of toxic pollution and its health effects, as well as to identify priority sites for remediation. In addition, this work will promote awareness in the international community of toxic issues globally. Consultations with governments in nearly every country assessed through the RETA revealed, that as a public health concern, this problem is a priority for many Ministries of Environment.

3.1.2 Data Analysis and Sharing

At the request of national governments, the RETA is assisting the development of long-term strategies to address toxic pollution in the form of national toxics action plans (NTAPs). RETA-supported site assessment data make it possible to understand the public health risks associated with toxic pollution, prioritize areas for intervention, and appeal for international support to address toxic pollution.

Ministries of Environment have been guided through detailed workshops that present inventory data, priorities for intervention, and recommendations for next steps for action. This includes remediation of legacy sites, cleaning up active polluting industries, improving/establishing regulatory frameworks for sound chemicals management and building capacity to implement the Basel and Stockholm POPs Conventions.

In 2011, NTAP workshops were held with the governments of India and the Philippines. The governments of Vietnam and Uruguay have also requested workshops. NTAPs are crucial for determining the feasibility of a Health and Pollution Fund for several reasons:

- National governments are important partners for remediation projects and essential to addressing toxic pollution nation-wide;
- NTAPs build technical knowledge and understanding about the scope of toxic pollution in afflicted countries, identifying priorities and informing strategic policy and action decisions;
- Without capacity or frameworks to prevent pollution and regulate industry, pollution remediation activities will not be sustainable. An NTAP is a first step to establishing these systems, and identifying gaps and priorities, as well as concrete actions;

- NTAP processes identify the stakeholders and partners with whom the international community needs to interact in order to implement projects at the national level; and
- Lessons learned from conducting NTAPs will better inform the whole process of how to address toxic pollution at the global level going forward.

Experience has shown that as governments gain understanding regarding the scope of the issue, they express interest in seeking both technical and financial support from the international community. It is for this reason that donor agencies are invited to participate in the NTAP workshops. More information on the NTAPs in India and the Philippines can be found in the Annex.

3.2 Ongoing Process toward Fund Development

There is a general consensus among donor agencies that peer-reviewed research is necessary to garner such financial support. This is because the legislative and fiduciary authorities of international agencies typically require substantive data and results to determine their development priorities. This has been a primary concern voiced by various donor agencies, including the US Agency for International Development (USAID) and the UK Department for International Development (DFID), among others.

An additional output of the RETA is a pair of papers that attempt to quantify the human health burden resulting from pollution at sites identified as part of the inventory. The first of these papers is largely contextual and descriptive, providing a scientific basis for the approach utilized during the inventory. The second attempts to quantify the IQ decrement in children as a result of pediatric lead exposure at the sites identified during the RETA. More research and papers along these lines will be very helpful in establishing donor support and in creating more international knowledge about the scope of these problems.

3.2.1 Assessing Fund Interest from Donors

In order to assess the practicality and interest in a Fund, consultation meetings were held that focused on seeking strategic advice for how best to develop the Fund. Activities were comprised of meetings, presentations and teleconference calls primarily with bilateral, multilateral and UN agencies. Presentations featured the RETA-supported assessment inventory and current trends, and discussions focused largely on strategy for garnering donor support. Agencies such as the European Commission (EC), the US Department of Treasury, the World Bank, the US Department of State, the UN Industrial Development Organization (UNIDO), and the UN Environment Program (UNEP), among others, were key in providing networking opportunities and providing introductions to bilateral and multilateral agencies, such as the Inter-American Development Bank (IDB), the Norwegian Development Agency (NORAD), the Swiss Development Cooperation (SDC), Swedish International Development Agency (SIDA), and many others. The World Bank, the US Department of Treasury and others provided strategic advice and insight regarding the set up and operation of international funds, as well as what types of funds would be of interest to which donors (see section 2.1).

Despite the remaining gaps in the database, there has been a growing international acceptance of the need to address legacy pollution, and a general understanding that industrialized countries, which have in many cases benefited from the original polluting industrial or mining activities, should provide financial and technical resources, especially to low-income countries. This has been in large part due to efforts of the international community to establish initiatives such as Basel, Stockholm, SAICM and so forth, but also the efforts of ADB, Blacksmith Institute and UNIDO to build a comprehensive database and raise international awareness.

A detailed list of activities in regards to meetings with the international community in 2010 and 2011 can be made available upon request.

3.2.2 Assessing Fund Interest from Recipients

The enthusiastic reception of the NTAP process (see section 3.1.2) illustrates the value of this information to recipient countries. As a strong proponent of this issue, Blacksmith Institute has been strengthening relationships with the Ministries of Environment in several Asian countries by collaboratively implementing remediation activities. In each case, Blacksmith Institute has received enthusiastic invitations to provide technical support, and would likely not even consider implementing the work without the prior request of government agencies. The political ease with which much of the work has been undertaken suggests that many countries are extremely eager to expand these small efforts nationally. Consultations with government representatives over the course of this RETA has confirmed that many countries possess the will, but lack the technical ability and economic plan to begin this work.

3.3 Potential Challenges for Administering the Health and Pollution Fund

If a Fund is established, there are several challenges that will need to be considered in order to ensure that the processes administered and financed by the Fund are as efficient and direct as possible. In most cases, detailed plans for addressing these challenges have not yet been established, but Blacksmith Institute estimates that the following considerations will need to be built into the administration process of the Fund:

- 3.3.1 Prioritizing Remediation Actions.** Partner countries participating in the Fund will need to work with the Secretariat in order to establish an agreed upon method for prioritizing sites for remediation, presumably through the NTAP process. The NTAPs will need to be relatively consistent, and the Secretariat will be responsible for ensuring that the criteria for assessment within each country follow a particular set of guidelines.
- 3.3.2 Prioritizing Funds Between Countries.** This will be a very important and difficult challenge, and will also be a process that needs to be managed by the Secretariat. There likely will be competition between countries for funding of remediation projects and for external technical assistance, as both of these are necessarily limited. Similar to prioritizing remediation actions within countries, the prioritizing of sites between countries will need to follow a very particular set of guidelines and procedures. Ideally, member countries will be able to have a strong voice in this initial prioritizing plan, which will then be applied throughout the course of any actions taken by the Fund.

- 3.3.3** Ensuring Finances are put Towards Intended Projects. Low and moderate income countries have many pressing needs and limited financial resources, and these could lead to pressure to use HPF funds for purposes other than the contamination identification and remediation purposes of the Fund. It is important that the Fund have a plan to prevent the diversion of resources to other areas. A strong Secretariat that manages the allocation of funds, as opposed to distributing funds directly to governments, will likely address this challenge. Also, strong accounting, reporting and auditing processes are necessary to prevent potential diversion or inappropriate use.
- 3.3.4** Stable Funding. As discussed in the former challenge, there are many competing global issues that require funding and assistance, and it may be difficult to maintain a consistent source of international funding for pollution and health issues alone. In addition, the economic distress currently felt in wealthier nations will likely mean fewer resources available for international aid. It may also be a challenge to convince wealthier donor countries that they are either responsible in some way or have a stake in remediating toxic pollution sites in low- and middle-income countries. Because many of the sites that have been identified by Blacksmith Institute and the RETA are very small in scale and are not necessarily caused by a particular industry or multinational operation, donor countries may not feel obligated to address these problems. If no one company or individual can be held accountable for a pollution problem, responsibility for addressing this problem becomes very diffuse. All of the above issues will need to be given careful consideration when creating a long-term plan for avoiding insolvency for the Fund.
- 3.3.5** Liability and Decision-making. All of the possible liabilities involved with remediation work need to be considered during development of the Fund. There are certain risks inherent in both assessment and remediation programs, and the Fund must work out consistent mechanisms for addressing these problems. Potential liability problems could include: 1) an instance where an unforeseen event occurs or some part of the process goes wrong, such as an injury to a contractor or resident of the community, a fire, or a spill of toxins, etc.; or 2) either one or several members of the community near a remediation site may be unhappy with the final outcome of the project in that they may feel that the remediation either did not do enough to abate health impacts, or that the remediation itself exacerbated the health problems. Thus, it will be imperative to create agreements within countries that indemnify the Fund, the Secretariat, and any remediation contractors or workers from these kinds of liabilities. Participants in the Fund will need to agree that, except in cases of gross negligence, the parties involved in remediation projects need to be protected.

Though avoiding liability claims is of great importance, it will also be necessary to avoid situations where projects undertaken by the Fund are made too conservative or inefficient in order to avoid any kind of liability situation. Experience in highly developed countries has shown that projects forced to take highly conservative approaches to remediation are more costly and take far longer to implement. The impact of overly conservative or bureaucratic approaches is less cost effectiveness, fewer projects implemented and ultimately less public health benefit. Therefore, as the Fund is developed, it will be very important to establish understandings with member countries and stakeholders about the

levels of risk that will be acceptable during remediation projects. This will require a coordinated and clear decision-making process.

4.0 RECOMENDATIONS AND NEXT STEPS

4.0 Recommendations and Next Steps

Research conducted through the RETA has made major headway in assessing the logistical and financial viability of a Health and Pollution Fund.

4.1 Summary of Recommendations

- There is still a need to raise awareness about the scale of the health impacts from toxic hotspots in the international community. UN and multilateral agencies can facilitate introduction of these topics in their governing councils, conferences/events and meetings of the member states or states' parties at the Conventions dealing with chemicals and toxics. The link to health must be clearly made.
- Finance, health, and environment agencies in recipient countries are responsible for setting their own development agendas, and they are the primary beneficiaries of data collected through assessment activities. They must be informed about the scope of toxic exposures within their countries in order to be able to call on international resources. Data from the inventory assessments needs to be clearly presented to recipient country agencies, and a plan of action developed in each country for implementation of projects on a country-to-country basis.
- Current efforts must be coordinated, to maximize resources, and all options for a long-term fund should be researched and presented. This should include working within existing mechanisms, such as the UNEP Chemicals Financing Initiative, GEF, the Basel and Stockholm POPs Conventions, SAICM, the Montreal Protocol, the new Mercury treaty under development, as well as existing funding mechanisms. Sharing of information, knowledge and experience is very important—especially the review of different funding models.
- Additional site research is necessary in all low- and middle-income countries, but especially in Africa, Latin America, the Caribbean, the Middle East, and Central and Eastern Europe, to better understanding the global scope of toxic pollution problems.
- Sensitivity of data should be resolved where possible, and efforts should be made to use data in a more public way in order to raise awareness and further propel these issues into the development agenda.
- Developing national capacity within countries is critical to further identification of contamination hotspots. Efforts must continue to deal with these issues through policy, regulations and remediation activities.
- Financial support to pursue the above activities is crucial and necessary. All options should be explored, including working with the private sector as well as foundations.

4.2 Current Commitments

The below points are statements of action made by stakeholders consulted throughout the RETA, specifically to promote international movement towards the development of the Fund.

- Blacksmith Institute will continue to provide leadership in initiating clean-up pilots and developing long-term strategies for the problem globally.
- The European Commission will explore options for funding expanded inventory assessment work and pilot implementation of toxic legacy sites, with a focus on Eastern Europe, Central Asia and Africa. These efforts would include working with recipient countries on action plans for their own local inventories of toxic hotspots.
- The European Commission will encourage country programs that are specifically related to toxins. India has expressed interest in remediating used lead-acid battery sites, for example.
- The Inter-American Development Bank will explore options for funding expanded Global Inventory work in Central and South America.
- The World Bank is committed to further exploring the possibility of applying to the Development Grant Facility (DGF) to explore whether there is a niche (linked solely with clean-up of legacy pollution in low-income countries) for a Health and Pollution Facility and exploring the different governance mechanisms for it.
- JICA will entertain funding of project work on a country-by-country basis, based on the formal request from each recipient government. JICA suggests that the representatives of developing countries contact their field offices, prior to the formal request, to determine whether a proposed project is in line with JICA's "country assistance program" for each recipient country.
- UNEP will invite stakeholders to participate in the Consultative Process on Financing Options for Chemicals and Wastes.
- ADB will share its contacts in European agencies appropriate to the issue, and continue its support of inventory assessments in its region.

4.3 Next Steps

- As the implementing agency for the assessment inventory research, Blacksmith Institute will continue to seek funding from the international community to conduct additional studies. Existing inventory assessment data has been sufficient to be noticed by members of the international community and many national governments, despite remaining gaps.
- Significant efforts must continue to be made to promote the Fund among potential donor agencies. Broad support for dealing with chemicals/toxins on an international level has been expressed by key donors, governments and international agencies, including the World Bank, Inter-American Development Bank, the European Commission, the German Ministry of Environment, the Organization for Economic Cooperation and Development,

the World Health Organization, UNIDO, UNEP and many others via numerous interactions under this RETA.

- More national toxic action plan (NTAP) workshops will be conducted in potential recipient countries. Low- and middle-income country governments are beginning to demand an international response as seen through the positive outcomes of NTAP workshops in India and the Philippines.

4.4 Conclusion

Research conducted through the RETA has made major headway in assessing the logistical and financial viability of a Health and Pollution Fund.

Mitigating the negative impacts of pollution on human health in low- and middle-income countries is not an insurmountable task. Proven technologies for remediation projects in this field are cost effective and produce measurable results. The solutions for many of the problems uncovered through assessment activities are well known, and with proper funding, can be implemented on a global scale. Feedback from both donors and recipients indicates that there is value in advocating for a coordinated multilateral effort to mitigate acute health risks from industrial sources. There is commitment from a variety of stakeholders to gather more data, promote the research undertaken thus far and agree on a global response.

Over the course of the RETA, this multilateral effort has taken critical steps towards the creation of a consolidated mechanism, and will continue to do so until a Fund is realized.