Removal of Barriers to the Introduction of Cleaner Artisanal Gold Mining and Extraction Technologies: The GEF/UNDP/UNIDO Global Mercury Project (GMP)

“Global Partnership for Mercury Management in Artisanal and Small-Scale Gold Mining”

Washington DC, 15 June 2005

Pablo Huidobro
Global Mercury Project

**UN Millennium Development Goals**

- Eradicate extreme poverty and hunger
- Promote gender equality and empower women
- Reduce child mortality
- Improve maternal health
- Combat HIV/AIDS, malaria and other diseases
- Ensure environmental sustainability
- Achieve universal primary education
- Global partnership for development
Gold price increasing = More people involved

5 Year Gold ($USD)
June 03, 2000 to June 02, 2005
MAX $454.20 on Dec 02, 2004, MIN $255.95 on Apr 02, 2001
Artisanal and Small-Scale Mining (ASM)

- The term *artisanal* miners encompasses all small, medium, large, informal and illegal miners who use rudimentary processes to extract gold from secondary and primary ores.

<table>
<thead>
<tr>
<th>Conventional</th>
<th>Artisanal</th>
</tr>
</thead>
<tbody>
<tr>
<td>geology, drilling</td>
<td>feeling, testing</td>
</tr>
<tr>
<td>reserves</td>
<td>subsistence</td>
</tr>
<tr>
<td>engineering</td>
<td>curiosity, pay bills</td>
</tr>
<tr>
<td>sophisticated equipment</td>
<td>homemade devices</td>
</tr>
</tbody>
</table>
Gold ASM

- Number of ASM have increased in Asia and Africa and reduced a bit in Latin America

- In China: 3 to 15 million miners ...depending on how ASM is defined (Gunson & Veiga, 2002)

- Best guess: 20 to 30 Million ASM (50% involved in gold) in more than 55 countries

- More than 1000 tonnes/a Hg released by ASM worldwide

- This represents 1/3 of the anthropogenic Hg emissions

42% of the people in Sub-Saharan Africa makes US$ 1/day
“More and more women and kids are getting involved in ASM”

Ghana, 2000
More women are getting directly involved in ASM

“Especially doing the (dirty) amalgamation work”

Indonesia, 2003
In the world this can represent as much as 9 million women directly employed.
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Mining & Child Labor

Currently this can be >2 million children (ILO, 2004)

Laos, 2003
• ASM is the main environmental and social problem related to mining activities in developing countries

• Most people in developing countries become miners to escape complete social marginalization

• Governments are generally not prepared to deal with issues related to artisanal mining

• In many rural regions, artisanal mining is an island of “prosperity” in a sea of poverty
Mercury is just the Tip of the Iceberg

- Mercury Pollution
- Environmental Impacts
- Degradation of Socio-Economic Conditions
- Health Impacts
- Lack of Economic Alternatives
Mercury is just the Tip of the Iceberg

- Disrespect for cultures (conflicts)
- Degradation of moral values
- Drinking and drug problems
- Tax evasion
- Money laundering & smuggling
- High cost of living in mining villages
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- Tanzania
- Sudan
- Brazil
- Indonesia
- Laos
- Zimbabwe

Started on Aug. 2002
It will last until 2nd half of 2006
What does the GMP hope to accomplish?

- **Improvements in community health**
  - Reduce mercury exposure
    - Miners and processors (both men and women)
    - Families and Vulnerable populations
  - Promote health seeking behaviors

- **Improvements in community quality of life**
  - Income
    - More gold; possible economic diversity
  - Security (family and community)
    - Greater participation in formal economy
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Objective 1: organize
Objective 2: awareness
Objective 3: monitoring
Objective 4: databank
Objective 5: demonstrate
Objective 6: policy
Objective 7: dissemination
**Project sites**

**Brazil**

- **Creporizinho/Para in Tapajós area**
  Accessible by air-taxi from Itaituba (around 500 km)
  From landing strip one hour drive by four-wheel drive car

- **São Chico/Para, Tapajós area**
  Accessible by air-taxi from Itaituba (around 500 km)
  From landing strip 10 min drive by car
**Project sites**

**Indonesia**
- Galangan mine site, draining to Katingan River (Central Kalimantan), draining to Java Sea
  Accessible by road from Palangkaraya
  2,000 people
- Talawan/Manado, river draining to Celebes Sea (24 km to shore)
  Accessible from Manado by road
  Hard rock gold mining

**Lao PDR**
- Luang Prabang, along Mekong at confluence with Nam Ou
  Accessible by boat
  Mining community of some 1,000 people in different villages
## Project sites

### Sudan
- **Gugub, 50 km from Al Damazin draining to Blue Nile**  
  Accessible by road  
  Hard rock and alluvial mining

### Tanzania
- **Rwamagaza, draining to Lake Tanganyika**  
  Accessible from Geita on dirt road

### Zimbabwe
- **Chakari, draining to a tributary of the Zambezi**  
  120 km away from Harare, close to main road
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Training

- Training courses designed to address specific local needs and the develop national (or in-country) capacity which is technically and financially sustainable
- Training packages take into account local technologies but meet international educational standards
- Training package is replicable and easily adoptable to suit specific country situations
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✓ environmental and health assessment;
✓ build capacity in local laboratories to assess impact of mercury pollution;
  • create awareness to reduce mercury pollution caused by artisanal miners on international waters;
  • introduce cleaner technologies for gold extraction and train miners (demonstration sites);
  • develop capacity and regulatory mechanisms within Government that will enable the sector to minimize mercury pollution.
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Protocols and Questionnaires for the Environmental and Health Assessments

- Protocols applied for all environmental and health surveys in the 6 countries advising on standardized, reproducible and simple procedures for assessing countries
  - mercury losses;
  - biota selection;
  - sampling;
  - sample preparation & preservation;
  - analysis, questionnaires for health the survey, etc…

- Review of Protocols by scientists from University of Montpellier, Munich, CETEM
- Review of Protocols by US Environmental Protection Agency
Assessment of Environment in Hot Spot Areas

- 500-700 analyses of sediments, soil, dust, water, bio-indicators

- Analyses from samples of the habitat/agricultural sites in the vicinity of the selected small-scale mining activities

- Evaluation of the nature and extent of mercury pollution in produce, especially in those which are part of the main diet

- Evaluation of the nature and extent of mercury pollution in the river system adjacent to the hot spot area
Assessment of Health

• Analyses of human specimens from a pre-determined cohort of approx. 200 people in each hotspot area and 50 persons from a non-exposed group

• Conduct clinical/neurological/toxicological tests according to the state of the art

• Check neurological disturbances, behavioral disorders, motor neurological functions, cognitive capabilities, balance, gait, reflexes, etc..

• Information on communicable disease prevention practices
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Sociological Surveys

- Providing the insight into the sociological patterns of gold mining communities
- Describing different processes of gold production in the six countries
- Describing the use of mercury, possible pathways and environmental as well as health implications deriving from these working practices
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Legal Advice includes

• Reviewing relevant legislation, policies and literature on the subject based on US EPA’s study

• Assessing the stakeholders’ legal needs

• Discussing present mining and environmental legislation and policies in the national and global context at governmental level

• Recommending possible legal and administrative framework to address the various environmental challenges of small-scale gold mining
Objective 7: Promote the dissemination of the project results and identify opportunities that will allow the project to continue beyond the three-year time frame through self-financing and to initiate and conduct Donor Conferences to solicit financing

Close cooperation of PCU in effect with
- UNEP Chemicals in establishing/refining the Global Mercury Assessment
- WHO in preparing a cooperation project in Indonesia
- US EPA in using their mercury-related expertise

Donor Seminars
- Organized in 2003 in Jakarta and co-chaired by WHO Jakarta, UNIDO Jakarta and PCU
- Under preparation with Government of the Philippines, UNIDO Manila and PCU
## Origin of funds for projects:

<table>
<thead>
<tr>
<th>Source</th>
<th>US$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular UNIDO Budget</td>
<td>130,000</td>
<td>2</td>
</tr>
<tr>
<td>UNDP</td>
<td>280,000</td>
<td>3</td>
</tr>
<tr>
<td>UNDP/GEF</td>
<td>350,000</td>
<td>4</td>
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</table>

### Donor funding:

<table>
<thead>
<tr>
<th>Source</th>
<th>US$</th>
<th>%</th>
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<tbody>
<tr>
<td>Government of Austria</td>
<td>70,000</td>
<td>1</td>
</tr>
<tr>
<td>Government of France</td>
<td>250,000</td>
<td>3</td>
</tr>
<tr>
<td>Government of Japan</td>
<td>350,000</td>
<td>4</td>
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<tr>
<td>GEF Global Mercury Project</td>
<td>6,806,800</td>
<td>83</td>
</tr>
</tbody>
</table>

**Total Budget since 1995:** 8,236,800 100
Thank you for your attention

For additional information please contact the Project Coordination Unit:

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