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# United Nations Environment Programme

**Global Mercury Partnership Partnership Advisory Group Second meeting** Geneva, 21 – 22 September 2010

#### Partnership area business plans

### **UNEP Global Mercury Partnership**

#### Note by the Secretariat

UNEP Governing Council Decision 24/3 called for business plans to be developed under the UNEP Global Mercury Partnership. The Overarching Framework of the UNEP Global Mercury Partnership sets out a business plan template to provide guidance to the partnership areas in developing the business plans.

The annex to the present note includes the business plans for the seven existing partnership areas: mercury releases from coal combustion; mercury cell chlor alkali production; mercury in products; mercury transport and fate research; mercury in artisanal and small-scale gold mining; mercury waste management and mercury supply and storage. Also annexed to the present note is a list of current partnership area members.

The Partnership Advisory Group may wish to review the business plans to:

- i) Encourage the work of the partnership areas.
- ii) Advise the partnership areas on the consistency of their business plans with the overall goal and the operational guidelines of the UNEP Global Mercury Partnership.
- iii) Identify overarching issues and lessons learned.
- iv) Promote synergy and collaboration across partnership areas.
- v) Promote synergy and collaboration within the UNEP Mercury Programme and with other international agreements and processes.

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#### Part i)

# Business Plan of the Mercury releases from coal combustion partnership area, 19 August 2010

(NOTE: This is the business plan version of 4 February 2009 with editorial revisions and updates proposed by UNEP.)

This Business Plan describes the activities of the *Reduction of Mercury Releases from Coal Combustion* partnership area of the United Nations Environmental Programme (UNEP) Global Mercury Partnership. It serves as a planning and communication vehicle both for Partners and others.

The purpose of the business plan is to provide a framework for developing and implementing projects. The business plan is to serve as a resource for providing a common, cohesive structure for implementing the UNEP Global Mercury Partnership.

The partnership is open for government and stakeholder participation. In UNEP Governing Council Decision 24/3 part IV paragraph 27, UNEP is tasked with working in consultation with Governments and stakeholders to strengthen the UNEP Global Mercury Partnerships. New activities and partners are encouraged within the UNEP Global Mercury Partnership.

Current partnership area lead:

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#### I. Summary of the Issue

- Mercury is found in trace quantities in coal. Mercury concentrations in coal vary within the different coal types. It is estimated that upwards of 60 %<sup>1</sup> of mercury emitted from anthropogenic sources to the atmosphere comes from coal combustion.
- The major pathway for mercury releases from coal combustion is via emissions to the atmosphere. To a
  lesser extent some mercury may be released in wastes/residues or water (in the case of coal washing, for
  example) and soil, and can be problematic if not properly controlled.
- Rapid development in many parts of the world has led to an unprecedented rate of construction of large coal-fired units. Consequently, they are increasingly considered the dominant source of global mercury emissions.
- Coal fired power emissions are a multi-pollutant challenge. In most instances, decisions related to coal fired utilities are driven by energy security, resource availability, emissions of a variety of air pollutants (such as NOx, SO2, PM, CO2), and other considerations. Mercury emission reductions from coal combustion occur primarily as a result of priority efforts to address conventional air pollution impact for this sector or otherwise improve the efficiency of energy production. For example, flue gas cleaning technologies for particulates can reduce mercury emissions as a co-benefit of controlling other pollutants (often in the range of about 50-90%).
- Coal is used as a fuel in a variety of settings beyond large scale power plants. The nature of these
  settings may pose different challenges with respect to available response measures and proposed
  partnership activities:
  - <u>Cement Production</u>: The combustion of coal in cement production (and related release of mercury to the atmosphere) is believed to be a significant source of mercury releases to the environment. In addition, the use of fly ash in cement and gypsum in wallboard manufacture could potentially lead to the later release of some mercury into the environment.
  - <u>Home Uses:</u> In some regions of the world, coal is used for home heating and cooking where the coal is burned in simple, sometimes unvented, household stoves, directly exposing people to emissions of mercury, and/or other toxic pollutants.
  - <u>Small scale boilers:</u> Many small scale industrial facilities use coal fired boilers. The problems and needs associated with small scale industrial facilities may require special consideration under the partnership.

#### II. Objective of the partnership area

The objective of this partnership area is continued minimization and elimination of mercury releases from coal combustion where possible.

The partnership area aims to supplement existing programs in key, strategically selected ways that ensure that reductions are globally significant as part of a multi-pollutant reduction approach. The partnership area aims to support such efforts while providing additional information on cost effective approaches for enhancing reductions of mercury emissions, particularly for developing nations and countries with economies in transition.

NOTE: Setting numerical targets to achieve under the partnership area has been discussed and may be revisited. Updated inventory information should enable the partnership to make a more advanced assessment of a baseline scenario and project a goal.

<sup>&</sup>lt;sup>1</sup> This is an estimate for the year 2000. Reference : E. G. Pacyna et al. 2006. Efforts are currently underway to update these estimates.

#### **III:** Priority actions

- 1. Encourage use of best available technology and best environmental practices to reduce or eliminate mercury releases into the environment:
  - Prepare guidance document to guide countries. In doing so, review available information on best available techniques (BATs) / Best Environmental Practices (BEPs) for new and existing sources. Amend and supplement this information, as appropriate, with consideration of how it applies to various country situations.
  - ii) Provide information and technical assistance on methods to optimize pollution control systems to improve mercury control as a co-benefit.
  - iii) Identify mercury specific technologies and facilitate exchange of information on emerging technologies, for existing and new facilities.
- 2. Assist countries (including providing training) in evaluating the environmental impacts of coal combustion and evaluating the opportunities to achieve multi-pollutant emission reductions with associated benefits for reduction in both conventional air pollution (such as SO2, NOx, and PM) and mercury emissions, and to assist countries in assessing their situation, interests and needs.
- 3. Support the development and/or improvement of mercury emission inventories to evaluate both mercury emissions and the effectiveness of emission reduction approaches.
- 4. Increase the awareness of mercury as a pollutant of concern through increased outreach efforts and collaboration with complementary programmes (such as at UNFCC level), including consideration of alternative energy sources and energy efficiency.

#### **IV. Ongoing and Planned Partner Efforts and Timelines**

"Reducing Mercury Emissions from Coal combustion in the energy sector"

This is a three year project funded by the European Commission (1 million Euro) which started in 2009. In-kind assistance has been provided by the US EPA with respect to the use and promotion of the mercury measurement tool-kit during mercury measurement campaigns in South Africa and Russia. Specifically the project aims to develop guidance material on how to minimize mercury releases:

- 1. by optimizing multi-pollutant control techniques, including improved energy efficiency to reduce mercury-emissions;
- 2. by collecting information to improve accuracy of future emissions inventories for the sector, including technical information on power plants and control technologies used, analysis of mercury concentrations in coals used by power plants and measurements of mercury in stack flue gases;
- 3. by implementing pilot studies to demonstrate the efficiency of multi-pollutant co-benefit techniques and by building local/national capacity on these issues, also with the aim of transferring information and lessons learnt to facilities and governments in other countries.
- The actions are focused on China, India, Russia and South Africa, but the results will be of interest to all countries with coal combustion power plants (duplicated below)
- Additional in-kind assistance has been provided by the US EPA with respect to the use and promotion of the mercury measurement tool-kit during mercury measurement campaigns in South Africa and Russia. In-kind assistance has been provided by the USGS (Geological Survey) towards providing free analysis of coal and ash samples for the mercury monitoring project in South Africa.

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• As part of the project above, the partnership is developing Process Optimization Guidance for mercury emissions from coal combustion, building on existing information. This work should be completed by end of 2010. It is available at the following web-link:

http://hqweb.unep.org/hazardoussubstances/Mercury/PrioritiesforAction/Coalcombustion/ProcessOp timizationGuidanceDocument/tabid/4873/language/en-US/Default.aspx

**Cement Production:** 

- The European Cement Association compiled worldwide data on the status of mercury emissions
  from cement kilns to share state of the art knowledge about mercury formation mechanisms in
  cement production processes and to show how it is possible to control and minimize mercury
  emissions from cement kilns through the use of integrated process optimization. This report should
  provide the most comprehensive data set available on mercury emission from the cement industry
  collected from public literature, scientific databases and individual company measurements.
- The United States is working with China State Environment Protection Agency (SEPA), Lawrence Berkeley National Laboratory, the China/US/World Business Councils for Sustainable Development, and other partners to analyze and reduce multi-pollutant emissions from cement kilns. The analysis has demonstrated significant mercury emissions at test kilns, and is developing options for improving combustion efficiency and reducing emissions. This project also involves the Cement Task Force of the Asia Pacific Partnership.

#### **V. Opportunities**

Opportunities are included for implementing countries to consider and for donor consideration to fund:

#### For Emissions Inventories:

Specialist assistance could be provided to allow the production of up to date emission inventories in further targeted regions. This would include, where necessary, help with mercury measurement in both coals and stack gas emissions. Guidance could also be given on how to include current and impending emission legislation and control technology application in future emission estimates.

#### Further complementary and specific pilot projects (including bilateral projects):

These could include the application and demonstration of any of the approaches outlined in the POG. Members of the coal partnership could be made available at national workshops in target countries to work with local authorities, utilities, researchers and interested parties to facilitate the exchange of knowledge and information on mercury control options, from coal switching and cleaning to more complex plant modifications.

#### Residential coal use:

Is an issue of significant local human health concern as well as a large contribution to atmospheric mercury releases. This is an area for consideration in future work plans.

For example, in the report 'A synopsis document- Mercury Knowledge & Gaps in the African Region' it was identified that widespread use of wood and coal for household energy consumption is common to all of the reporting countries within the African sub-regions, and more information is needed about the mercury content and emissions of mercury from coal used in domestic household settings in order to better judge the magnitude of this emissions source in Africa.

#### **VI.** Evaluation

The partnership areas reports biennially to UNEP in accordance with the UNEP reporting format. Reporting includes monitoring performance (tracking partnership activities and partner contributions) as well as assessing effectiveness (measuring the impact of partnership activities on target beneficiaries).

Amongst other means, results will be characterized in terms of:

- Availability of guidance tools to assist countries in achieving emission reductions.
- Emission reductions achieved.

The latest evaluation report is available as an Information Document to the second meeting of the Partnership Advisory Group, Document UNEP(DTIE)/Hg/PAG.2/INF 1 - Reporting of the mercury emissions from coal partnership area.

#### **VII. Resource Mobilization**

Partnerships and the associated business plans are a way of mobilizing funding in a systematic, focused and harmonized way. The Partnerships' objectives and business plans should provide clarity for potential donors and finance institutions.

The partnership has been able to generate significant and targeted actions with the funding from the European Commission from 2009-2011. A strategy for funding beyond 2011 will need to be considered.

The partners are encouraged to contribute financially and also to offer in-kind assistance.

Partners can develop specific initiatives, work with non-partners, or pursue projects consistent with partnership objectives. It is hoped that the Partnership will serve as a mechanism to consolidate and leverage funding for large, strategic projects.

An important opportunity to leverage resources lies in the significant partnership efforts currently underway to address conventional pollution (eg, SOx, NOx, CO2) from this sector. These efforts alone, or built upon with relatively little additional resources, can lead to increased awareness of mercury as a pollutant of concern and significant reductions in mercury emissions.

Partners are encouraged to apply for funding to relevant funders and regional organizations. Developing countries and countries with economies in transition can also submit requests for funding to UNEP under the UNEP Mercury Small Grants Programme.

#### **VIII. Business Planning Process**

The business plan will be updated regularly, at intervals deemed appropriate by the partners.

Table 1: Administration and Management Support		Source of Support
Partnership Lead	<ul> <li>Facilitation and support of the partnership.</li> </ul>	IEA Clean Coal Centre
UNEP Secretariat Support	<ul> <li>Administrative and secretariat support.</li> <li>Disseminate information to the Partners on relevant issues.</li> <li>Assist the lead in following up activities by partners.</li> <li>Other tasks as requested.</li> </ul>	In-kind support from UNEP
Face to face meetings	Estimated one per year. All attempts will be made to host face to face meetings of the partnerships in the most cost effective way (e.g. back-to-back with other related meetings and have the ability to call in).	UNEP will support some limited travel of developing countries/NGOs in face to face meetings, rest is in-kind support from partners for their own travel.
Teleconferences	Estimated 3 per year	In-kind support from USA

#### IX. Linkages

Asia Pacific Partnership (Australia, Canada, China, India, Japan, Republic of Korea, United States). Under the Asia-Pacific Partnership (APP) on Clean Development and Climate, partner countries have agreed to cooperate on development and transfer of technology to address both greenhouse gas emissions and air pollution. A major focus of the APP is the coal fired power sector with the objective of improving both its energy efficiency and environmental performance. Progress made under the APP will reduce greenhouse gas emissions and emission of conventional air pollutants and, as a significant co-benefit, also reduce mercury emissions. Multiple projects are underway directed at Sox emission control, improved efficiency and demand reduction; these have significant mercury reduction co-benefits. Several projects are underway and planned including for the cement sector. efficiency improvements in existing facilities, use of alternate (non-coal) based fuels such as biofuels and waste materials.

**Development of Emission Inventories** – UNEP with support from the Government of Denmark recently updated the 'Toolkit for Identification and Quantification of Mercury Releases' based on initial experiences in using the toolkit. The toolkit is a key information gathering tool available to countries in assessing their national situation.

Contact person: Gunnar Futsaeter, UNEP Chemicals.

<u>Mercury Fate and Transport Partnership</u> – The partnership has a strong interest in improving emissions monitoring, data collection and reporting of mercury emissions; including contributing to published data dissemination to support modeling efforts assessing extent of problem, and against which to demonstrate progress. The coal partnership will link closely with the fate and transport partnership.

#### **X.** Partners

Please see Part viii of this document for the current list of partners that have submitted letters of support to the UNEP Global Mercury Partnership. There are a number of participating partners that have not officially submitted support letters.

For further details, please go to the list of partner support letters posted at the following web address: <a href="http://hqweb.unep.org/hazardoussubstances/Mercury/InterimActivities/Partnerships/CurrentPartners/tabid/3437/language/en-US/Default.aspx">http://hqweb.unep.org/hazardoussubstances/Mercury/InterimActivities/Partnerships/CurrentPartners/tabid/3437/language/en-US/Default.aspx</a>

Other partners are welcome to self identify to the partnership.

XI. Completed projects (moved from section iv of the business plan)





https://www.yunbaogao.cn/report/index/report?reportId=5 15723