SOUND MANAGEMENT OF CHEMICALS

UNEP’S CONTRIBUTION TO THE ACHIEVEMENT OF THE 2020 GOAL
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Cover photo: Rain drops falling in rain water Pune, India by Yogesh S. More
SOUND MANAGEMENT OF CHEMICALS

UNEP’S CONTRIBUTION TO THE ACHIEVEMENT OF THE 2020 GOAL
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>APELL</td>
<td>Awareness and Preparedness for Emergencies at Local Level</td>
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<td>ASGM</td>
<td>Artisanal and small-scale gold mining</td>
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<td>CAPP</td>
<td>Chemical Accident Prevention and Preparedness Programmes</td>
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<td>CiP</td>
<td>Chemicals in Products</td>
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<td>CSOs</td>
<td>Civil society organizations</td>
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<td>DELC</td>
<td>Division of Environmental Law and Conventions</td>
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<td>DTIE</td>
<td>Division of Technology, Industry and Economics</td>
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<td>EADAP</td>
<td>East Africa Dental Amalgam Phase Down</td>
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<td>EDCs</td>
<td>Endocrine-Disrupting Chemicals</td>
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<td>EST</td>
<td>Environmentally sound technologies</td>
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<td>ETB</td>
<td>Environment and Trade Branch</td>
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<td>GCO</td>
<td>Global Chemicals Outlook</td>
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<td>GEF</td>
<td>Global Environment Facility</td>
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<td>GPA</td>
<td>Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities</td>
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<td>GPNM</td>
<td>Global Partnership on Nutrient Management</td>
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<td>GPWM</td>
<td>Global Partnership on Waste Management</td>
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<td>ICCA</td>
<td>International Council of Chemicals Associations</td>
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<td>ICCM</td>
<td>International Conference of Chemicals Management</td>
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<td>IETC</td>
<td>International Environment and Technology Centre</td>
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<td>IGOs</td>
<td>Intergovernmental organizations</td>
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<td>INC</td>
<td>Intergovernmental Negotiating Committee</td>
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<td>IOMC</td>
<td>Inter-Organization Programme for the Sound Management of Chemicals</td>
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<td>ISWM</td>
<td>Integrated solid waste management</td>
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<td>JEU</td>
<td>Joint Environment Unit</td>
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<td>LDCs</td>
<td>Least Developed Countries</td>
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<td>MEA</td>
<td>Multilateral Environment Agreement</td>
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Foreword

In 2006, in response to the growing urgency for sound management of chemicals throughout their life cycle for sustainable development, the Strategic Approach to International Chemicals Management (SAICM) was adopted as a cross-sectoral and multi-stakeholder initiative to protect human health and the environment. Since then, UNEP has continuously provided substantive support to the SAICM process. This has included aligning its work with other international organizations and supporting multilateral environmental agreements (MEAs) related to chemicals and waste, as well as capacity building at the country level.

Delegates to the United Nations Environment Assembly adopted the Special Programme to support institutional strengthening for sound management of chemicals and wastes at national level as one element of an integrated approach to financing chemicals. Furthermore, recognizing that current trends in chemicals management have far-reaching economic, social and health implications, governments targeted chemicals and wastes in a number of Sustainable Development Goals (SDGs), such as health, water and consumption and production patterns.

This brochure provides a snapshot of UNEP’s role in stimulating a cross-sectoral, participatory and partnership-based set of interventions. Together, the partners are promoting the idea of prevention — managing harmful substances and waste to avoid problems before they occur rather than mitigating negative impacts after the damage has been done.

UNEP is a critical and invaluable partner in SAICM, uniquely positioned to develop practical guidelines; increase the effectiveness of its normative work; integrate the sound management of harmful substances and hazardous waste into macroeconomic and sectoral policies at country level; and generate behavioural changes within civil society at large.

UNEP’s support to SAICM underpins the complementary approaches of sustainable development and a green economy. As the post-2015 development agenda moves ever closer, it will be crucial to maintain a political and technical focus on the importance of sound management chemicals within the context of the achievement of the SDGs.
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Pillars glowing blue with radiation.  
*Photo: Peter Essick*
Introduction

The Strategic Approach to International Chemicals Management (SAICM) is an important policy framework for ensuring the sound management of chemicals. Developed during 2003-05, it was adopted at the first session of the International Conference of Chemicals Management (ICCM) in Dubai, February 2006. Its overall objective is the sound management of chemicals throughout their life cycle so that, by 2020, they are produced and used in ways that minimize significant adverse effect on human health and the environment. This “2020 goal” was adopted by the World Summit on Sustainable Development in 2002 as part of the Johannesburg Plan of Implementation. It was further supported by the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012.

SAICM is distinctive in its insistence that chemical safety is a sustainable development issue, while its cross-sectoral and multi-stakeholder nature also make it comprehensive.

At the request of the ICCM, UNEP and the World Health Organization (WHO) agreed to provide the Secretariat for SAICM. UNEP’s implementation of SAICM has, therefore, followed two strands:

- Support for Secretariat functions
- Implementation of environmental sector activities and contributions to cross-sectoral initiatives

This brochure provides an overview on UNEP’s activities to support these two strands.
SAICM Secretariat functions

The SAICM Secretariat continued to support SAICM stakeholders in implementing its overarching policy strategy towards achieving the 2020 goal. Such activities included the organization of meetings of the International Conference on Chemicals Management, as well as preparatory meetings both at the regional and global level. Other activities included the organization of sectoral consultations for SAICM stakeholders to promote information exchange and scientific and technical cooperation on a range of issues contained in the overarching policy strategy. The SAICM Secretariat also supported its stakeholders in raising awareness on the five emerging policy issues adopted under SAICM and in further promoting action in those areas.

These areas included those emerging policy issues for which UNEP is the lead or co-lead, namely lead in paint, chemicals in products and endocrine-disrupting chemicals. Cooperation between the SAICM Secretariat and leading governmental and intergovernmental organizations has further strengthened the mainstreaming of sound management of chemicals into their respective programmes of work. Efforts to further engage with industry and civil society as key stakeholders in SAICM continued through ongoing dialogue and joint activities.

Figure 1: Proportion of funding granted for LDCs and SIDS (US$ and %)

Water with air bubbles
Photo: Ralph Kerpa
The Quick Start Programme

The Quick Start Programme (QSP) comprises a UNEP-administered trust fund, and multilateral, bilateral and other forms of cooperation. Its main goal is to “support initial enabling capacity-building and implementation activities”. The Trust Fund (QSPTF) has the specific role of providing seed money to support the QSP’s objective and strategic priorities in developing countries and countries with economies in transition.

From 2006 to June 2015, the QSP mobilized more than US$46.8 million. This amount includes approximately US$37 million in cash contributions to the Trust Fund and over US$9.75 million in cash and/or in-kind contributions from project implementers and Executing Agencies. In addition, US$69.3 million in non-Trust Fund contributions were reported between 2006-14.

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1 a. Development or updating of national chemical profiles and the identification of capacity needs for sound chemicals management
b. Development and strengthening of national chemicals management institutions, plans, programmes and activities to implement the Strategic Approach, building upon work conducted to implement international chemicals-related agreements and initiatives
c. Undertaking analysis, interagency coordination and public participation activities directed at enabling the implementation of the Strategic Approach by integrating—i.e. mainstreaming—the sound management of chemicals in national strategies, and thereby informing development assistance cooperation priorities.
The QSPTF has been primarily responsible for enabling activities related to capacity building and technical cooperation. Under the Trust Fund, 184 projects were approved for funding in 108 countries, including 54 Least Developed Countries (LDCs) and/or Small Island Developing States (SIDS). Out of the 184 projects, 21 are implemented by civil society organizations (CSOs).

The QSP is demonstrating the effectiveness of a multi-donor funding mechanism that responds to defined needs. Moreover, its practice of securing wide ownership of projects and initiatives has broader implications for other SAICM implementation activities. The multi-sectoral and multi-stakeholder approaches help strengthen governance structures in-country to help implement SAICM. At the same time, the projects foster collaboration among governmental institutions, and with other actors such as CSOs, think tanks and the general public.
Implementation of environmental sector activities under SAICM

UNEP has implemented environmental sector activities mainly through the sub-programme on harmful chemicals and hazardous waste (2010-13). It now operates under the sub-programme on chemicals and waste (2014-17). The Chemicals Branch in the Division on Technology, Industry and Economics (DTIE) covers most of the chemicals activities, while the International Environment and Technology Centre (IETC) covers most of the waste issues. However, other branches in DTIE, as well as UNEP divisions and regional offices, are participating in a number of projects.

Activities relate to all five objectives of the overarching policy strategy of SAICM:

- Risk reduction
- Knowledge and information
- Governance
- Capacity building and technical cooperation
- Illegal international traffic

In addition, activities relate to Chapter V of the overarching policy strategy on financial considerations. This included particular actions at the national or sub-national levels to support financing of SAICM.

In 2011-15, UNEP has participated either as a lead or in partnership with other intergovernmental organizations in a number of emerging issues:

- Chemicals in products (UNEP lead)
- Lead paint (UNEP in partnership with WHO)
- Endocrine-disrupting chemicals (UNEP in partnership with WHO and OECD)
The table below presents the activities that will be described in the following pages, and their relation to the objectives of the overarching policy strategy, financial considerations and the UNEP entity responsible for the activity.

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<thead>
<tr>
<th>Activity</th>
<th>Risk Reduction</th>
<th>Knowledge and information</th>
<th>Governance</th>
<th>Capacity building and technology</th>
<th>Illegal international trade</th>
<th>Financial considerations</th>
<th>UNEP entity</th>
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<tr>
<td>1. Assessments of global trends in use of chemicals and its consequences</td>
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<td>3. Activities related to mercury</td>
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<td>4. Development of the Minamata Convention on Mercury</td>
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<td>5. Nutrients management</td>
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<td>6. Industrial accidents</td>
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<td>DTIE, SLCI</td>
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<td>7. Waste</td>
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<td>DTIE, SLCI</td>
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<td>8. Development of legislation, administrative infrastructures and financing</td>
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<td>9. Emerging issues</td>
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<td>10. Key regional activities</td>
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<td>Regional Offices, DTIE, Chemicals Branch, IETC</td>
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<td>11. Financing of sound management of chemicals</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
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<td>DTIE, Chemicals Branch, SLCI, ETB, DELC</td>
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Assessment of global trends in use of chemicals and its consequences

Global Chemicals Outlook
In 2012, Global Chemicals Outlook (GCO) presented the first comprehensive report assessing the changes and trends affecting the production, use and disposal of chemicals. It measured these trends against a set of health, environmental, economic and policy facts, evidence and arguments to make a convincing economic case for investing in sound management of chemicals. In so doing, it mobilized support and commitment from governments, private sector, civil society, academia and scientific societies towards a comprehensive, coherent and complementary policy approach to chemicals.

The Governing Council recognized the significance of GCO’s findings and recommendations. In response to the Council’s request for further work on the issue, UNEP is preparing a new edition of Global Chemicals Outlook. It will identify data gaps; explore adoption or development of metrics and analytics, particularly for the chemical intensification of economies; and focus more concretely on opportunities and barriers for promoting sound management of chemicals at the regional level.

Costs of Inaction
UNEP’s 2013 report, the Costs of Inaction on the Sound Management of Chemicals, shows that environmental and health costs from the production, use and disposal of harmful chemicals are borne by all segments of society, including business. These costs, both environmental and health-related, are simply too high. To reduce costs and achieve national development goals more effectively, the report recommended improvements in chemicals management.
The international environmental policy community widely believes that work to improve the sound management of chemicals (SMC) is seriously underfunded. This is due to a lack of a global consensus on the costs of inaction on SMC. In particular, the inconsistent message on the economic costs of inaction makes it all the more difficult for national and international decision makers to make SMC a priority.

This initiative therefore aims to raise political awareness of the economic benefit of investing in the sound management of chemicals. This includes strengthening the rationale for inclusion of SMC priorities into national development plans, and building capacity for ongoing assessment of the costs of inadequate chemicals management at national and international levels. The Costs of Inaction thus makes an economic business case for increasing investments in SMC by providing a more complete picture of the environmental and health costs of chemicals mismanagement.

To better complement this work on the costs of inaction, greater emphasis is needed on the social and economic benefits of sound chemicals management. Integrating chemicals management into social and economic development planning and poverty reduction strategies can create important opportunities for additional resources. However, more research and communication on the cost of actions and benefits of sound management of chemicals are needed to make a case for a preventive approach and generate investments in improving capacities for chemicals management.
Activities related to lead and cadmium
Countries, including major groups and stakeholders, are increasingly turning to scientific and technical knowledge and tools to implement sound chemicals management and related MEAs. To that end, UNEP has been producing scientific and technical services through multi-stakeholder partnerships. The final reviews of scientific information on lead and cadmium, for example, highlight existing and future national actions, including legislation, relevant to lead and cadmium.

These publications have built the capacities of governments, the private sector and civil society to take action on risks. Key scientific findings for lead and cadmium are available in all UN official languages at http://www.unep.org/chemicalsandwaste/Metals/LeadandCadmium/Publications/tabid/1059806/Default.aspx

Activities related to mercury
**Capacity building in artisanal and small-scale mining in Indonesia**
UNEP is working with miners, non-governmental organizations (NGOs) and the Government of Indonesia to reduce mercury use in artisanal and small-scale gold mining (ASGM) and raise awareness of health impacts. UNEP partnered with a local NGO to reduce mercury released into the environment by an estimated 3,000 kg through the installation of 10 sluices, 90 retorts and 50 water box condensers. In addition to training miners, the project promoted awareness of the risk of mercury exposure in local communities. Local mining offices, research institutes and mining NGOs also worked with the government to develop a national strategic plan for the sector that embraced broader
sustainable development objectives. This plan now serves as the basis of Indonesia’s Minamata Convention ASGM National Action Plan. UNEP has begun a follow-up project to build on the success of the previous work.

**Global Mercury Assessment a2013**
The Global Mercury Assessment provides the most recent information available on worldwide atmospheric mercury emissions, releases to the aquatic environment and the environmental transport and fate of mercury. A summary report for policymakers accompanies a fully referenced technical background report. The assessment was developeda in response to Decision 25/5, paragraph 36 of UNEP’s Governing Council.

It has become an important basis for the Intergovernmental Negotiating Committee (INC) on Mercury in forging agreement on emission sectors to be covered by the Minamata Convention. This achievement relates to the SAICM objectives of risk reduction, and information and knowledge.

**Reducing mercury emissions from coal combustion in the energy sector**
UNEP provided technical support and capacity building to China, India, the Russian Federation and South Africa on mercury emissions from the coal-fired power sector. The project analyzed mercury content of coal; developed emissions inventories and projections; provided training in mercury emissions

*Figure 5: Mercury emissions by activity*
measurements; and recommended actions to reduce emissions. The results were an important input into the INC process.

In addition, UNEP pursued three demonstration projects. Two projects in the Russian Federation demonstrated the efficiency of other conventional control techniques, as well as dedicated mercury control techniques, in capturing mercury, and built local/national capacity on these issues. The other project in South Africa showed how coal selection, coal washing and operational changes can optimize mercury capture in the power sector.

**Guidance and support to countries in developing national inventories of mercury emissions**

UNEP conducted training workshops for countries on its Toolkit for Identification and Quantification of Mercury Releases, and helped develop national inventories. This work included training of 18 future trainers in the use of the toolkit. UNEP, in cooperation with the United Nations Institute for Training and Research (UNITAR), has developed an online training course on the UNEP Toolkit to broaden its access to a larger audience. The e-learning platform is a useful supplement to actual training workshops for potential new national experts and for the future trainers. It will make the UNEP Toolkit easily accessible and more user friendly, encouraging more countries to develop their inventories.

**Mercury reduction in the Chlor-Alkali sector**

The Mercury Partnership works to significantly minimize and eliminate potential mercury releases and emissions from chlor-alkali production facilities, contributing to SAICM’s objective of risk reduction from mercury. Between 2010-13, 26 mercury-cell facilities have implemented mercury-free technologies. This led to a 22 per cent decrease of global chlorine production with mercury cell.
Mercury waste storage and disposal
Options for treatment, storage and disposal of waste mercury such as stabilization and solidification are at different stages of development and commercialization. Specially engineered landfills or salt mines are potential options for the final disposal of stabilized mercury. These options are presented in UNEP’s *Practical Sourcebook on Mercury Waste Storage and Disposal* that contributes to the risk reduction for mercury, an element that cannot be destroyed. The Basel Convention technical guidelines on the environmentally sound management of mercury waste are a key reference of the Sourcebook.

Mercury in Products: East Africa Dental Amalgam Phase Down (EADAP), Phase 1
This project produced awareness materials that increased information and knowledge on alternatives to dental amalgam and helped East African countries phase out amalgam. A total of 196 dental personnel benefited from the EADAP training.

Environmentally sound management of mercury wastes
In response to enormous demand from governments and stakeholders, the Global Partnership on Waste Management (GPWM) added a new thematic area of hazardous waste management. The IETC started a new activity on mercury waste management as the first step to address hazardous waste management under the GPWM.

IETC has several projects on mercury waste management. “Development of Minamata Initial Assessment in three Asian countries” operates under the Global Environment Facility (GEF). It facilitates use of scientific and technical knowledge and tools by national stakeholders in Cambodia, Pakistan and the Philippines towards ratification and early implementation of the Minamata Convention (see below). The GEF project, expected to be completed by March 2017, has six components to develop a Minamata Initial Assessment report in each country. “Environmentally sound management of mercury wastes”, funded by the Japanese Ministry of the Environment (MOEJ), aims to accelerate ratification of the Minamata Convention with special emphasis on mercury wastes. As of June 2015, IETC and MOEJ were
finalizing project activities, and planning new ones with additional partners for 2015-16. In addition to IETC’s work on mercury wastes under the GPWM, the Centre works closely with the Mercury Waste Management Area of the UNEP Global Mercury Partnership.

Development of the Minamata Convention on Mercury

Over the last few years, UNEP has supported the process that led to one of the major achievements in the area of global governance for the sound management of chemicals and waste: the adoption of the Minamata Convention on Mercury, the first new global convention on environment and health adopted for nearly a decade.

Named after the town and bay in Japan where thousands of people were poisoned by mercury-contaminated industrial wastewater in the mid-twentieth century, the Minamata Convention aims to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. In support of this goal, the convention covers the entire life cycle of mercury—from its primary extraction, use, emissions and releases through various processes to its storage and treatment as waste. In fact, the convention contributes to attainment of all the objectives of SAICM’s overarching policy strategy—from risk reduction, strengthening of knowledge and information and governance to enhancing capacity building, stemming illegal internal traffic and improving general practices.

The intergovernmental negotiations of the Minamata Convention took place under the auspices of UNEP over five sessions, from 7 June 2010 in Stockholm until 19 January 2013 in Geneva. More than 140 governments agreed to the final text. A few months later, on 10 October 2013, the convention was officially adopted and opened for signature at a diplomatic conference in Kumamoto, Japan.
In addition to governments and intergovernmental organizations, a wide range of stakeholders helped give birth to the convention. These included representatives from business and industry, environmental and public health groups, indigenous populations, local governments and municipal authorities, and research and academia.

Since its adoption, with 128 signatories and 12 future Parties (as of 1 July 2015), large support has been demonstrated to the convention. Still, it needs 38 more ratifications to enter into force. UNEP, which hosts the interim secretariat of the convention, will continue to support the intergovernmental process, which is currently laying the groundwork for the convention's entry into force. UNEP also actively promotes early ratification by a large number of countries through awareness raising, capacity building and other enabling activities.

Nutrients management
The Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA) has been supporting the Global Partnership on Nutrient Management (GPNM) to advance best practices for improved nutrient management as endorsed by governments within the Manila Declaration (2012). The GEF, through the GEF-Global Nutrient Cycling (GEF-GNC) Project, funds a significant portion of nutrients management work by UNEP and the GPNM. This project has been helping model nutrient flows from major drainage basins at the global scale to estimate nutrient fluxes into the marine environment. Applied studies are ongoing on nutrient release into the marine environment from aquaculture, observation and mapping of occurrences of hypoxia and harmful algal blooms, and development of relationships between fishery production and nutrient loading. In this way, the project is generating evidence for investments supported by effective policy measures.
The GEF-GNC Project has also been contributing to demonstration of best practices for sustainable nutrients management associated with agriculture and land-use practices in target watershed areas in India and the Philippines. The project supported the development of an “ecosystem health score card” for Chilika Lake in India—a simple tool to communicate the state of the environment and help target investments. Manila Bay and Laguna de Bay watershed areas have used the tool to apply nutrient cycle modelling and management scenario evaluation based on best practices. These efforts have received high-level policy support through the Supreme Court’s Manila Bay Advisory Committee. The project has subsequently led to the development of an online best management practice toolbox for nutrient management for use by agricultural extension officers and other practitioners.

The GPNM advocates for improved nutrient-use efficiency in crop and livestock production systems by taking part in various regional and international forums. The partnership is actively contributing to the formulation of global goals and targets for nutrient-use efficiency and environmental sustainability within the framework of the SDGs. Through the GPA, with support from the GPNM and the Global Partnership on Wastewater, the issue of nutrient recovery from conventional wastewater systems for reuse and recycling is gaining attention via technical assessments, demonstration and replication.

Industrial accidents

Preventing accidents with chemicals requires the coordination of different stakeholders, including government bodies, industry, workers and community groups. To that end, UNEP supports activities to raise awareness and build capacities of communities, industry and governments about emergency prevention and preparedness. Since 1988, for example, UNEP has implemented the Awareness and Preparedness for Emergencies at Local Level (APELL) programme in more than 30 countries. APELL increases knowledge in communities about possible neighbouring chemical risks and hazards, and prepares coordinated emergency response plans; this leads to long-lasting, local-level partnerships with active multi-stakeholder participation. In parallel to APELL’s work with local communities, the Flexible Framework for Addressing Chemical Accident Prevention and Preparedness guidance (2010) and implementation-support package (2012) works at the national level to help governments develop, improve or review the Chemical Accident Prevention
and Preparedness Programmes (CAPP). The guidance is available in Chinese, English, French, Spanish and Thai. With support from UNEP and the SAICM Quick Start Programme Trust Fund, Cambodia, China, Mali, the Philippines, Senegal, Sri Lanka and Thailand have already prepared national roadmaps to develop CAPP Programmes.

UNEP and the Office for the Coordination of Humanitarian Affairs (OCHA) collaborate in the UNEP-OCHA Joint Environment Unit (JEU) to help Member States prepare for, and respond to, environmental emergencies. In addition to coordinating international efforts and mobilizing partners for affected countries requesting assistance, JEU developed an introductory online course on industrial accidents.

As well as supporting SAICM objectives of preparing national programmes for emergency prevention and preparedness, these activities promote stakeholder participation and strengthen policy frameworks for emergency preparedness.

Waste

IETC has been working on various waste management areas as reflected in UNEP’s Governing Council decisions 24/5 and 25/8 that called for a holistic and integrated approach. The Centre helps developing countries and countries with economies in transition to develop waste strategies and action plans, and to assess and identify environmentally sound technologies (EST) and pilot demonstration projects. To transfer EST to these countries, IETC adopts a holistic definition of waste within the context of sustainable development, offering support to developing regions for national/city-level strategies and establishment of a knowledge hub.

IETC’s work on waste management links to chemicals management, contributing to activities in the SAICM Global Plan of Action. These include the GPWM; environmentally sound management of mercury wastes; development of E-waste management techniques guidance and national waste management strategies; and capacity building to support national actions. Highlights appear below.

Development of E-waste management techniques guidance

IETC’s work on E-waste focuses on capacity building for practitioners and policymakers to prepare and develop E-waste management systems. Apart from organizing various kinds of training workshops and policy dialogue on E-waste, IETC has developed manuals on inventory assessment, E-waste management and the WEEE/E-waste “Take back system”. Drawing on these
manuals, for example, the municipality of Phnom Penh developed an E-waste inventory and studied E-waste recycling structure, among other activities. IETC plans on a fourth manual that will offer guidelines for recycling E-waste, including primary and secondary dismantling. This series of manuals and guidelines provides comprehensive expertise, helping users to develop E-waste management systems or update E-waste management technologies.

National waste management strategies
IETC works on national waste management strategies in developing countries and countries with economy in transition with the aim of changing behaviour. To that end, the Centre builds on past programmes in cities, including integrated solid waste management (ISWM), wastewater and rainwater reuse, as well as specific streams such as E-waste, waste plastics and disaster waste. IETC enables countries and cities to develop waste management strategies that address solid waste, liquid waste and greenhouse gas emissions in a holistic manner.

In one activity, IETC collaborated with UNITAR in 2013 to develop Guidelines on National Waste Management Strategies: Moving from Challenges to Opportunities. The guidelines provide a framework for national planning that countries can adapt to their particular circumstances. It also suggests a process and poses questions that countries may wish to consider.

Development of legislation, administrative infrastructures and financing
UNEP has developed a guidance document for the development of legal and institutional infrastructures for the sound management of chemicals and measures for cost recovery of national administration. Known as the LIRA
Guidance, the document provides practical support to countries developing or strengthening national legislation and institutional structures. Achieving sound management of chemicals includes measures for financing the costs associated with national administration.

The LIRA Guidance, developed by an Expert Group, is based on the outcomes of a project to help countries develop legal and institutional infrastructures for national chemicals management. Developed by UNEP and the Swedish Chemicals Agency, it focuses on the particular needs of developing countries and countries with economies in transition.

Emerging issues

**Endocrine-disrupting chemicals (EDCs)**

SAICM recognizes the need to improve risk-reduction measures to prevent the adverse effects of chemicals on the health of vulnerable groups, such as children, pregnant women, fertile populations, the elderly, the poor and workers, as well as on susceptible environments.

The ICCM, at its third session in September 2012, agreed that EDCs met the criteria as an emerging policy issue. It adopted a resolution that calls for cooperative action to build awareness and understanding and promote action on EDCs. The resolution also calls upon the participating organizations of the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) to meet the SAICM objectives of risk reduction, information and knowledge sharing, and capacity building.

In 2012, UNEP and WHO, in collaboration with a working group of international experts, updated the Global Assessment of the State-of-the-Science of Endocrine Disruptors (IPCS, 2002).
This resulted in the publication of State of the Science of Endocrine Disrupting Chemicals – 2012 (UNEP/WHO, 2013,) supporting the SAICM objective of information and knowledge sharing.

An accompanying summary, published to make the report more accessible to decision makers, is being translated into the six UN languages for global dissemination.
The 2012 UNEP-WHO report identifies data gaps, areas for significant work and the need to improve knowledge. Overall, stakeholders agree on the need for further action on EDCs.

In line with the IOMC work plan, UNEP convened awareness-raising workshops on endocrine disrupting chemicals back-to-back with the Strategic Approach regional meetings in 2013-14. The workshops recognized the need for increased awareness and research on the issue, including gathering information on levels of endocrine-disrupting chemicals in the environment. These workshops provided a good basis to further implement targeted capacity building and risk-reduction activities at country level.

In May 2014, UNEP established an advisory group nominated through SAICM regional groupings from governments, academia, civil society and industry. The EDC Advisory group for UNEP provides policy and strategic advice to UNEP on the environmental exposure and impact of EDCs.

**Chemicals in products (CiPs)**

When handled correctly, most chemicals used to fabricate products are relatively safe. Some products, however, contain chemicals that can present significant risks to human health and/or the environment at various points in the products’ life cycles.

Both businesses and the general public are increasingly aware that proper diligence is needed with respect to chemicals in products. They know the capacity to manage chemicals in products safely, and to use chemical information effectively, is evolving. Yet too often, information on chemicals...
in products is still absent or insufficient to allow proper management. Effective action on this complex issue creates challenges, but also opportunities for forward-thinking businesses.

At the request of ICCM 3, UNEP developed the Chemicals in Products (CiP) programme, a voluntary initiative aimed at businesses, organizations and other participants throughout the product life cycle who want better ways to exchange information on chemicals in products. By enhancing access to information, the CiP programme aims to empower stakeholders to take appropriate actions on chemicals exposure, risk and management. The programme is built around three objectives:

1. Within supply chains, **KNOW AND EXCHANGE** information on chemicals in products, associated hazards and sound management practices.

2. **DISCLOSE** information of relevance to stakeholders outside the supply chain to enable informed decision-making and actions about chemicals in products.

3. **ENSURE** that information is accurate, current and accessible.

Engaging with numerous product sectors, UNEP has used its convening power to raise awareness of the issue and the need for action. It has catalyzed action among stakeholders seeking to advance on the issue. And it has brought various stakeholder groups into collaborative discussions on CiP information exchange systems and how they can help achieve the programme’s aim and support attaining the SAICM goal.
Lead in paint

At the 2002 World Summit on Sustainable Development (WSSD), nations agreed to phase out lead in lead-based paints. This decision was reinforced in 2009 and 2012 at ICCM 2 and 3 respectively, which identified lead in paint as an emerging policy issue. At the invitation of ICCM, UNEP and WHO established the Global Alliance to Eliminate Lead Paint (Lead Paint Alliance).

Lead exposure is estimated to account for 0.6 per cent of the global burden of disease, with the highest burden in developing countries. Based on recent estimates, reduced cognitive potentials (loss of IQ points) due to preventable childhood lead exposure are equal to 98.2 million points in Africa, 283.6 million in Asia and 24.4 million in Latin America and the Caribbean. This translates into economic losses of $134.7 billion (4.03 per cent of gross domestic product (GDP)), $699.9 billion (1.88 per cent of GDP) and $142.3 billion (2.04 per cent of GDP) of international dollars, respectively.

Collection of data on lead in paint in developing countries and countries with economies in transition began as early as 1999. To date, data have been collected on the total lead concentration in more than 1,500 new enamel paints from 37 countries. Some of those results are included in *Lead in enamel decorative paints: National paint testing results—a nine country study* (2013).

Most of the paints tested in different countries did not meet regulatory standards established in most industrialized countries.
In addition, and in line with the results of these studies, paints with very high levels of lead were still available in most countries where equivalent paint with no added lead is available; brightly coloured paints contained much higher levels of lead than white paints; and some market-leading brands have removed lead from their paint production.

Key regional activities

**Fostering the sound use of pesticides in Panama**
Panama is reportedly one of the Central American countries that use agro-chemicals to a significant degree. To prevent related risks to human health and the environment, UNEP, WHO, the Pan American Health Organization and the Food and Agriculture Organization provided support to the Government of Panama for a new regulation on the sound use of pesticides. Within this framework, more than 500 participants, including producers, government officers, practitioners, distributors and retailers of agrochemicals, took part in 20 dissemination and training activities in the main farming areas. In addition, the University of Panama provided post-graduate training on pesticides for a group of professionals from the agricultural, health and environment national authorities.

**Integrated solid waste management in Honduras**
IETC promoted a project on integrated solid waste management (ISWM) in Honduras through the UNEP Regional Office for Latin America and the Caribbean, in partnership with the National Cleaner Production Centre, the National Association of Municipalities and the Ministry of the Environment. Besides strengthening capacities at national and local levels, the project demonstrated how to develop an ISWM plan at city level, which can be replicated in different municipalities of the country and the region. The project addressed three pilot municipalities, and activities included the development of baselines, trainings, workshops and development of the plans. A final dissemination workshop was also organized to exchange experiences and promote regional cooperation with other countries of Central America.

**Health and environment linkage in Africa**
The Libreville Declaration on Health and Environment in Africa adopted in 2008 is the umbrella framework under which African countries and their development partners coherently address environmental determinants of human health and ecosystems integrity.
The momentum created in Libreville catalyzed an unprecedented intersectoral dialogue that culminated in the adoption, by ministers of health and the environment, of the Luanda Commitment, the institutional arrangements for the Health and Environment Strategic Alliance and the African Ministers of Health and Environment Joint Statement on Climate Change and Health at their second Conference in Luanda, Angola (23-26 November 2010).

Two Pan African programmes resulted from the Libreville Declaration: the Pan African Programme for Public Health Adaptation to Climate Change and the African Programme to Reduce Risks Posed by Chemicals to Human Health and Ecosystems. The former, approved by the African Ministerial Conference on the Environment at its fourteenth session, provides a health and environment intersectoral response to essential capacity building and technical assistance needs. With increased awareness of the health and environment and economic impacts of harmful chemicals, policy makers can be encouraged to fully integrate sound management of chemicals into national budget and sector-level plans.

As part of implementing the Libreville Declaration and mainstreaming the sound management of chemicals into development policies, the GEF’s Council approved a project proposal in June 2014 for development of an integrated health and environment observatory. The observatory will help improve health and environment conditions and cooperation in nine countries by strengthening national and regional institutions and acting on key chemicals and waste-related concerns.

**Figure 6:** Waste flows analysis in a pilot municipality of Honduras
Financing of sound management of chemicals

An integrated approach for financing the sound management of chemicals and wastes has been developed based on the following three major elements:

- Mainstreaming
- Involving industry
- Dedicated external funding including a special programme on chemicals and wastes

**Mainstreaming**

As part of efforts to mainstream the sound management of chemicals, SAICM has made progress in developing tools and materials, as well as convincing national decision makers to give SMC higher priority. The initiative relies on coordination and complementary actions that bring together the main entities involved in national economic and social development, as well as health and environment.

The aim is to make sound management of chemicals a critical factor in achieving the Sustainable Development Goals. SMC must be perceived as a vital element that underpins each aspect of a green economy and sustainable development. To that end, convincing economic arguments are needed to prove that SMC is a valid area for investment in education, transport, direct health care services and other essential public services. Ultimately, SMC could help foster the creation of many green, decent and healthy jobs and livelihoods in both developed and developing countries.

The initiative has shown how national ministries can make better use of available evidence. Specifically, they can access linked assessments of health...
and environment costs and benefits, which supports evidence-based economic development policies. This, in turn, can stimulate the needed investment and further strengthen and sustain the institutional and legal framework for the sound management of chemicals.

With support of the SAICM Quick Start Programme Trust Fund and bilateral donors (Sweden and Norway), this partnership has supported pilot projects in 17 countries (Belize, Burkina Faso, Cambodia, Ecuador, Honduras, Kazakhstan, Kyrgyzstan, Liberia, FYR Macedonia, Mauritania, Mauritius, Moldova, Nigeria, Suriname, Uganda, Viet Nam and Zambia). In addition, it has held four regional workshops involving participants from 22 countries that developed a range of guidance and support materials.

**Involving industry**

*Small and medium-sized enterprises*

In many developing countries and fast-growing economies, small and medium-sized enterprises (SMEs) form the backbone of industrial sectors that manufacture, transport, repackage and use hazardous chemicals. Limited access of SMEs to information and resources to address chemicals management magnify the risks posed from manufacturing and handling operations of chemicals. To address these concerns, UNEP works closely with members of the joint UNIDO-UNEP Global Network for Resource Efficient and Cleaner Production (RECPnet), composed of National Cleaner Production Centres (NCPCs), among others. Together, the partners implement cleaner and safer production practices in SMEs, including responsible production and eco-innovation².

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² Eco-innovation proposes a top-down approach that embeds sustainability into the business strategy of SMEs, subsequently filtering down to the business model and the operational level of these companies. This approach entails a set of coordinated
As a result of this work on Responsible Production and Eco-innovation, between 2011 and 2015, 36 NCPCs participated in train-the-trainer workshops, and worked with more than 85 SMEs in 13 countries. These efforts have contributed to SAICM’s objectives by building capacities in industry to assess production methods and implement improvements towards risk reduction, as well as promoting corporate social and environmental responsibility.

The Responsible Production approach has been developed with accountability, and disseminated in close cooperation with the International Council of Chemical Associations and the International Council on Mining and Metals.

UNEP highlights the relevance of the NCPCs under the RECPnet as intermediaries in countries that can propagate different approaches and values of cleaner and safer production effectively. In this regard, UNEP has trained more than 30 NCPCs on approaches such as Responsible Production and Eco-innovation. Special focus was given to three sectors including chemicals, and built capacities in these centres to implement cleaner and safer practices in several SMEs around the world. As a result, work on chemicals management has been implemented in collaboration with NCPCs in more than 85 SMEs in Brazil, China, Colombia, Egypt, El Salvador, Ghana, India, Jordan, Kenya, Malaysia, Sri Lanka, Thailand, and Viet Nam. With the purpose of building capacities of SMEs, NCPCs and other service providers, UNEP has helped design clear and simple manuals and guides based on a life-cycle approach.

**UNEP and ICCA cooperation**

UNEP and the International Council of Chemistry Associations (ICCA) promoted jointly sound and safe management of chemicals globally, including through disseminating and raising awareness on APELL, Responsible Production and Responsible Care approaches. Since 2013, UNEP and ICCA have promoted chemicals safety in the main port areas of Kenya (Mombasa) and Ghana (Tema). The project trains all port area stakeholders on best practices for handling, transport, warehousing, loading and unloading of chemicals; it also prepares emergency exercises based on accident scenarios. The project will end in December 2015.
In cooperation with the Government of Sweden, UNEP organized two successive workshops in Nairobi, Kenya on 2-4 December 2014 and in Siem Reap, Viet Nam on 9-11 December 2014. The workshops raised awareness on the need to involve industry in long-term financing of the national sound management of chemicals and wastes and on how it can be achieved. At the same time, participants encouraged UNEP to continue mainstreaming SMC at the national level as a critical means to achieving the SAICM 2020 goal and the Sustainable Development Goals. Further work with chemical industry associations is needed to foster broader engagement of industry, including importers, distributors, downstream users and SMEs, in sound management of chemicals.

Participants also identified approaches to foster more widespread adoption of SMC through the direct, in-kind or financial contributions from industry. A set of general and specific recommendations will be made available at relevant regional and international forums, particularly ICCM 4.

**Special programme on chemicals and wastes**

“By 2020, chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment”. In light of this expected result, and to address the need for sustainable, predictable, adequate and accessible financing for the chemicals and wastes agenda, the UNEP Executive Director launched consultations on financing options at the fourth session of the Conference of the Parties to the Stockholm Convention on Persistent Organic Pollutants in May 2009.

This process led the UNEA to adopt a Special Programme to support institutional strengthening at the national level at its first session in June 2014. It aimed to enhance implementation of the Basel, Rotterdam and Stockholm Conventions, the Minamata Convention on Mercury and the Strategic Approach to International Chemicals Management.

As noted in Global Chemicals Outlook, “in many countries a full range of government institutions has not been established, important legal instruments have not been adopted, and sufficient financial resources have not been allocated”. In response, the Special Programme supports country-driven institutional strengthening at the national level. Funded activities may include:

(a) Identifying national institutional capacity, weaknesses, gaps and needs, as well as strengthening the institutional capacity to do so, where required
(b) Strengthening institutional capacity to plan, develop, undertake, monitor and coordinate the implementation of policies, strategies and national programmes for the sound management of chemicals and wastes

(c) Strengthening institutional capacity to improve progress reporting and performance evaluation capabilities

(d) Promoting an enabling environment to foster the ratification of the Basel, Rotterdam and Stockholm Conventions and the Minamata Convention

(e) Enabling the design and operation of institutional structures dedicated to the promotion of the sound management of chemicals and wastes throughout their life cycle

(f) Strengthening institutional capacity to promote measures to support all aspects of the sound management of chemicals and wastes, including more specific nationally identified thematic areas covered by the Instruments

Support from the Special Programme is available for developing countries, taking into account the special needs of least developed countries and Small Island Developing States, and for countries with economies in transition. Priority is given to those with least capacity. Applicants must be party to any of the relevant conventions or demonstrate they are preparing to ratify any of the conventions. An Executive Board, which rules on applications, oversees the programme with support of a secretariat in UNEP’s Chemicals and Waste Branch.
Cooperation and partnerships with other IGOs and stakeholders to implement SAICM

SAICM provides a framework to support cross-sectoral and multi-stakeholder approaches for the sound management of chemicals. UNEP is participating as a lead or a member in a number of different partnerships with other intergovernmental organizations (IGOs) and stakeholders. Some of them are highlighted below.

IOMC
The Inter-organization Programme for the Sound Management of Chemicals (IOMC) was established in 1995 as a coordinating group following recommendations of the 1992 UN Conference on Environment and Development (UNCED), particularly those in Chapter 19 of Agenda 21 about toxic chemicals. UNEP was one of the first six IGOs to join.

Initially, the IOMC aimed to help its members cooperate, and increase their effectiveness to promote sound management of chemicals worldwide. From these beginnings, the IOMC has evolved into a platform for joint action. Its members now work together to:

• Develop guidance for developing countries on specific aspects of chemical management
• Contribute to chemical management activities at country, regional and international levels
• Create coordinating groups in priority areas, such as facilitating the implementation of international conventions that address sound management of chemicals
The Lead Paint Alliance
The Global Alliance to Eliminate Lead Paint (Lead Paint Alliance), a voluntary partnership, focuses and catalyzes efforts of diverse stakeholders to prevent children’s exposure to paints containing lead and to minimize occupational exposures to lead paint.

Ultimately, it seeks a phase out of the manufacture and sale of paints containing lead and eventually to eliminate the risks posed by such paints.

The Lead Paint Alliance is an important means of contributing to paragraph 57 of the Plan of Implementation of the World Summit on Sustainable Development and to resolution II/4/B and III/2/B of the second and third session, respectively, of the International Conference on Chemicals Management concerning lead in paint.

UNEP and WHO jointly provide the secretariat support to the diverse partners that make up the Alliance. To date, the Alliance comprises 9 governments, 3 IGOs and 26 NGOs and others.

UNEP Global Mercury Partnership
The UNEP Global Mercury Partnership aims to protect human health and the global environment from the release of mercury and its compounds by minimizing and, where feasible, eliminating global, anthropogenic mercury releases to air, water and land. The Partnership works closely with stakeholders to assist in the timely ratification and effective implementation of the Minamata Convention on Mercury.

Since its inception in 2007, the Partnership has provided credible information on existing and emerging mercury issues. In collaboration with partners, for example, UNEP has generated baseline information and developed key guidance materials to advocate reduction of mercury in all sectors, raised awareness and facilitated information exchange.

The Partnership also provides a platform for dialogue between governments and non-governmental actors. In addition, it plays a key role in implementing demonstration projects and strengthening national capacities to address mercury pollution.

UNIDO-UNEP Joint Programme on Resource Efficient and Cleaner Production in Developing and Transition Countries
Resource Efficient and Cleaner Production (RECP) is the continuous application of preventive environmental strategies to processes, products and services. In this way, RECP increases efficiency and reduces risks to humans and
the environment. It addresses the three sustainability dimensions of production efficiency, environmental management and human development.

UNEP and UNIDO cooperate under this joint programme to improve overall resource efficiency and environmental performance of businesses and other organizations. A global network (RECPnet) brings together RECP service providers in developing and transition countries, including the National Cleaner Production Centres. RECP also greatly facilitates the work of UNEP and UNIDO with SMEs towards SAICM objectives.

The OECD/UNEP Global PFC Group
At ICCM 2 in 2009, Resolution II/5 called upon intergovernmental organizations, governments and other stakeholders to “consider the development, facilitation and promotion in an open, transparent and inclusive manner of national and international stewardship programmes and regulatory approaches to reduce emissions and the content of relevant perfluorinated chemicals of concern in products and to work toward global elimination, where appropriate and technically feasible”.

In response, the Global PFC Group was established in 2012 to facilitate the exchange of information on perfluorated alkylated substances (PFASs) and to support a global transition towards safer alternatives.

The Global PFC Group constitutes a wide range of stakeholders, including representatives from OECD and non-OECD member countries (e.g. Benin, Costa Rica, China, India, the Russian Federation, Viet Nam, Zambia), industry stakeholders (in particular fluorinated chemicals producers), NGOs and academics. The Secretariat of the Stockholm Convention is also actively engaged in activities. Further participation in the group is encouraged.
Since its inception, the Global PFC Group has focused on developing a global overview of PFASs. In 2013, it published a synthesis report on PFCs\(^3\), which provides an overview of the following areas: major uses of PFASs, scientific information pertaining to PFASs in regards to human health and the environment, regulatory approaches in a number of countries and available alternatives. Four public webinars on the synthesis report, held in 2013-14, are available at http://www.oecd.org/ehs/pfc/pfceventsmeetingswebinars.htm.

More recently, the Global PFC Group has thoroughly analyzed risk reduction measures for PFASs across countries, as well as examined information on related emissions in different regions worldwide.

**Global Partnership on Waste Management**

Through IETC, UNEP leads the Global Partnership on Waste Management (GPWM). It focuses on enhancing international cooperation; promoting outreach and advocacy; enhancing knowledge management and sharing; identifying and filling information gaps in waste management; protecting human health and the environment; and tackling adverse impacts of unsound management of waste. The GPWM also aims to raise awareness, political will and capacity to promote resource conservation and resource efficiency through waste prevention and by recovering valuable material and/or energy from waste.

As the Secretariat of the GPWM, IETC facilitates information sharing and exchanges among participants and other users of its information platform on the six focal areas (waste and climate change, waste agricultural biomass, integrated solid waste management, E-waste management, marine litter and waste minimization). The platform provides a waste management database, including guidelines, country needs assessment analysis, country waste management profiles, etc. The GPWM supports international partners to help ensure their waste management projects are coherent, minimize duplication, produce value for money and bring tangible change in waste management in these countries.

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Conclusion

In the spirit of SAICM, UNEP is committed to move expeditiously towards a cross-sectoral, participatory and partnership-based set of interventions. A focus on prevention rather than reaction can avoid problems before they occur. Otherwise, mitigating the harmful impacts of substances/waste may prove to be too costly, both to human health, the environment, businesses and governments.

This challenge calls for coordinated actions at international, national, regional, corporate and civil society levels. The sound management of chemicals must be perceived as essential throughout their life cycle. In this way, we can decouple sustainable development advances and maximize societal benefits from the potential and growing risks to human health and the environment.

The need for action is urgent since current trends in chemicals production and manufacture have far-reaching economic, social and health implications. Unsustainable practices related to chemicals affect the world’s ability to meet its development goals. The root causes of chemicals and other environmental problems, however, cannot be solved through environmental and regulatory policies alone. This is why UNEP actively promotes the value of the green economy initiative in which chemicals also play a role.

As recent negotiations on the SDGs and post-2015 development agenda attest, awareness is growing about the importance of the sound management of chemicals and waste, as well as pollution prevention and clean-up, for the protection of human health and the environment. The international community integrated pollution, chemicals and waste under Targets 3.9, 6.3, 12.4 and 14.1, under the respective post-2015 SDGs on Health, Water and Sanitation, Sustainable Consumption and Production, and Marine Conservation.

Already, efforts are yielding concrete and fruitful results. Complementary streams of activities are emerging to help developing countries build capacity for mainstreaming the sound management of chemicals, and to raise the priority given to the issue. This movement strengthens UNEP’s resolve to provide evidence that shows sound management of chemicals is a valid area for investment. UNEP believes SMC can lay the foundation for a thriving green economy and a fairer distribution of development benefits across society.

To that end, SAICM is a unique forum from which sound management of
chemicals can, and must, become a national and international environmental, public health, and economic and business development priority.

Chemicals have the power to build economies, sustain societies, cure the sick, entertain, feed and clothe us. The ways in which we use chemicals to do all that can make the difference between environmental degradation and rich resources, between health and illness, between a thriving economy and one threatened by occupational exposure to chemicals and associated costs of disease. Improving quality of life, reducing the burden of disease, and safeguarding the environment while pursuing economic growth can contribute to sustainable development by 2020—let’s get there together.