International Conference on Chemicals Management
Third session
Nairobi, 17–21 September 2012
Item 4 (a) of the provisional agenda

Implementation of the Strategic Approach to International Chemicals Management:
evaluation of and guidance on implementation and review and update of the Strategic Approach

Proposed additions to the Global Plan of Action of the Strategic Approach to International Chemicals Management

Note by the secretariat

I. Introduction

1. The International Conference on Chemicals Management at its second session agreed to a procedure for the inclusion of new activities in the Global Plan of Action of the Strategic Approach to International Chemicals Management.

2. Two proposals for the addition of new work areas and associated activities to the Global Plan of Action were received by the secretariat. The first, on the environmentally sound management of nanotechnology and manufactured nanomaterials, was submitted by Switzerland and the second, on the environmentally sound management of hazardous substances within the life cycle of electrical and electronic products, by participants in the fourth African regional meeting on the Strategic Approach.

3. Both proposals were considered at Strategic Approach regional meetings and by the Open-ended Working Group at its first meeting, held in Belgrade from 15 to 18 November 2011.

4. The Open-ended Working Group, in its decision OEWG.1/1 on inclusion of new activities in the Global Plan of Action, recommended to the Conference that, at its third session, it include in the Global Plan of Action activities relating to nanotechnologies and manufactured nanomaterials, and hazardous substances within the life cycle of electrical and electronic products.

Possible action by the Conference

5. The Conference may wish:

   (a) To consider the recommendation of the Open-ended Working Group, contained in its decision OEWG.1/1, that, at its third session, the Conference include in the Global Plan of Action of the Strategic Approach to International Chemicals Management activities relating to nanotechnologies and...
manufactured nanomaterials, and hazardous substances within the life cycle of electrical and electronic products;

(b) To consider the comments received from stakeholders related to the proposal presented by Switzerland to include nanotechnologies and manufactured nanomaterials as a new work area in the Global Plan of Action and to the revised proposed additions to the Global Plan of Action on hazardous substances within the life cycle of electrical and electronic products;

(c) To take into account, as appropriate, the progress reports on nanotechnologies and manufactured nanomaterials and on hazardous substances within the life cycle of electrical and electronic products, contained in documents SAICM/ICCM.3/17 and SAICM/ICCM.3/16, respectively.

(d) To adopt a resolution on the matter.

II. Background

6. The Global Plan of Action was recommended by the International Conference on Chemicals Management at its first session, held in Dubai, United Arab Emirates, in February 2006, as a guidance document to assist stakeholders in achieving the objectives of the Strategic Approach. The Plan is intended to be reviewed, as appropriate, and the activities considered and implemented by stakeholders according to their applicability. The Plan is structured according to the five categories of objectives of the Overarching Policy Strategy: risk reduction, knowledge and information, governance, capacity-building and technical cooperation, and illegal international traffic. For these categories, the Plan sets out possible work areas and associated activities, actors, targets and time frames, indicators of progress and implementation aspects.

7. At its second session, the International Conference on Chemicals Management adopted a procedure for the inclusion of new activities in the Global Plan of Action. The procedure, which is set out in annex II to the report of the session,1 permits a stakeholder or a group of stakeholders to submit a proposal to the secretariat, accompanied by a justification document explaining the merits of the proposal. A copy of the document must also be sent to the Strategic Approach regional focal point. The secretariat is instructed to post proposals and their justification documents on the Strategic Approach website for comment and to circulate them for discussion at regional Strategic Approach meetings. The stakeholders at the regional meetings are to prioritize the proposals for consideration by the Open-ended Working Group so that it can assess the proposals and select a limited number for consideration by the Conference at its next session.

III. Proposed additions on nanotechnologies and manufactured nanomaterials

8. At the second session of the Conference, the Government of Switzerland proposed that nanotechnologies and manufactured nanomaterials should be considered to be an emerging policy issue and that activities relating to the issue should be added to the Global Plan of Action. At that time the Conference had yet to decide on a procedure for the addition of activities to the Plan, and time constraints precluded consideration of the proposal at the second session. The Conference did, however, adopt resolution II/4 E on nanotechnology and manufactured nanomaterials, and agreed that the addition of related activities to the Plan would be placed on the agenda for its third session.2

9. The justification document submitted by the Government of Switzerland (which includes a proposal for a new work area) is set out in annex I to the present note; it is reproduced without formal editing. The proposal was discussed at the 2011 Strategic Approach regional meetings for Africa (Nairobi, 5, 7 and 8 April), Latin America and the Caribbean (Panama City, 2 and 3 June), Central and Eastern Europe (Lodz, Poland, 27–29 June) and Asia and the Pacific (Beijing, 8 and 9 September) and at workshops that were held to raise awareness of nanotechnologies and nanomaterials. At all of the regional meetings and associated workshops, the participants discussed amendments to the proposal and made recommendations supporting the addition to the Global Plan of Action on nanotechnologies and manufactured nanomaterials. The proposal was formally endorsed at the regional meetings held in Africa and in Latin America and the Caribbean.

1 SAICM/ICCM.2/15.
2 Ibid., para. 88.
10. The Open-ended Working Group considered the proposal at its first meeting and adopted decision OEWG.1/1 I, recommending to the Conference that, at its third session, it include activities related to nanotechnologies and manufactured nanomaterials in the Global Plan of Action. In the decision the Working Group also set out specific instructions for further consultation in preparation for the third session of the Conference.

11. In relation to the proposal by Switzerland, in its decision OEWG.1/1 I the Open-ended Working Group:

   (a) Noted that agreement on the inclusion of activities related to nanotechnologies and manufactured nanomaterials in the Global Plan of Action had been reached in principle for activities 4–6, 12–15, 21 and 22 in the proposal, and did not preclude editorial amendments to the wording of those activities being made, and that such inclusion referred only to the content of the column entitled “New activity”;

   (b) Also noted that further discussions would be needed at the third session of the Conference on the other activities in the proposal by the Government of Switzerland;

   (c) Recognized that to date no agreement had been reached on where new activities should be included in the Global Plan of Action.

12. In preparation for discussions at the third session of the Conference, in decision OEWG.1/1 the Working Group also:

   (a) Requested all stakeholders to clarify any remaining concerns on the activities in the proposal by the Government of Switzerland and to submit comments in that regard to the secretariat as soon as possible;

   (b) Requested the secretariat to compile any comments received from stakeholders and make them available on the Strategic Approach website.

13. In accordance with decision OEWG.1/1, the secretariat invited stakeholders, through the Strategic Approach website, from 5 March to 27 April 2012, to comment further on the proposal by Switzerland. Stakeholders were invited to:

   (a) Provide editorial amendments on activities 4–6, 12–15, 21 and 22 in the column entitled “New activity” in the proposal by Switzerland;

   (b) Comment on where the new activities should be included in the Global Plan of Action;

   (c) Clarify any remaining concerns relating to the other activities contained in the proposal.

14. Comments were provided by Canada, Costa Rica, Japan, Madagascar, Senegal, the United States of America, the European Union, the Inter-Organization Programme for the Sound Management of Chemicals (IOMC), Ecological Restoration, Friends of the Earth International, the International Council of Chemicals Associations and the Nanotechnology Industries Association.

A. Editorial amendments

15. The suggested editorial amendments received have been annotated and are set out, together with the original table of proposed activities, in annex I to the note by the secretariat on submissions received from stakeholders on the inclusion of activities relating to nanotechnologies and manufactured nanomaterials and to hazardous substances within the life cycle of electrical and electronic products in Global Plan of Action (SAICM/ICCM.3/INF/4). The editorial comments received are not restricted to the nine work activities that were agreed in principle by the Open-ended Working Group at its first meeting, but include suggestions for further streamlining and preventing possible duplication of effort. The submissions are set out in annex II to the note by the secretariat and are available on the Strategic Approach website.

B. Placement of new activities in the Global Plan of Action

16. A number of comments concerned the placement of new activities in the Global Plan of Action. One expressed the view that a new work area was not necessary as all the activities could be included under existing work areas, while others noted that some activities, in particular activities 12 and 21, might best be placed under “Strengthening knowledge and information” rather than “Risk reduction”. Another suggested that consideration of the placement of an activity was less important than ensuring that the proposed activity was feasible and clearly expressed.
C. Additional outstanding concerns

17. A number of reviewers emphasized the need to make full use and take account of existing work being carried out in various forums, including the Organization for Economic Cooperation and Development, and to build mechanisms for effective information and exchange, promote harmonization and cooperation and recognize the stage of scientific discussion of some topics in order to ensure that the feasibility of the implementation of particular work activities was considered fully. There were suggestions that some activities be deleted, in particular those relating to the development of certification schemes, labelling, regulatory and legislative provisions for the environmentally sound management of waste containing nanomaterials and worker and public protection. Comments on some activities proposed that they should be carried out within inclusive frameworks between developed and developing countries to enhance human resources in developing countries. One comment included the suggestion that activity 22 on the promotion of public and private sector partnerships might raise concerns about potential conflicts of interest and require guidance so as to ensure that environmental, health and safety objectives were not undermined.

IV. Proposed additions on hazardous substances within the life cycle of electrical and electronic products

18. Participants in the fourth African regional meeting, held in Nairobi from 5 to 8 April 2011, considered the outcomes of an international workshop on hazardous substances within the life cycle of electrical and electronic products, held in Vienna from 29 to 31 March 2011. The African regional meeting subsequently adopted a resolution calling for the inclusion of activities on hazardous substances in electrical and electronic products in the Global Plan of Action and prepared a justification document of the kind called for in the procedure adopted by the Conference at its second session. The justification document (see annex II) was considered by the Open-ended Working Group at its first meeting.

19. In its decision OEWG.1/1 II, the Open-ended Working Group recommended that, at its third session, the Conference include new activities related to hazardous substances within the life cycle of electrical and electronic products in the Global Plan of Action. In the same decision, it requested the secretariat:

(a) To prepare, in cooperation with the Secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, a document setting out the proposed additions to the Global Plan of Action for the consideration of the Conference at its third session, taking full account of the deliberations at the Open-ended Working Group and noting that no agreement had yet been reached on the text for inclusion in the Global Plan of Action;

(b) To make the above-mentioned document available for comment on the Strategic Approach website, to compile any comments received and make this compilation available to inform discussions at the third session of the Conference on inclusion of activities related to hazardous substances within the life cycle of electrical and electronic products.

A. Revised table of proposed additions to the Global Plan of Action

20. A revised table of proposed activities for inclusion under a new work area relating to hazardous substances within the life cycle of electrical and electronic products is set out in annex III to the present note. The proposal was prepared by the secretariat in collaboration with the Secretariat of the Basel Convention together with the Strategic Approach regional focal point for Africa, the national focal point for Peru and representatives of the United Nations Industrial Development Organization, the Basel Convention Regional Coordinating Centre for Africa and the International POPs Elimination Network.

B. Comments received on the revised proposal

21. The secretariat sought comments on the revised table of proposed activities through the Strategic Approach website from 3 April to 7 May 2012. Comments were received from Canada, Japan, the United States, the European Union and its member States, IOMC, the United Nations Development Programme and the Information Technology Industry Council. The comments are set out in the annex to document SAICM/ICCM.3/INF/4, which also contains the revised table of proposed activities, with annotations to highlight the comments received, and are also available on the Strategic Approach website.
22. In general, comments cautioned against the duplication of effort with regard to work performed in other forums and cautioned stakeholders not to create new initiatives that would fall within the scope of another international agreement. With two exceptions, the comments received confirmed support for the inclusion of a new work area relating to hazardous substances within the life cycle of electrical and electronic products set out in the revised table of proposed activities relating to the Global Plan of Action. One reviewer, who did not support the additions, expressed the view that the topics addressed in the proposal were already being dealt with in existing forums, while another suggested that new work areas were not necessary, as all the activities proposed could be included under existing work areas of the Global Plan of Action. The reviewer drew attention to the specific existing work areas of the Global Plan of Action where the proposed activities could be accommodated. In general, comments reiterated the need to avoid the duplication of work performed in other forums and cautioned stakeholders not to create new initiatives that would fall within the scope of another international agreement.
Annex I

Justification document for the inclusion of nano-related activities in the Global Plan of Action of the Strategic Approach

Proposal by Switzerland considered by the Open-ended Working Group at its first meeting

Complementing the Strategic Approach to International Chemicals Management Global Plan of Action with the creation of a new work area and associated activities in relation to the environmentally sound management of nanotechnologies and manufactured nanomaterials

The use of nanotechnologies and manufactured nanomaterials has evolved rapidly since the first session of the International Conference on Chemical Management in 2006. Today, these new technologies are broadly used, and heavy research and development is underway in many countries. Nanotechnologies and manufactured nanomaterials offer potential societal and economical benefits as well as potential environmental, health and safety risks.

Nanotechnologies and manufactured nanomaterials were not yet an issue at first session of the International Conference on Chemical Management, but they were addressed as an emerging issue under SAICM beginning with the second session of the International Conference on Chemical management (ICCM2) in 2009. The SAICM Global Plan of Action (GPA) thus does not yet address this issue.

At ICCM2, a discussion on the inclusion of activities related to manufactured nanomaterials and nanotechnologies in the SAICM GPA took place based on a Conference Room Paper (SAICM/ICCM.2/CRP.6) presented by Switzerland.1 This CRP included a preliminary table of proposed activities to be added to the GPA. ICCM2 concluded that this issue should be considered at the third International Conference on Chemical Management (ICCM3). Pursuant to this decision, Switzerland consulted with relevant stakeholders, and prepared a formal proposal to add a new work area to the Global Plan of Action, with new activities for the sound management of nanotechnologies and manufactured nanomaterials, at the third International Conference on Chemical Management (ICCM3) in 2012. This proposal dated April 3, 2011 was posted on the SAICM secretariat website and sent to all regional and national SAICM focal points for consultation.2 Further regional consultations took place during the regional workshops on nanotechnology and manufactured nanomaterials organized back to back with the SAICM regional meetings in Africa (April 2011), Latin America and Caribbean (May 2011), Central and Eastern Europe (June 2011) and Asia Pacific (September 2011). Based on input received through the consultations, Switzerland prepared this final proposal and table of activities, which should serve as a basis for initial discussion at the Open Ended Working Group in November 2011.

The proposed new work area includes activities to:

- Encourage the generation and sharing of hazard and risk data in relation to nanomaterials and nanotechnologies;
- Support technical, legal and institutional information sharing and capacity building for the management of nanomaterials;
- Integrate the management of nanomaterials to ongoing and projected chemical management programs;
- Support the development of adequate risk management tools and mechanisms, including information schemes such as certification systems.

See table below distributing the proposed activities of this new work area under the various SAICM objectives.

In accordance with the procedure for the inclusion of new activities in the GPA of the Strategic Approach adopted during ICCM2, this draft document describes how the activities of the proposed new work area

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1 This CRP will be made available as an information document.
2 This draft proposal will be made available as information document.
are relevant to protecting human health and the environment; its contribution to national, regional or global commitments, objectives, priorities, and needs; how it will reflect best practices and be effective; and, means of implementation at the country or participant level.

Background information, including relevance of the activity to protecting human health and the environment

A background information document (SAICM/ICCM.2/INF/34) in relation to the emerging policy issue of nanotechnology and manufactured nanomaterials document was prepared by the USA and Switzerland as the two lead countries, to guide the discussion on this emerging issue and provide rationale for proposed cooperative action during ICCM2 in 2009. This document noted that “while SAICM is aimed to providing the overarching policy framework for chemicals policy and sound chemicals management, it does not yet address this increasingly important area of chemicals management”.

The same document mentions that some of the same unique properties that make manufactured nanoparticles suitable for certain applications also raise questions about the impacts of nanoparticles on human health and the environment. Toxicity and fate of nanoparticles depends on a variety of physicochemical properties such as size and shape, as well as surface properties such as charge, area, reactivity, and coating type on the particle. These factors also influence the uptake and distribution of nanoparticles in the human body. In addition to particles themselves, the potential human health and ecological impacts of their breakdown products, as well as their interactions with other contaminants, should also be considered.

Once in the bloodstream, studies have shown that some nanoparticles can be transported around the body and are taken up by the liver, spleen, bone marrow, the kidneys, the heart, the reproductive organs, soft tissue and skeleton. Furthermore, placental transfer is supported by a recent study, which demonstrated the ability of some nanoparticles to transfer from pregnant mice into the brain and testes of their offspring. A number of studies have also demonstrated that some nanoparticles may be transported directly from olfactory neurons into the central nervous system, crossing the blood-brain barrier.

With respect to the genotoxicity of nanomaterials, studies have shown the ability of nanomaterials to penetrate sub-cellular compartments containing DNA that are usually impervious to man-made chemicals. The intracellular mobility of nanomaterials is especially concerning when viewed in light of studies showing that nanomaterials can, directly and/or indirectly (through oxidative stresses), damage DNA, RNA, and/or histones.

In addition, there is evidence that some nanomaterials may be toxic for ecosystems. For example, nanoscale titanium dioxide can cause mortality or behavioral or physiological changes in environmental indicator species such as water fleas, fish, or algae and have been shown to stress photosynthetic organisms, potentially leading to the disruption of nitrogen and carbon cycles in aquatic ecosystems.

When chemicals bioaccumulate, tissue concentrations increase over time despite low background environmental levels of the chemical. It is acknowledged that “[b]acteria and living cells can take up nanosized particles, providing the basis for potential bioaccumulation in the food chain.” Further research

5 Takeda et al., Nanoparticles Transferred from Pregnant Mice to Their Offspring Can Damage the Genital and Cranial Nerve Systems, Journal of Health Science, Volume 55, number 1, February 2009.
has shown that earthworms can absorb copper nanoparticles present in soil.\(^9\) Biomagnification, the increase in concentration of a specific toxic from prey into predator, was also evidenced for nanomaterials in an aquatic environment, involving microscopic life forms, which comprise the base of all food webs.\(^10\) This evidence of bioaccumulation suggests that the risks of nanomaterials to human health and the environment may increase over time. Additionally, “[m]any of the nanomaterials in current use are composed of inherently non-biodegradable inorganic chemicals, such as ceramics, metals and metal oxides, and are not expected to biodegrade.”\(^11\)

Because manufactured nanomaterials are already on the market in a growing number of products including paints, cosmetics, clothing, household appliances, food packaging, etc. countries should give due consideration to potential health or environmental implications of such use of nanomaterials during their whole life cycle; e.g. the potential effects of production of the nanoscale materials, as well as the disposition of nanomaterials that may, for example, require new hazard communication programs to recyclers or new concerns for disposal.\(^12\) In this context, according to ICCM2 preparatory documents, SAICM should provide a supportive international framework for developing countries and countries with economies in transition to develop and implement concrete policies and activities.\(^13\)

The new GPA activities in relation to nanotechnologies and manufactured nanomaterials herein proposed by Switzerland could thus help countries to address this issue, to develop and implement appropriate policies, and to access support for such policies.

**How the activity would contribute to achieving national, regional or global commitments, objectives, priorities and needs**

SAICM’s general objectives are detailed in the Overarching Policy Strategy (OPS) and Dubai Declaration. These overall objectives include risk reduction, knowledge and information, Governance and capacity building and technical cooperation. The GPA is the evolving tool that identifies work areas and associated activities that may be undertaken by stakeholders in order to pursue the commitments and objectives expressed in the SAICM OPS and the Dubai Declaration. The proposed new work area aims at providing an implementation path to reach the OPS objectives in relation to nanotechnologies and manufactured nanomaterials in agreement with objective 14(e) of the OPS.

During ICCM2, a resolution on nanotechnologies and manufactured nanomaterials was adopted. This resolution called on SAICM stakeholders to provide support to countries in development and countries with economies in transition to enhance their capacity to use and manage nanotechnologies and manufactured nanomaterials responsibly (operational paragraph 1), and on the wider dissemination of human health and environmental safety information in relation to products containing nanomaterials (operational paragraph 7). The resolution also requested the promotion of appropriate actions to safeguard human health and the environment (OP 2), recognized the role of regulatory, voluntary and partnership approaches for the responsible management of nanotechnologies and manufactured nanomaterials (OP3) and recommended the establishment of multi-stakeholder dialogues (OP 6). New GPA activities proposed for inclusion in the new work area relating to nanotechnologies and manufactured nanomaterials would support the realization of these objectives. At subsequent SAICM regional meetings in 2009/10 and 2011, in Africa, Latin America and Caribbean, Central and Eastern Europe, and Asia & Pacific regions further elaborated on specific national and regional needs in relation to the safe management of nanotechnologies and manufactured nanomaterials. Those needs relate to the establishment of partnerships and collaborations; to the necessary funding for research on potential risks to human health and the environment; to the development of legal provisions to ensure safe practices with regards to the production, use, transport and disposal of manufactured nanomaterials.

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12. See supra note 1.

13. See supra note 1.
The new activities that Switzerland proposes to add to the SAICM GPA, are designed to support the fulfillment of those needs and priorities, as discussed in the different regional consultations and the resolution adopted unanimously by the African and GRULAC regions in 2009/10 and 2011.

For example, in order to satisfy the demand for the set up and enforcement of legal provisions to ensure safe practices with regards to all stages of nanomaterials life, Switzerland proposes to include activities to assess the gaps in existing legal and institutional frameworks, promote and enhance information sharing on national and regional policy and regulatory initiatives, identify, strengthen and enforce legal provision for the environmentally sound management of waste containing nanomaterials, and promote technical guidelines and harmonized standards.

Similarly, to meet the needs expressed by those regions and countries for better information regarding potential human health and environmental impacts of manufactured nanomaterials and, Switzerland proposes to add activities to increase the understanding of the environmental health and safety implications through further information sharing and research of manufactured nanomaterials.

Ways in which the activities reflect the best practices and will be effective

The activities included in the proposed new work area on nanotechnologies and manufactured nanomaterials intend to facilitate the sharing of best practices, including by facilitating the exchange of information on existing regulatory and voluntary initiatives, for example in the area of protection of workers manufacturing, using or disposing of manufactured nanomaterials.

Furthermore, by promoting sharing of technical and regulatory information, it would allow countries less advanced to benefit from knowledge developed by most advanced countries, arising in particular from existing regional initiatives such as the OECD Working party on Manufactured Nanomaterials and definition efforts from Australia, Canada, the European Union, the United states of America and International Standardization Agency.

Means of implementation of the activity at the country or participant level (Setting out examples)

Activities proposed, such as promoting private/public partnership, including nanomaterials and nanotechnology in existing chemical management programs, refining guidance for such inclusion and developing pilot projects in developing countries and countries with economies in transition, developing nano labeling schemes based on best practices, could provide appropriate means of implementation at the country or participant level.
<table>
<thead>
<tr>
<th>Work area</th>
<th>New activity</th>
<th>Actors</th>
<th>Target time frame</th>
<th>Indicators of progress</th>
<th>Implementation aspects</th>
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</thead>
<tbody>
<tr>
<td>Nanotechnologies and manufactured nanomaterials</td>
<td>1. Develop, establish and promote adoption of technical guidelines and harmonized standards on nanotechnologies and manufactured nanomaterials based on precaution.</td>
<td>National Governments, intergovernmental and international organizations, industry, NGOs</td>
<td>2012–2017</td>
<td>Guidelines and standards are developed.</td>
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<td>2. Identify, strengthen and implement legal instruments to ensure the use of best practices in the production, use, transport and disposal of manufactured nanomaterials.</td>
<td>National Governments, intergovernmental and international organizations, industry, academia, NGOs and other interested groups</td>
<td>2012–2015</td>
<td>Best practices for production, use, transport, and disposal of manufactured nanomaterials are in place and implemented in all relevant sectors.</td>
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<td>3. Increase the active involvement of the health sector to identify, treat and track diseases potentially caused by occupational exposure to manufactured nanomaterials and develop and implement preventive interventions.</td>
<td>WHO, ILO, national Governments, industry NGOs and other interested stakeholders</td>
<td>2012–2020</td>
<td>WHO/ILO project to identify, treat and track diseases potentially caused by occupational exposure to manufactured nanomaterials. Guidance on preventive measures are adopted.</td>
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<td>Nanotechnologies and manufactured nanomaterials</td>
<td>4. Increase the understanding of the environmental, public and occupational health and safety implications, including risk assessment, of nanotechnologies and manufactured nanomaterials through further research.</td>
<td>National Governments, intergovernmental and international organizations, industry, academia, NGOs and other interested groups</td>
<td>2012–2018</td>
<td>Number of publicly available research paper on hazards and risks, significantly increase in all regions.</td>
<td>Coordination by IOMC</td>
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<td></td>
<td>5. Support and where feasible, increase funding for independent research on the environmental and occupational health and safety implications of manufactured nanomaterials.</td>
<td>National Governments, intergovernmental and international organizations, industry, NGOs, academia</td>
<td>2012–2020</td>
<td>Number of publicly available peer reviewed research papers on hazards and risks significantly increases. Increased allocation of national budget towards research on nanotechnologies. Number of funding opportunities available to promote nanotechnology</td>
<td>Creation of international and national information clearing houses.</td>
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<tr>
<td>Work area</td>
<td>New activity</td>
<td>Actors</td>
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<td>6.</td>
<td>Enhance information sharing on national and regional policy and regulatory initiatives.</td>
<td>National Governments, intergovernmental and international organizations, industry, NGOs, academia</td>
<td>2012–2015</td>
<td>All stakeholders are informed of hazards and risks of nanomaterials. All relevant stakeholders have access to available relevant information.</td>
<td>IOMC</td>
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<td>7.</td>
<td>Develop a national inventory reflecting the national situation of nano-research, production, and marketing.</td>
<td>National Governments, intergovernmental and international organizations, industry, NGOs, academia, other interested groups</td>
<td>2012–2015</td>
<td>Number of national inventories developed.</td>
<td></td>
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<td>9.</td>
<td>Develop national or regional registers for manufactured nanomaterials produced, imported or integrated into products.</td>
<td>National Governments, intergovernmental and international organizations</td>
<td>2012–2015</td>
<td>Number of national registers in place.</td>
<td></td>
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<td>10.</td>
<td>Develop and promote a voluntary global scheme certifying the presence of manufactured nanomaterials in products.</td>
<td>National Governments, intergovernmental and international organizations, industry, NGOs</td>
<td>2012–2020</td>
<td>Certification scheme is developed.</td>
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<td>Work area</td>
<td>New activity</td>
<td>Actors</td>
<td>Target time frame</td>
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<td>11.</td>
<td>Develop GHS criteria to address the safety of manufactured nanomaterials.</td>
<td>National Governments, intergovernmental organizations, industry, NGOs</td>
<td>2012–2015</td>
<td>Criteria for labelling of manufactured nanomaterials are developed and incorporated into the GHS.</td>
<td>UN ECOSOC, regional economic commissions, WTO, WCO, ECOSOC</td>
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<td>12.</td>
<td>Improve existing information management systems to include information specific to nanotechnologies and manufactured nanomaterials.</td>
<td>National Governments, intergovernmental and international organizations, industry, NGOs</td>
<td>2012–2015</td>
<td>Material Safety Data Sheet (MSDS) includes relevant nano information. Databases (e.g. nano portals) are developed.</td>
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<td>13.</td>
<td>Develop life cycle analysis (LCA) for manufactured nanomaterials</td>
<td>National Governments, international organizations, NGOs, industry, trade unions, chamber of commerce</td>
<td>201–2015</td>
<td>Number of LCA developed for manufactured nanomaterials; Availability of LCA tools for manufactured nanomaterials</td>
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<td>Nanotechnologies and manufactured nanomaterials</td>
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<td>14.</td>
<td>Identify and increase access to, and refine where necessary, existing guidance on the incorporation of nanotechnologies and manufactured nanomaterials in national chemicals management programs, and identify where gaps exist.</td>
<td>National Governments, intergovernmental and international organizations, industry, NGOs</td>
<td>2012–2015</td>
<td>Nanomaterials are included in increasing number of chemical management programs. Increased access to existing guidance available.</td>
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<td>15.</td>
<td>Incorporate nanomaterials and nanotechnologies in national chemicals management program.</td>
<td>National Governments, intergovernmental and international organizations, industry, NGOs</td>
<td>2012–2015</td>
<td>Nanomaterials are included in increasing number of chemical management programmes.</td>
<td>Involvement of all stakeholders and use of guidelines developed by intergovernmental organizations.</td>
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<td>16.</td>
<td>Identify and address existing gaps and needs in existing legal and institutional framework addressing nano specific issues, including in relation to enforcement.</td>
<td>National Governments, intergovernmental and international organizations, industry, NGOs, academia</td>
<td>2012–2015</td>
<td>Reports on regulatory and institutional gaps. New legislation addressing the management of nanotechnologies and manufactured nanomaterials is in place and enforced.</td>
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<td>17.</td>
<td>Establish national policy and institutional coordination plan regarding nanotechnologies and manufactured nanomaterials.</td>
<td>National Governments, intergovernmental and international organizations, industry, NGOs</td>
<td>2012–2015</td>
<td>Number of national policy and institutional coordination plans in place.</td>
<td>Involvement of all stakeholders and use of guidelines developed by intergovernmental organizations.</td>
</tr>
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<td>18.</td>
<td>Identify, strengthen and enforce regulatory provisions for the environmentally sound management of waste containing nanomaterials.</td>
<td>National Governments, intergovernmental and international organizations, industry, NGOs</td>
<td>2012–2015</td>
<td>Relevant legislation/or/and best practices are in place and implemented in all relevant sectors.</td>
<td>Develop pilot project for the sustainable management of waste containing nanomaterials.</td>
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<td>19.</td>
<td>Develop and/or update existing legislation covering the entire spectrum of work situations in which nanomaterials are handled, to protect workers, the public and the environment, from potential harm related to nanotechnologies and manufactured nanomaterials.</td>
<td>National Governments, intergovernmental and international organizations, industry, NGOs</td>
<td>2012–2015</td>
<td>Relevant legislation is fully implemented in all relevant sectors.</td>
<td>IOMC</td>
</tr>
<tr>
<td>20.</td>
<td>Promote extended producer responsibility (EPR) throughout the life cycle of manufactured nanomaterials.</td>
<td>National Governments, intergovernmental and international organizations, industry or industry associations, academia, NGOs</td>
<td>2012–2015</td>
<td>Number of countries who have EPR schemes in place (voluntary or mandatory). Number of manufacturers applying EPR schemes.</td>
<td>Involve Association of industrial chambers of commerce.</td>
</tr>
<tr>
<td>Nanotechnologies and manufactured nanomaterials</td>
<td>Increase the understanding of environmental, public and occupational health and safety implications of manufactured nanomaterials through awareness raising and capacity building, and information sharing and dissemination.</td>
<td>National Governments, intergovernmental and international organizations, industry, academia, NGOs, consumer groups, public and community research centers, trade unions and other interested groups</td>
<td>2012–2020</td>
<td>Key stakeholders, particularly consumers and workers are informed of risks and hazards of nanomaterials. Number of national and regional workshop on nanomaterials. Development of inventories of nanomaterials including their environmental, health and safety risks accessible to all stakeholders.</td>
<td></td>
</tr>
<tr>
<td>Work area</td>
<td>New activity</td>
<td>Actors</td>
<td>Target time frame</td>
<td>Indicators of progress</td>
<td>Implementation aspects</td>
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<td>22.</td>
<td>Promote public and private sectors partnerships for the environmental sound management of nanomaterials with adequate financial support to assist developing countries, small island developing states and countries with economies in transition to build scientific, technical, and legal capacity to address associated risks.</td>
<td>National Governments, intergovernmental and international organizations, industry, NGOs, academia</td>
<td>2012–2015</td>
<td>Number of public-private partnerships signed.</td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Develop guidance on legal and institutional gaps and needs assessment.</td>
<td>National Governments, intergovernmental and international organizations (IOMC), industry, academia, NGOs and other interested groups</td>
<td>2012–2015</td>
<td>Guidance document is available.</td>
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</tr>
</tbody>
</table>
Annex II

Justification document for the inclusion of hazardous substances within the life cycle of electrical and electronic products in the Global Plan of Action of the Strategic Approach to International Chemicals Management: complementing the Global Plan of Action with the creation of a new work area and associated activities in relation to the environmentally sound management of hazardous substances within the life cycle of electrical and electronic products

Proposal by the fourth African regional meeting

1. The manufacture of electrical and electronic products (e-products) has increased dramatically over the past several decades and there are now billions of such products produced and consumed worldwide. Furthermore, the manufacture of electrical and electronic products relies on and uses thousands of chemicals and other materials, many of which are hazardous. Hazardous substances contained in consumer e-products include phthalates, heavy metals such as cadmium, lead, and mercury, and persistent organic pollutants such as brominated flame retardants, in addition to other carcinogens, mutagens, reproductive and developmental toxins, and endocrine-disrupting compounds.1

2. Another issue of concern is the paucity of data on hazardous substances throughout the life cycle of such products, and in particular those found in e-products and in the workplace and communities around extraction, production and disposal sites.2

3. Large-scale consumption of e-products has caused the massive production of e-waste. This has become a global crisis, but not only in terms of quantity. In addition, this crisis stems from the various hazardous substances contained within the e-products that, when improperly managed, especially in countries with economies in transition and developing countries, are released into the environment, thereby posing significant environmental and human health risks.

4. Hazardous substances in the life cycle of e-products were adopted as an emerging policy issue by the International Conference on Chemicals Management at its second session, in May 2009. The Global Plan of Action of the Strategic Approach to International Chemicals Management is, however, yet to take on this issue. The African region is proposing to include a new work area in the Global Plan of Action, including new activities for the environmentally sound management of hazardous substances in the life cycle of e-products, at the third session of the International Conference on Chemical Management, in 2012.

5. The proposed new work area includes the following activities to tackle upstream, midstream and downstream issues in the life cycle of e-products:

   a) Identify, collate and promote an international set of best practice resources for managing chemical information flows in e-products, including information on hazard and risk data for health and safety for humans and the environment;

   b) Compile and disseminate best practices in business organizational procedures for managing hazardous substances in e-products; and create guidance documents for interested parties and stakeholders that include chemical management systems; investments in green chemistry; prevention activities such waste minimization; in addition to capacity-building for the sound management of e-products;

   c) Compile, share and disseminate information on chemicals of concern to human health and/or the environment in e-products, including summaries of the hazard and toxicological data of these chemicals;

1  SAICM/ICCM.2/INF/36.
2  SAICM/RM/Afr.4/INF/1, annex I, and SAICM/RM/LAC.2/3, annex C.
(d) Promote environmentally sound manufacturing through sustainable cleaner production and pollution prevention; in addition to the identification of tools and best practices that foster design for hazardous chemical reduction, elimination and substitution;

(e) Support policy, legal, technical and regulatory actions that promote hazardous chemical reduction, elimination and substitution in e-products;

(f) Formulate, promote and implement health-based exposure limits for workers that provide equal protection in the workplace and the community;

(g) Promote and implement integrated policies on environmentally sound management of e-waste, ensuring the involvement of relevant stakeholders.

6. These activities are described in further detail in the table below.

7. In relation to changing unsustainable patterns of consumption and production, the Plan of Implementation of the World Summit on Sustainable Development calls for a renewed commitment, as set out in Agenda 21, to the sound management of chemicals throughout their life cycle and of hazardous wastes for sustainable development and for the protection of human health and the environment; and to supporting developing countries in strengthening their capacity for the sound management of chemicals and hazardous wastes.

8. The present document describes how the activities of the proposed work area are relevant to protecting human health and the environment and to meeting global, regional and national needs, priorities, objectives and goals. It will reflect international best practices and efficient means of implementation at the national or international level, as appropriate.

Background information, including the relevance of the activity to protecting human health and the environment

9. Document SAICM/ICCM.2/INF/36, which was prepared as background information to guide the discussions on the emerging policy issue of electronic waste and to provide a rationale for proposed cooperative actions at the second session of the International Conference on Chemicals Management noted that there were a number of activities in the Global Plan of Action concerning waste management and illegal traffic but none specifically addressed the special problems of electronic waste and e-products.

10. The document underscores the fact that e-waste and e-products contain a myriad of toxic components and materials that can cause significant damage to the environment, human and animal health if crude recycling and disposal methods are used. The dumping of e-waste in any environment has negative health consequences such as the leaching of toxins (into the soil, air and groundwater) which may later enter the food chain. Medical experts have warned that exposure to these substances can cause damage to blood, nervous systems, DNA, immune systems and kidneys; can lead to respiratory and skin disorders and lung cancers; and can interfere with regulatory hormones and brain development (Osuagwu and Ikerionwu, 2010).

11. Various e-products have been confirmed as hazardous using the toxicity characterization leaching procedure (Musson and others, 2000; Li and others, 2006). The actual operation of several end-of-life processes for e-waste, such as landfills, incineration with municipal solid waste and mechanical recycling, results in the emission of heavy metals and organic pollutants to air, water and soil.

How the activity would contribute to achieving global, regional and national needs, priorities, objectives and goals

12. The Overarching Policy Strategy of the Strategic Approach recognizes the importance of adopting a life-cycle approach to chemicals management and for adequate information at all stages of the life cycle, in chemicals in products and illegal international traffic. Paragraphs 13–15 and 18 of the Overarching Policy Strategy are particularly relevant.

13. Paragraph 13 sets out the 2020 goals of the Strategic Approach in terms of the sound management of chemicals throughout their life cycle; and paragraph 14 emphasizes the need to minimize risks to human health and the environment and vulnerable groups subject to exposure to toxic chemicals throughout the life cycle of chemicals. Paragraph 15 aims to ensure that information on chemicals throughout their life cycle including where appropriate, chemicals in products, is available, accessible, user friendly, adequate
and appropriate to the needs of all stakeholders; while paragraph 18 aims to prevent illegal international traffic in toxic, hazardous, banned and severely restricted chemicals, including products incorporating these chemicals, mixtures and compounds and wastes.

14. The overall objectives of the Strategic Approach, as set out in the Overarching Policy Strategy, include pollution prevention, risk reduction, capacity-building, knowledge and information sharing, governance, partnership and technical cooperation. The Global Plan of Action provides the platform that identifies work areas and associated activities that may be undertaken by stakeholders to implement the objectives and goals in the Overarching Policy Strategy. The new work area proposed provides a road map to attain the Overarching Policy Strategy objectives in relation to hazardous substances in the life cycle of e-products.

15. Resolution II/4, on hazardous substances within the life cycle of electrical and electronic products of the International Conference on Chemicals Management invited the participating organizations of the Inter-Organization Programme for the Sound Management of Chemicals and the secretariats of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal and the Stockholm Convention on Persistent Organic Pollutants to develop, plan and convene, within available resources, a workshop to consider issues in relation to electrical and electronic products based on a life-cycle approach. In planning the workshop the following objectives were considered important: (i) Reduction and eventual phase out of restricted or hazardous substances in e-products and e-waste; (ii) Information needs about hazardous substances in e-products and e-waste along the product chain in their life cycle, (iii) Development of technical guidance and capacity-building; (iv) Governance; and (v) Awareness-raising and education. The new work area activities proposed for inclusion in the new GPA relating to hazardous substances in the life cycle of e-products would support the realization of these objectives.

16. In addition, four regional meetings were organized by the Strategic Approach secretariat during 2009 and 2010 in Africa, Asia and the Pacific, Central and Eastern Europe and Latin America and the Caribbean, at which participants discussed the issue of hazardous substances in e-products and provided clarification about country needs in those regions and expectations about the outcome of the international workshop. Much emphasis was laid on the issue of green design, the phasing-out, where feasible, of harmful substances in e-products, the need to protect workers’ health throughout the life cycle of e-products and the need for capacity-building and institutional strengthening.

17. The new work area that Africa propose to include in the Global Plan of Action is designed to support the fulfillment of the needs, priorities and goals as adopted by the participants at the above-mentioned regional meetings.

**Ways in which the activity reflects the best practices and will be effective**

18. The activities included in the proposed new work area aim to facilitate the adoption and sharing of international best practices, information sharing and exchange on hazard and risk data; institutional and regulatory voluntary initiatives, for example exposure and monitoring; health surveillance and disease prevention to ensure the protection of workers during the manufacture, use and disposal of e-products.

**Means of implementation at the global, regional or national level**

19. Some of the activities proposed, including strengthening existing chemical management mechanisms to include hazardous substances in e-products, promoting public-private partnership, developing information or labelling schemes on hazardous substances in e-products based on international best practices, capacity-building within the life cycle and developing pilot projects, could provide means of implementation at the national level. Bilateral and multilateral cooperation could be means of implementation at the regional or global level.
### Revised table of proposed activities for inclusion under a new work area relating to hazardous substances within the life cycle of electrical and electronic products

<table>
<thead>
<tr>
<th>Work area</th>
<th>New activity</th>
<th>Actors</th>
<th>Target time</th>
<th>Indicators of progress</th>
<th>Implementation aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-products green design</td>
<td>1. Compile and communicate lists of chemicals of concern to human health or the environment in e-products</td>
<td>National and regional authorities, Stockholm conventions, Basel and Stockholm convention regional centres, SAICM, industry, NGOs, Partnership for Action on Computing Equipment (PACE), Solving the e-Waste Problem (StEP), UNIDO, academic and research institutions</td>
<td>2012–2015</td>
<td>Database and information freely available on hazards and risks on hazardous chemicals in e-products.</td>
<td>IOMC coordination Create coordination committees at the national level and networks (global, regional and national) involving all key stakeholders</td>
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<tr>
<td></td>
<td>2. Promote public and private partnerships for the environmentally sound management of hazardous substances in e-products</td>
<td>National and regional authorities, industry, NGOs, Basel Convention, Stockholm Convention, SAICM Secretariat, Basel and Stockholm convention regional centres, PACE, StEP, UNIDO, academic and research institutions</td>
<td>2012–2015</td>
<td>Number of partnerships established. Number of partnership projects undertaken.</td>
<td>Establish or use existing private-public partnership initiatives, Global, regional and national networks involving all key stakeholders</td>
</tr>
<tr>
<td></td>
<td>3. Assess and fill gaps in existing policies, legal and institutional framework addressing design of e-products</td>
<td>National and regional authorities, NGOs, Basel Convention regional centres, Stockholm Convention, UNIDO, academic and research institutions</td>
<td>2012–2015</td>
<td>Reports on regulatory and institutional gaps in green e-products design. Number of countries and regional authorities with relevant policies, laws, regulations and guidelines. Relative reduction in toxic chemicals in e-products.</td>
<td>Inter-agency and multi-stakeholder committees created</td>
</tr>
<tr>
<td></td>
<td>4. Identify tools and best practices that advance design for hazardous chemical reduction, elimination and substitution</td>
<td>National and regional authorities, industry, NGOs, StEP, UNIDO, UNEP/IETC, Stockholm Convention, academic and research institutions</td>
<td>2012–2015</td>
<td>Number of green design tools identified. Best practices guidance developed.</td>
<td>National, regional and global coordination Partnerships in cooperation with industry.</td>
</tr>
<tr>
<td>Work area</td>
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<td>5.</td>
<td>Adopt policy instruments and actions that support hazardous chemical reduction, elimination and substitution in electrical and electronic products</td>
<td>National and regional authorities, industry, NGOs, academic and research institutions</td>
<td>2012–2015</td>
<td>Number of instruments and policy actions adopted and implemented. Hazardous chemicals in electrical and electronic products regulated. Disclosure of hazardous chemical ingredients across supply chain. Green electrical and electronic product procurement initiatives undertaken.</td>
<td>Global, regional and national coordination</td>
</tr>
<tr>
<td>6.</td>
<td>Promote harmonization of policies and regulations that support hazardous chemicals reduction, elimination and substitution in e-products</td>
<td>National and regional authorities, UNEP, UNIDO, SAICM Secretariat, Basel and Stockholm convention regional centres, industry, NGOs, academic and research institutions</td>
<td>2012–2015</td>
<td>Number of policies and laws harmonized.</td>
<td>Global, regional and national coordination</td>
</tr>
<tr>
<td>8.</td>
<td>Prioritize reduction of exposure; eliminate or substitute the hazardous substances and production processes of greatest concern</td>
<td>National and regional authorities, industry, NGOs, UNIDO, WHO, ILO, UNITAR, StEP UNEP/DTIE, Stockholm Convention</td>
<td>2012–2015</td>
<td>Number of substitutes and alternatives produced and effective. Health status of workers and local communities improved through the use of alternatives and substitutes.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Conduct research and development on safer chemicals substitutes, alternatives, and safer production processes</td>
<td>National and regional authorities, industry, NGOs, UNIDO, UNITAR, Basel Convention regional centres, UNEP/DTIE, Stockholm Convention, World Bank, academic and research institutions</td>
<td>2012–2015</td>
<td>Number of research outputs produced. Number of research successes achieved. Safer substitutes and safer production processes developed.</td>
<td>Provision of research and capacity-building assistance, including training and methodologies</td>
</tr>
</tbody>
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Substances of concern include those that are persistent, bioaccumulative and toxic substances (PBTs); very persistent and very bioaccumulative substances; chemicals that are carcinogens or mutagens or that adversely affect, among other things, the reproductive, endocrine, immune or nervous systems; persistent organic pollutants (POPs); mercury and other chemicals of global concern; chemicals produced or used in high volumes; those subject to wide dispersive uses; and other chemicals of concern at the national level.
<table>
<thead>
<tr>
<th>Work area</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>10. Formulate, promote and implement health-based exposure limits for workers that provide equal protection in the workplace and the community</td>
<td>National and regional authorities, industry, NGOs, ILO, WHO, UNIDO, UNITAR, International Standards Organization (ISO), academic and research institutions, and the World Bank</td>
<td>2012–2015</td>
<td>Number of operational health related standards developed and implemented. Occupational health information and exposure monitoring available.</td>
<td>Standard setting and licensing</td>
</tr>
<tr>
<td>Environmentally sound management of e-waste</td>
<td>11. Assess gaps in existing policy, legal and institutional framework, including control of transboundary movement and illegal traffic,</td>
<td>National and regional authorities, Basel Convention, SAICM Secretariat, PACE, Basel Convention regional Centres, UNIDO, industry, NGOs, European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL), International Network for Environmental Compliance and Enforcement (INECE)</td>
<td>2012–2015</td>
<td>Number of policies, laws and regulations developed and enforced. Number of illegal traffic shipments returned to country of origin.</td>
<td>Multi-stakeholder participation. Coordination of existing initiatives on the control or transboundary movement of e-waste and illegal shipment.</td>
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<tr>
<td></td>
<td>13. Conduct pilot projects on environmentally sound management of e-waste, without duplicating Basel Convention programme</td>
<td>National and regional authorities, UNIDO, SAICM Secretariat, Stockholm Convention, Basel Convention, PACE, StEP, Basel and Stockholm convention regional centres, industry, academic and research institutions</td>
<td>2012–2015</td>
<td>Number of informal sector persons successfully trained in the environmentally sound management of waste; sustainable collection and dismantling of end-of-life e-products; and the control of illegal traffic. Number of pilot projects undertaken. Number of project reports completed.</td>
<td></td>
</tr>
<tr>
<td>Awareness-raising</td>
<td>14. Promote awareness, information, education and communication for all relevant stakeholders along the supply chain</td>
<td>National and regional authorities, UNIDO, UNEP, SAICM Secretariat, UNITAR, UNESCO, Stockholm Convention, Basel Convention, PACE, StEP, Basel and Stockholm convention regional centres, industry, academic institutions, NGOs</td>
<td>2012–2015</td>
<td>Level of awareness among stakeholders increased. Amount of information, education and communication materials produced.</td>
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</tbody>
</table>