Assessment paper

Assessment on linkages with other clusters related to chemicals and waste management and options to coordinate and cooperate on areas of common interest

Prepared by United Nations Environment Programme
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Executive summary

During the third meeting of the Open-Ended Working Group (OEWG3) for the Strategic Approach to International Chemicals Management (SAICM)[1], stakeholders invited the United Nations Environment Programme (UNEP) to provide an assessment on linkages with other clusters related to chemicals and waste management and options to coordinate and cooperate on areas of common interest. Acknowledging the need for multi-sectoral and multi-stakeholder cooperation for advancing the sound management of chemicals and waste as well as the Sustainable Development Goals (SDGs), the identification of options to coordinate and cooperate may help to streamline efforts, avoid duplications, increase visibility of priority topics, and bundle resources to achieve common goals and targets.

This assessment paper explores the linkages and options to coordinate and cooperate between chemicals and waste management and seven related clusters. The selection of clusters is based on linkages identified in the Global Chemical Outlook II (p. 10-11), with the addition of human rights based on its cross-cutting relevance. Each of these clusters demonstrate a strong link with the SDGs.

The assessment reveals a plethora of common areas of interest in each of the examined clusters. Yet, gaps remain in existing mechanisms for coordination and cooperation. Accordingly, options to coordinate and cooperate (and/or to enhance existing coordination and cooperation) can be identified across all the clusters. This applies as well for several cross-cutting themes that are identified in this assessment (e.g. the science-policy interface). The 2030 Agenda offers a suitable overarching platform to strengthen cooperation across the clusters. In addition, SAICM and the Sound Management of Chemicals and Waste Beyond 2020 process offers a window of opportunity to establish a framework and the parameters to facilitate such enhanced multi-stakeholder and multi-sector collaborations and coordination.

Acknowledging that cooperation and coordination initiatives are already in place across these clusters, this assessment seeks to build upon these activities and explore means to further scale up such efforts. It is also recognized that the discussed here clusters are not comprehensive and options to coordinate and cooperate on common areas of interest also exist within other clusters related to chemicals and waste management. This assessment is considered an initial step towards understanding the ongoing and potential future interconnectivity among clusters. A more in-depth examination of options to coordinate and cooperate might be undertaken if deemed necessary.

[1] http://www.saicm.org/Portals/12/Documents/meetings/OEWG3/in_session/V3%20Sound%20management%20of%20chemicals%20and%20waste%20beyond%202020%20-%20FINAL.docx

The following provides a summary of key options on **how** and on **what topics** opportunities exist to coordinate and cooperate between the **chemicals and waste cluster** and the other clusters.

Health

- Further link the World Health Organization's (WHO) Chemicals Road map with SAICM beyond 2020 framework
- Enhance cooperation in the implementation of the International Health Regulations (IHR)
- Consider collaboration and joint research on topics including:
  - (i) antimicrobial resistance (AMR)
  - (ii) pesticides and fertilizers
  - (iii) environmental and health risk assessment of plastics an microplastics
  - (iv) lead paint, cadmium, etc.

World of work

- Knowledge sharing and linking the chemical databases
- Share technical guidance and expertise on occupational safety and health (OSH)
- Continue and enhance the ongoing cooperation between multilateral environmental agreements and International Labour Organization (ILO)
- Consider collaboration and joint research on topics including:
  - (i) Chemical accident prevention, preparedness and response
  - (ii) Child labour
  - (iii) Promotion and creation of decent and safe work opportunities
  - (iv) E-waste
  - (v) Greening industries and jobs
  - (vi) Elimination of work-related diseases, etc.

Biodiversity

- Aligning and strengthening relevant targets and indicators of the Post-2020 Global Biodiversity Framework and SAICM beyond 2020 by jointly identifying priority chemicals of concern, and parameters and methodologies for monitoring
- Mobilizing the chemicals and waste conventions in achieving biodiversity goals
- Consider collaboration and joint research on topics including:
  - (i) Plastic pollution, including harmonized monitoring, reporting and assessment methodologies
  - (ii) Artisanal mining driven land degradation
  - (iii) Water birds and lead poisoning
  - (iv) Pesticides use and loss of pollinators
  - (v) Nutrient management, etc.

Climate Change

- Collaboration on achieving the objectives of the Paris Agreement
- Joint efforts on long-term monitoring data to evaluate the impact of climate change on chemical releases
- Consider collaboration and joint research on topics including:
  - (i) Climate change triggered chemical releases
  - (ii) Climate change impacts on contaminants in the ocean
  - (iii) Clean technologies
  - (iv) Waste and resource management as a contributor to climate change mitigation measures, etc.
  - (v) Climate change triggered channelling of fossil fuel use for plastic production, etc.

Agriculture and Food

- Collaboration on implementation of the International Code of Conduct on Pesticide Management and implementation of the Fertilizer Code
- Applying lessons learned from the transboundary movement of pesticides and the Food and Agriculture Organization of the United Nations (FAO) training programme
- Consider collaboration and joint research on topics including:
  - (i) climate change triggered chemical release
  - (ii) use of harmful pesticides and herbicides;
  - (iii) exposure of farmers due to unsound use of pesticides;
  - (iv) contamination of groundwater
  - (v) use of chemical fertilizers
  - (vi) use of food conservation, colouring agents, food safety (pesticides residues)
  - (vii) addressing food waste, etc.

Human Rights

- Enhance engagement with the Office of the United Nations High Commissioner
- Consider collaboration and joint research on topics including:
  - (i) Right to know, Right of Access to Information, e.g. by strengthening the efforts to promote global participation in Pollutant Release and Transfer Register (PRTR) and compliance with Globally Harmonized System of Classification and Labelling of Chemicals (GHS)
  - (ii) Access to Justice and effective remedy, e.g. by engaging with UNEP's Environmental Rights Initiative
  - (iii) Awareness raising and information sharing, e.g. by drawing lessons learned from the Minamata National Action Plans (NAPs) that inter alia aims to address child labour.

Sustainable consumption and production

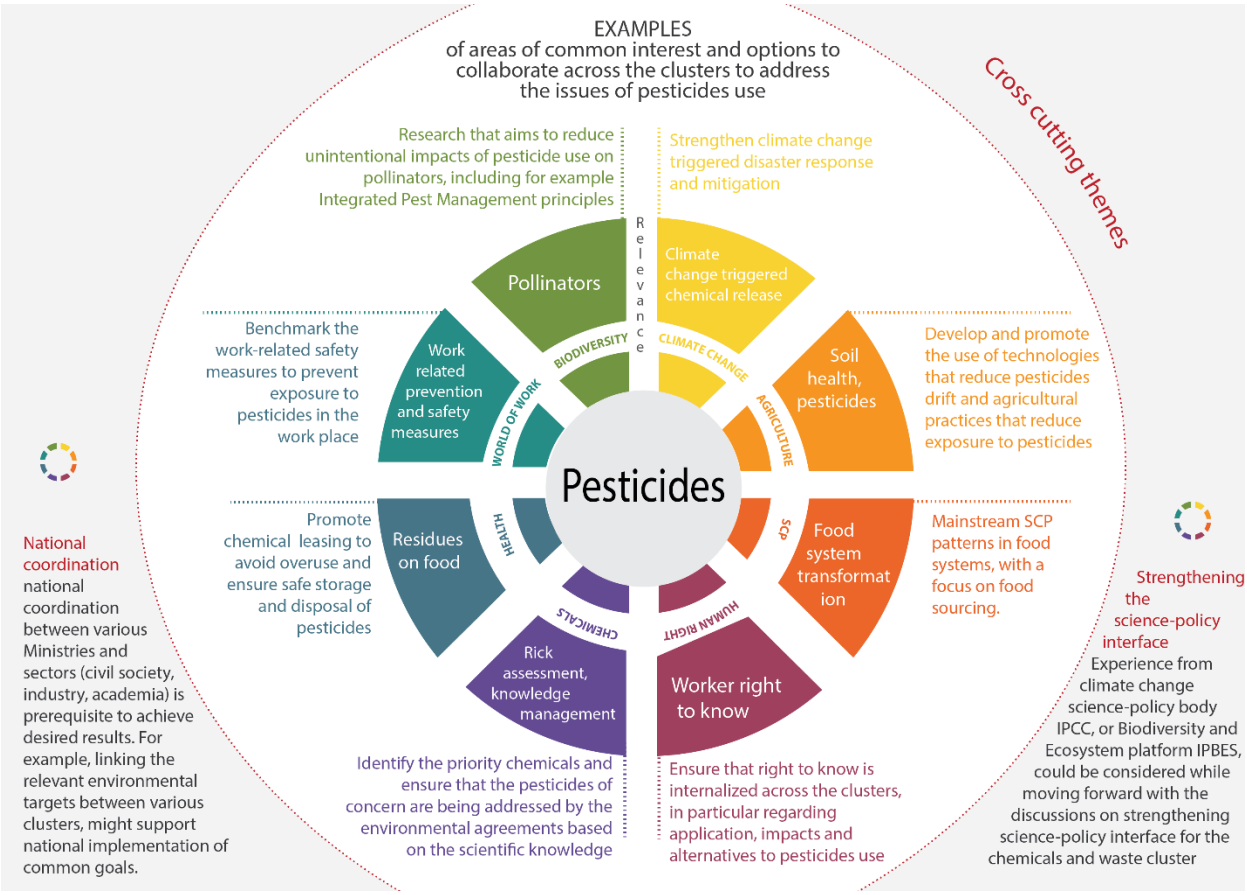
- Collaboration to increase resource management and efficiency, for example through:
  - (i) Phase out of hazardous chemicals throughout life cycle of products
  - (ii) Applying green chemistry to reduce materials use and increase material efficiency
  - (iii) Exploring ways to turn waste into resources
- Strengthening linkages with the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP)
- Enhancing participation in Eco-innovation programme and private sector engagement
- Promoting life cycle approach for environmentally sound management (ESM) of wastes
- Applying lessons learned from the Life Cycle Initiative
- Informing consumers about chemicals of concern in products.

Cross cutting themes

- Strengthening the science-policy interface, e.g. by applying lessons learned from previous initiatives and Science Policy platforms from other clusters (IPCC, IPBES, etc.)
- Enhancing national coordination e.g. by engaging multisectoral cooperation in the context of meeting obligations of the multilateral environmental agreements (MEAs)
- Promoting stakeholder involvement, e.g. by:
  - (i) Mapping relevant events and parallel processes across clusters,
  - (ii) Increasing participation in each other's governing body meetings
  - (iii) Exploring possibilities of resource mobilization for cross thematic initiates
  - (iv) Increasing collaboration between scientific/technical bodies across clusters

Example of thematic collaboration

Pesticides: Figure below presents selected areas of common interests (relevance) and an example of contribution from each cluster to managing and jointly addressing pesticides use.



1. Introduction

The transboundary movement of chemicals and waste, through diverse media, namely water, air, and soil, as well as the international trade, cross-sectoral application and related exposure pathways of chemicals, call for coordinated action among the relevant stakeholders and sectors. The sound management of chemicals and waste cuts across the 17 SDGs and is a crucial element underpinning the implementation of the 2030 Agenda, as chemicals and waste affect many aspects of development. Accordingly, achieving the sound management of chemicals and waste and the 2030 Agenda requires multi-stakeholder and multi-sectoral collaboration and coordination.

The international community has developed various MEAs, voluntary frameworks and other initiatives to address specific aspects of the sound management of chemicals and wastes.

As a multi-sectoral and multi-stakeholder policy framework, SAICM, was adopted in 2006 by the First International Conference on Chemicals Management (ICCM1). Since its original objective was set for 2020, SAICM has initiated an intersessional process to prepare recommendations regarding the Strategic Approach and sound management of chemicals and waste beyond 2020.

During OEWG3 for SAICM[2], stakeholders **invited UNEP to provide an assessment on linkages with other clusters related to chemicals and waste management and options to coordinate and cooperate on areas of common interest.** Acknowledging the need for multi-sectoral cooperation for advancing the sound management of chemicals and waste and the SDGs, the identification of options to coordinate and cooperate may help to streamline efforts, avoid duplications, increase visibility of priority topics, and bundle resources to achieve common goals and targets.

In response, the UNEP Chemicals and Health Branch, in consultation with the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) Participating Organizations, Secretariats of relevant MEAs, and focal points from the biodiversity, climate change, and human rights areas of work, have developed this report that assesses the linkages between chemicals and waste management and other clusters, and identifies opportunities to coordinate and cooperate on areas of common interest. This assessment is considered an initial step towards a more in-depth examination of options to coordinate and cooperate and will thus be considered a living document that is to be further refined based on further stakeholder consultations. It aims to provide elements for consideration by the intersessional process and for potential incorporation when shaping the future of chemicals and waste management. At present the paper is being submitted as an information document to the fourth meeting of the intersessional process (IP4) considering the Strategic Approach and sound management of chemicals and waste beyond 2020, taking place

[2] http://www.saicm.org/Portals/12/Documents/meetings/OEWG3/in_session/V3%20Sound%20management%20of%20chemicals%20and%20waste%20beyond%202020%20-%20FINAL.docx

on 23-27 March 2020, in Bucharest, Romania. Comments and inputs received from the interested stakeholders after the IP3 in October 2019 have been taken into consideration in finalizing the paper. The target audience includes SAICM stakeholders as well as other stakeholders active in the clusters discussed herein and any other clusters with areas of common interest.

The relevance of the chemicals and waste management for the 2030 Agenda for Sustainable Development and its SDGs has been previously highlighted in various instances, including the governing bodies of the Basel, Rotterdam and Stockholm conventions[3] and the IOMC[4]. Given the relevance of chemicals and waste across the 2030 Agenda for Sustainable Development, the intersessional process provides an opportunity to identify linkages and put forward options to coordinate and cooperate between chemicals and waste management and other international policy agenda beyond 2020.

The first step in undertaking the assessment was to identify and define the "other clusters related to chemicals and waste management". Many approaches and organizing frameworks are conceivable in identifying relevant clusters, e.g. based on economic sectors, or ministerial structures at the national level, or definitions in the scientific literature, or the existence and scope of international agreements etc. Recognizing each of these options has both advantages and limitations, the selection of the clusters was therefore based on the linkages identified in the Global Chemical Outlook II (GCO II) (p. 10-11), with the addition of human rights based on its cross-cutting relevance. Each of these clusters demonstrates a strong link with the SDGs (see below).

The current paper discusses the linkages and options to coordinate between chemicals and waste management and the seven identified clusters[5]:

1. Health (e.g. SDG 3, target 3.9; SDG 6, target 6.3; SDG 12, target 12.4)
2. World of Work (e.g. SDG 8)
3. Biodiversity (e.g. SDG 14 and 15)
4. Climate Change (e.g. SDG 13)
5. Agriculture and Food (e.g. SGD 2 and 15)
6. Sustainable Consumption and Production (e.g. SDG 12[6])
7. Human Rights (e.g. SDGs 2, 3, 4, 5 and 10)

At the national level, many countries have established inter-ministerial coordination mechanisms to advance coordination and cooperation in chemicals and waste management and other clusters. At the international level, a range of intergovernmental organizations involved in the above-mentioned clusters, are already cooperating with the chemicals and waste management on areas of common interest, for example the IOMC or in the context of SAICM. Examples of concrete areas of cooperation are featured in the following chapter. Acknowledging that cooperation and coordination initiatives are already in place across these clusters, this assessment seeks to build upon these activities

[3] Decisions BC-13/16, RC-8/10 and SC-8/20 on international cooperation and coordination which emphasize the important contributions of the conventions for the implementation of the 2030 Agenda for Sustainable Development and relevant SDGs and associated targets.

[4] http://www.saicm.org/Portals/12/Documents/SDGs/IOMC_CWMandSDG_brochure_final_01Feb18.pdf

[5] The selection of the policy agenda is based on the linkages identified in the Global Chemical Outlook II, with the addition of chemicals and human rights agenda.

[6] Also partially including SDGs 7,9,11

and explore means to further scale up such efforts. It is also recognized that these clusters are not comprehensive and options to coordinate and cooperate on common areas of interest also exist in other clusters related to chemicals and waste management. Acknowledging the importance of other clusters that are not reviewed here and their links to the SDGs, such assessment may be undertaken at a later stage.

The identified cross-cutting themes, including science policy interface, national coordination, and stakeholder involvement, are briefly discussed in chapter 3: “Advancing 2030 Agenda and beyond”. Moreover, chapter 3 outlines a proposal to establish a collaborative platform to enhance cooperation and coordination in the light of advancing the 2030 Agenda and beyond.

2. Linkages and Opportunities to coordinate and cooperate

The present chapter gathers information on each of the studied cluster, including the chemicals and waste cluster. The relevance for chemicals and waste cluster is discussed and relevant legally binding instruments, voluntary agreements and initiatives, science-policy platforms and other relevant resources, are highlighted[7]. The chapter further provides examples of existing and potential future linkages and options to coordinate and cooperate between the chemicals and waste cluster and other studied clusters.

The discussed linkages and options to coordinate and cooperate are not exhaustive but instead seek to highlight some important areas for action as well as to illustrate the breadth of options available. Stakeholders within each cluster are therefore encouraged to identify additional options to coordinate and cooperate.

2.1. Chemicals and Waste

From pharmaceuticals and plant protection products to the production of cars, computers and textiles, many manufactured chemicals have helped improve human health, food security, productivity and quality of life throughout the world. Nevertheless, many chemicals, products and wastes have hazardous properties and continue to cause significant adverse impacts on human health and the environment because they are not properly managed. Ensuring the sound management of chemicals and waste is essential for advancing sustainable development across its social, economic and environmental dimensions. Chemistry and the chemical industry have important roles to play in achieving the sound management of chemicals and waste within a sustainable development context.

The chemicals and waste cluster is shaped by various legally binding instruments, voluntary agreements and other initiatives. Since 1987, a few multilateral treaties have established rights and obligations as well as goals and targets for different aspects of the sound management of chemicals and wastes. They serve to identify and address chemicals and wastes of the highest concern at the global level. The international community has taken concrete and legally binding actions to control the use of specific chemicals, e.g. through the Minamata Convention on Mercury, or groups of chemicals, e.g. via the Stockholm Convention on Persistent Organic Pollutants (POPs) or the Montreal Protocol on Substances that Deplete the Ozone Layer. Moreover, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal aims to protect human health and the environment from the adverse effects of hazardous wastes

[7] An initial mapping is featured in the annex.

and other wastes, and the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade promotes shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm. The ILO Conventions, such as the Chemicals Convention, 1990 (No. 170)[8] and Major Industrial Accidents Convention, 1993 (No.174), as well as the WHO IHR (2005) also address chemicals and waste management, but are discussed under the sections on health and the world of work, respectively.

In addition to the legally binding instruments, several voluntary instruments adopted by the governing bodies of international organizations address a wide range of chemicals and wastes issues. This includes SAICM and the intersessional process initiated by the ICCM. Moreover, an internationally harmonized approach to classification and labelling of chemicals[9] (GHS) provides a foundation for the safe use, transport and disposal of chemicals. The Pollutant Release and Transfer Register[10] (PRTR) is a global database that gathers information of potentially hazardous chemical substances and/or pollutants released to air, water and soil, including information on polluters, what kind of substance and how much is being released.

In order to foster coordination among intergovernmental organizations, the IOMC brings together nine intergovernmental organizations actively involved in chemical safety[11]. The IOMC was established in 1995, following recommendations made by the 1992 UN Conference on Environment and Development and in particular those in Chapter 19 of Agenda 21 about toxic chemicals. The objective of the IOMC is to strengthen international cooperation in the field of chemicals and to increase the effectiveness of the organizations' international chemicals programmes.

It is important to highlight the existing cooperation. For example, the cooperation between MEAs and other international bodies is highlighted in the treaties as the means for achieving the purposes of the conventions. For instance, under the Basel, Rotterdam and Stockholm (BRS) conventions, the mandate for enhanced cooperation with other international bodies within and outside of the chemicals cluster stems from the convention texts, joint decisions on international cooperation, the conventions' programmes of work or more specific decisions on thematic issues. International cooperation efforts are discussed during meetings of the conferences of the Parties when the secretariat provides a report on its cooperative activities. This allows Parties to exchange their views and provide guidance which areas should require further cooperation. The BRS secretariat has reported undertaking cooperation and coordination activities with more than 50 intergovernmental organizations, MEAs secretariats, and non-governmental organizations and networks on various thematic areas over the period 2017–2018.[12]

[8] https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_INSTRUMENT_ID:312315

[9] http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html

[10] https://prtr.unece.org/

[11] https://www.who.int/iomc/participants/en/

[12] Document UNEP/CHW.14/20–UNEP/FAO/RC/COP.9/16–UNEP/POPS/COP.9/23.

As an example of an arrangement providing a high degree of cooperation (i.e. integration) between international bodies, it is worth acknowledging the process that was put in place by Parties to the BRS conventions to enhance cooperation and coordination among the conventions in order to facilitate their implementation. While this process describes a degree of integration which is a function of the objectives and scopes of the respective conventions and may thus not be foreseen for enhanced cooperation across clusters, it provides some interesting lessons learned and examples of cooperative arrangements that considered at the international level between international bodies. Triggered in 2006, the so-called synergies process led, among other things, to:

i) the establishment of a single Secretariat with a matrix structure serving the three conventions, with a joint head for the UNEP administered part of the secretariat,

ii) meetings of the conferences of Parties held back to back, which include joint sessions on common issues,

iii) adoption of substantially identical and harmonized decisions on joint issues, such as technical assistance, international cooperation, scientific work, clearing-house mechanism, among others, and

iv) alignment of budgets and programmes of work. Those arrangements aim at promoting the policy coherence at all relevant levels, improve efficiency, reduce unnecessary overlap and duplication and enhance coordination and cooperation among the MEAs as well as with other international bodies[13].

[13] http://www.brsmeas.org/Decisionmaking/Overview/SynergiesProcess/tabid/2615/language/en-US/Default.aspx.

2.2. Health

Characterization and linkages

The sound management of chemicals and waste plays an important role in avoiding and minimizing risks posed by harmful chemicals to human health, especially that of vulnerable populations such as pregnant women, infants and children. The links between chemicals and health are well established and the health sector plays a key role in efforts to minimize health risks. However further efforts are needed to strengthen linkages between the health and other sectors working on chemicals and waste management. Additional measures to ensure health sector engagement in chemicals and waste management agenda are being considered in the intersessional process on SAICM beyond 2020. Also, in order to increase awareness of the important roles of the health sector in the management of chemicals and wastes, a WHO Chemicals Road Map was approved by the 70th World Health Assembly (WHA) in 2017[14].

The revised IHR (2005)[15] serve as a global framework to prevent, detect, assess and provide a coordinated response to events that may constitute a public health emergency of international concern[16]. Implementation of the IHR is an obligation for the 196 State Parties. The IHR touches on a range of issues that are directly and indirectly linked to the sound management of chemicals and waste. For example, core capacity 12 relates to the detection and alerting of, and responses to, chemical events. Other capacities include chemical events (e.g. emergencies) legislation and policies, preparedness and response, and strategic coordination.

Examples of areas of common interest between Health and chemicals and waste management

- poisons centers
- environment and health monitoring and surveillance systems
- safety guidelines and norms regarding water, air, soil, food etc.
- laboratory capacity
- medical school curricula
- burden of disease estimates
- residential exposure to industrial chemicals and consumer products
- use of chemicals in healthcare and health care waste management
- occupational exposure, in formal and informal settings
- health impacts of pesticides and fertilizers
- pharmaceuticals in the environment and environmental dimension of AMR
- chemical releases caused by natural hazard events and disasters
- management of contaminated sites

At the 72nd WHA the global draft strategy was adopted which aimed to provide a vision and way forward on how the world and its health community need to respond to environmental

[14] GCO-II Introduction p. 10
[15] https://www.who.int/ihr/about/en/
[16] https://www.who.int/ihr/finalversion9Nov07.pdf

health risks and challenges until 2030, and to ensure safe, enabling and equitable environments for health by transforming our way of living, working, producing, consuming and governing.

Acknowledging the impacts of chemicals and waste on the public health agenda, in May 2017, the 70th WHA approved the Road map to enhance health sector engagement in SAICM towards the 2020 goal and beyond. In addition, the WHA has taken other resolutions on chemical safety which address numerous areas of common interest with MEAs, in particular the BRS conventions[17]. Moreover, many of the legally binding environmental convention's overall objective is to protect human health and the environment from harmful effects of chemicals and waste. Moreover, various chemicals conventions have a specific component promoting health related issues. For example, Minamata Convention Article 16 (2) b on Health Aspects asks the parties to "Promote cooperation and exchange of information with the World Health Organization, the International Labour Organization and other relevant intergovernmental organizations, as appropriate". And article 7 of the Stockholm Convention asks Parties to: "consult their national stakeholders, including women's groups and groups involved in the health of children, in order to facilitate the development, implementation and updating of their implementation plans."

The 3rd session of the United Nations Environment Assembly (UNEA3) further highlighted the linkages between chemicals and waste and the health agenda through its Resolution on Environment and Health[18]. As a result of deliberations at that meeting, UNEP has developed an Implementation plan "Towards a pollution-free planet" which the Assembly welcomed at its fourth session[19]. The Plan focuses on the challenges that are common to various dimensions of pollution including chemicals and waste. The challenges that the plan identifies broadly pertain to the areas of knowledge, implementation, infrastructure, awareness and leadership, all areas that would benefit from wide partnerships and inter-cluster collaboration. The UNEA affirms the strong interlinkages between environment and health, including health inequalities, and the importance of addressing them jointly by implementing the 2030 Agenda for Sustainable Development. For example, the collaboration with WHO was highlighted in the development of "report on the environmental and health impacts of pesticides and fertilizers and ways of minimizing them" and "report on the environmental impacts of antimicrobial resistance and the causes for the development and spread of resistance in the environment".

Moreover, the WHO Chemicals Road Map outlines concrete actions where the health sector has either a lead or important supporting role to play in the sound management of chemicals, recognizing the need for multi-sectoral cooperation. The actions are organized into four areas: risk reduction; knowledge and

[17] Including for example: Sound management of obsolete pesticides and other obsolete chemicals (WHA 63.26, May 2010); Safe and environmentally sound waste management (WHA 63.25, May 2010); Promotion of chemical safety, with special attention to persistent organic pollutants (WHA 50.13, May 1997).

[18] https://undocs.org/UNEP/EA.3/Res.4

[19] http://wedocs.unep.org/bitstream/handle/20.500.11822/25514/Africa_WMO.pdf?sequence=1&isAllowed=y

evidence; institutional capacity; and, leadership and coordination[20].

Options to coordinate and cooperate

The following provides examples of options for how the health cluster and the chemicals and waste cluster can coordinate and cooperate (or enhance existing coordination and cooperation):

- WHO Chemicals Road map

  The time horizon of the WHO chemicals road map is past 2020, and it is specifically linked to the 2030 Agenda for Sustainable Development. Therefore, the health sector has set out its priorities for the post 2020 period, which presents an opportunity in the SAICM beyond 2020 discussions for the chemicals and waste and health relevant sectors to identify areas where they wish to strengthen cooperation and partnership. Moreover, WHA Decision 70(23) provides considerations for the road map to be updated in light of the outcome of the intersessional process to prepare recommendations regarding the Strategic Approach and the sound management of chemicals and waste beyond 2020[21]. As such, opportunities exist to further link the health and chemicals and waste agendas beyond 2020. The road map lists number of areas on which further coordination and cooperation is envisaged, including for example laboratory capacities, monitoring and surveillance systems, guidelines and norms re. food, water, air, soil etc., medical school curricula etc. In each of these areas, relevant focal points from the environment, health and other sectors could jointly develop plans e.g. on how to strengthen national capacities for bio-monitoring or to reform relevant curricula to ensure that they address the health impacts of chemicals, which could for example also be linked to parallel efforts to integrate green and sustainable chemistry in relevant curricula.

- National multisectoral collaboration

  Continued strengthening of the collaboration between national stakeholders is a horizontal issue across all the clusters and it is further discussed in chapter 3. Cases of relevance for the health cluster are featured below.

  For example, national collaboration is required in implementing many health-related articles of the Minamata Convention. Including the actions on mercury-containing medical devices used in health care, and the development of actions on artisanal and small-scale gold mining (ASMG) where ministries of health and other relevant ministries need to collaborate on the development and implementation of public health strategies. Numerous other examples are set out in the WHO Chemicals Road Map. It would therefore be a useful exercise to assess the key national objectives, e.g. in the form of action plans or road maps, so that specific areas for collaboration between the health and other clusters at national level are identified and acted upon.

  Another example of multisectoral collaboration is the Ministerial Conference for Health and Environment, organized

[20] https://apps.who.int/iris/bitstream/handle/10665/273137/WHO-FWC-PHE-EPE-17.03-eng.pdf?ua=1

[21] https://apps.who.int/iris/bitstream/handle/10665/273137/WHO-FWC-PHE-EPE-17.03-eng.pdf?ua=1

every five years by the European Regional office of the WHO in close collaboration with other UN agencies. The conference brings together relevant stakeholders to develop policies and actions on environment and health. As one of the outcomes of the last conference, Member States committed themselves to drawing up a tailored national portfolio for action in seven priority areas and endorsed the new institutional arrangements for the European Environment and Health Process[22]. The future meetings of the Conference provide an excellent platform to further enhance the cooperation between relevant actors across the Health and Chemicals and Waste clusters.

- Implementation of the International Health Regulations

  Enhancing cooperation could for example be considered under the IHR goal "Prevent and respond to international public health emergencies" by strengthening the management of specific risks associated with the use of chemical and resulting toxic chemicals accidents. Ensuring that environmental risks are fully understood and actions to counter them are supported in the national implementation of international health instruments, such as the IHR (2005), would particularly enhance and augment capacities to prevent, prepare for and respond to environmental emergencies. Efforts under core capacity 12, which covers the detection and alerting of, and responses to, chemical events, could be linked to parallel efforts, such as under the UNEP Flexible Framework for Addressing Chemical Accident Prevention and Preparedness. Relevant focal points could work jointly to develop, improve or review Chemical Accident Prevention and Preparedness Programmes at the national level. Joint efforts could also be undertaken under the Organisation for Economic Co-operation and Development (OECD) Chemical Accidents Programme, or the United Nations Economic Commission for Europe (UNECE) Convention on the Transboundary Effects of Industrial Accidents.

In addition, the following presents options on topics – areas of common interest – where collaboration might be enhanced and put into practice.

- Antimicrobial resistance

  Coordination and collaboration on the topic of AMR might be considered, for example following the UNEA3 resolution on Environment and Health, relevant stakeholders might consider a collaboration to develop a " report on the environmental impacts of antimicrobial resistance and the causes for the development and spread of resistance in the environment, including the gaps in understanding of those impacts and causes". Various options for coordination and cooperation present themselves in this area of work. For example, UNEP may scale up its engagement in the Tripartite Collaboration on AMR, to ensure that WHO, FAO, the World Organisation for Animal Health, and UNEP speak with one voice on matters related to AMR. Among scientific communities, closer collaboration could be

[22] http://www.euro.who.int/en/media-centre/events/events/2017/06/sixth-ministerial-conference-on-environment-and-health/documentation/anchored-list/report-of-the-sixth-ministerial-conference-on-environment-and-health

envisaged to further strengthen the knowledge base on the environmental dimensions of AMR. Projects in this field could benefit from joint fundraising efforts by environment and health actors.

- Pesticides and fertilizers

  Coordination and collaboration on the topic of environmental and health impacts of pesticides and fertilizer, in particular as per UNEA3 resolution on Environment and Health. Collaboration might be considered in the development of the science base and recommendations in a "report on the environmental and health impacts of pesticides and fertilizers and ways of minimizing them" [23]. At the national level, ministries of agriculture, health, labour and the environment could scale up cooperation in various areas, e.g. by developing and undertaking joint training programs in which farmers are educated in a holistic manner to understand and weigh the trade-offs that may be involved in seeking to maximize harvests while at the same time minimizing risks from releases of chemicals, in particular regarding farmers and their families.

- Environmental and health risk assessment of plastics and microplastics

  As per the request of the UNEA4[24], collaboration among relevant international organizations, including UNEP and WHO, might be considered to harmonize monitoring, reporting and assessment methodologies, in order to strengthen scientific and technological knowledge with regard to marine litter, including marine plastic litter and microplastics. Efforts at the national and international level as well as in the scientific community could be scaled up to undertake joint research on potential risks from chemical additives in plastics as well as chemicals adsorbed by plastics, with a view, in particular, to the potential effects on vulnerable groups. This could also cover circularity considerations, such as the presence of hazardous chemical additives from plastics that appear in recycled products. Work to better understand fate and impact of microplastics for human health and in the environment might be considered among various stakeholders from private sector (e.g. textile, tire, electro domestic appliance industries), public sector (responsible for supplying the wastewater treatment facilities) and research institutes to jointly undertake projects to reduce entry of microplastics into the environment.

Other examples of enhancing cooperation, include i) scaling up the UNEP and WHO initiative to prevent children's exposure to lead from paint and to minimize occupational exposures to lead paint, the Global Alliance to Eliminate Lead Paint (Lead Paint Alliance[25]), and ii) implementation of the health aspects of the Minamata Convention as suggested in the WHO guidance document "Addressing health aspects in the context of developing national action plans under the Minamata Convention on Mercury".

[23] http://apps.who.int/gb/ebwha/pdf_files/WHA72/A72_15-en.pdf
[24] UNEP/EA.4/RES.6: http://wedocs.unep.org/bitstream/handle/20.500.11822/28471/English.pdf?sequence=3&isAllowed=y
[25] https://www.who.int/ipcs/assessment/public_health/gaelp/en/

2.3. World of work

Characterization and linkages

Workers are among those most exposed to hazardous chemicals and waste in various sectors around the world, and particularly in developing countries, economies in transition and in the informal economy, where they may not be sufficiently informed and protected. Hazardous occupational exposures take place along the entire length of the supply chain, from production, to handling, to storage, to transport, to disposal and treatment of waste chemicals.

Examples of areas of common interest
world of work and chemicals and waste management

- safety data sheets at the workplace;
- monitoring at the workplace;
- workers need for, and right to, information about the chemicals they use at work;
- occupational exposure in the chemical and downstream industries and recycling, including the informal sector;
- risk assessment;
- prevention and reduction of workplace risks and hazards, as well as injuries, diseases and deaths;
- industrial accidents prevention and preparedness and response;
- principles on business and human rights
- greening industries and promoting green jobs; and
- promotion and creation of decent work opportunities.

Ratification and implementation of the ILO's normative international labour standards helps achieve decent work that is safe and healthy, while simultaneously advancing towards greener work processes[26].

The ILO has adopted more than 50 legal instruments specifically dealing with OSH, many of them related to the protection of workers from toxic substances, chemicals and waste. Some of the relevant ILO conventions which are directly related to chemicals and waste management are:

- Chemicals Convention, 1990 (No.170)
- Prevention of Major Industrial Accidents Convention, 1993(No. 174)
- Sector-specific instruments, e.g.:
  - Safety and Health in Agriculture Convention, 2001 (No. 184);
  - Safety and Health in Construction Convention, 1988 (No. 167);
  - Safety and Health in Mines Convention, 1995 (No. 176)
- Risk-specific instruments, e.g.:
  - Asbestos Convention (No. 162)
  - Occupational Cancer Convention, 1974 (No. 139)
  - Working Environment Convention, 1977 (No. 148)

Within the ILO's action in the area of OSH, the protection of workers from exposure to hazardous substances has always been a major concern for the ILO since it was founded in 1919, both in terms of normative international standard setting, policy guidance and technical

[26] GCO-II Introduction p. 10

assistance to its global tripartite constituents. Such efforts have assisted countries address topics like workplace exposure to hazardous substances (e.g. asbestos, pesticides, etc.), child labour, greening jobs and industries etc.

In addition to legally binding standards, the ILO has developed numerous Codes of Practice and guidelines on OSH, for example related to safety in the use of chemicals at work, safety and health in construction and safety in the use of asbestos, among many others[27]. The International Chemical Safety Cards (ICSCs)[28] project is a joint undertaking between the WHO and ILO to produce data sheets intended to provide essential safety and health information on chemicals in a clear and concise way. The primary aim of the ICSCs is to promote the safe use of chemicals in the workplace. The main target users are workers and those responsible for OSH. Important information like identity of the chemical, fire and explosion hazards, acute health hazards and prevention, preventive measures, first aid, spillage disposal, storage and packaging, classification and labelling, physical and chemical properties and dangers, short-term and long-term health effects, regulatory information and occupational exposure limits and environmental data could potentially help in the sound management of chemicals (and waste). Along with other IOMC agencies, ILO helped establish and continues to play an important role in the global implementation of the GHS.

Moreover, ILO is set to develop a Chemicals Action Plan in order to enhance labour sector engagement (Ministries of labour) as well as related stakeholders from the world of work, including employers from various economic sectors, worker representatives and other OSH bodies in the SAICM Beyond 2020 agenda. The Action Plan will be developed as a tool to assist the labour sector and related stakeholders to identify areas of primary focus for engagement and additional actions relevant for chemical safety management at the national, regional and international levels.

Options to coordinate and cooperate

The following provides examples of options for how the world of work cluster and the chemicals and waste cluster can coordinate and cooperate (or enhance existing coordination and cooperation):

- Knowledge sharing
  Options for linking the chemical database platforms could be explored. For example, the ICSCs which provide essential safety and health information on chemicals, could be linked to the knowledge platform under development by the SAICM Secretariat and could also be linked to other clearing house mechanisms under multilateral agreements. In the private sector, companies at different stages of the supply chain could enhance cooperation on chemicals in products information to ensure that workers throughout the supply chain have access to this information and thus can take protective measures.

- Promotion and implementation of international labour standards related to chemicals and waste

[27] https://www.ilo.org/safework/areasofwork/occupational-health/WCMS_117570/lang--en/index.htm

[28] https://www.ilo.org/safework/info/publications/WCMS_113134/lang--en/index.htm

The ILO promotes its numerous International Labour Standards on this topic. Focus is placed on assisting ILO's 187 member States to implement the main ILO chemicals-related Conventions. For countries dealing with specific chemical management problems, the implementation of these standards provides a legislative framework for sound management. At a national level, joint efforts among labour and environment ministries might be considered in order to enhance this cooperation. At the international level, respective Conventions Secretariats for example, might explore opportunities to further align their outreach and capacity building services provided for the Parties.

- Technical guidance and expertise on OSH

  Based on the numerous non-binding instruments the ILO has developed codes of practice and guidelines. For example, the development of NAPs for ASGM is an obligation under Article 7 of the Minamata Convention on Mercury for each country that determines that ASGM in its territory is more than insignificant. In the current guidance available to develop an action plan, there is limited guidance regarding the occupational safety of miners. This is an area where expertise from specialized agencies such as ILO, and other organizations might be considered in order to enhance the joint efforts to address multi-dimensional issues.

- Continue and enhance the ongoing cooperation between MEAs and ILO

  The BRS Secretariat, within the framework of the Rotterdam and Basel conventions, cooperates with ILO, WHO and other agencies, in carrying out activities under the framework of the Inter-Agency Working Group on Sound Management of Industrial Chemicals especially focusing on asbestos. The Secretariat in conjunction with WHO and ILO, Basel Convention Regional Centre (BCRC) for South-East Asia, BCRC-South Africa and the Asbestos Diseases Research Institute of the University of Sydney are currently working on a pilot project on "training and capacity building related to the recognition of asbestos-related diseases (diagnosis, surveillance and registration of mesothelioma cases)" in the Philippines, Thailand and Zimbabwe. The Basel Convention Secretariat continues to work with organizations such as the ILO and International Maritime Organization, as appropriate, on policy and capacity building issues related to sustainable ship recycling.

  The Rotterdam Convention Secretariat, in collaboration with the FAO Social Policies and Rural Institutions Division and ILO, continues the promotion of the visual tool for training on pesticide risks and children. Opportunities to enhance the cooperation exist and might be explored further by Conventions Secretariats.

In addition, the following presents options on topics – areas of common interest – where collaboration might be enhanced and put into practice.

- Chemical accidents

  Chemical accident prevention, preparedness and response requires coordination and cooperation at multiple levels. Ratification and implementation of ILO normative standard Prevention of Major Industrial Accidents Convention, 1993 (No. 174) can be encouraged among

States. Further coordination and cooperation among state actors (including local governments), the private sector and other stakeholders can be scaled up to implement the Sendai Framework for Disaster Risk Reduction 2015-2030, e.g. by supporting the development of user-friendly systems and services for the exchanges of information on good practices, cost-effective and easy-to-use risk reduction technologies and sharing the lessons learned on policies, plans and measures for disaster risk reduction.

- Child labour

  Collaboration on various child labour issues related to chemicals and waste activities, such as ASGM, pesticide exposure in agriculture, and so forth might be considered. For example, brick production is a source of air pollution and contributes to addition of black carbon and other short-lived climate pollutants (SLCPs) in the environment[29]. The brick-making sector is usually an informal sector and workers are almost never covered by the national social, economic or environmental policies. The kilns provide no protection from the sun and the swirling dust, and the work is hard and hazardous. In many countries (including Afghanistan[30], Pakistan, India and Cambodia among other), child labour is prevalent and cases of 'bonded labour' have been recorded. In addition to their basic rights being violated, by being exposed to brick kilns children risk respiratory illnesses, poor bone development and early-onset arthritis. At the national level, the joint response of the labour and environmental actors might be considered in order to harmonize the approach and provide the most effective solutions.

- Promotion and creation of decent and safe work opportunities

  Decent work drives sustainable development by providing inclusive opportunities, promoting gender equality, fair income and safe working conditions. Opportunities exist to tighten the collaboration between the world of work and chemicals and waste actors at the national level. For example, the ASGM sector employs over 20 million people worldwide, mainly in rural areas, operates often in the informal economy, lacks safe work conditions and uses toxic mercury to extract gold. Coordinated actions from both chemicals and world of work actors is necessary to sustainably transform the sector by providing for example access to decent and safe work conditions through formalization, access to finance, training, and promoting equal participation of men and women. If managed through joint actions, this sector has the potential to be a main driver for rural employment and development and simultaneously protect workers and communities from negative effects of chemicals used in the mining.

- E-waste

  ILO is among the seven UN entities which signed a letter of intent to establish an e-waste coalition[31]. The intended aim of the collaboration is to i) support a UN system-

[29] UNEP Climate and Clean Air coalition

[30] https://www.ilo.org/global/about-the-ilo/newsroom/features/WCMS_182468/lang--en/index.htm

[31] https://www.itu.int/en/ITU-D/Climate-Change/Documents/2019/FINAL_Letter%20of%20Intent%20-%20E-waste_WSIS_2019.pdf

wide knowledge sharing platform on e-waste for UN entities; ii) implement strengthened UN system-wide programmatic collaboration on e-waste; iii) strengthen UN system-wide engagement with other stakeholder groups; and iv) consider ways to deliver as one in countries to tackle national e-waste problems. Opportunities exist to enhance the collaboration among signatories of the letter in the establishment and future implementation of the e-waste coalition.

Other examples of enhancing cooperation, include

(i) greening industries and jobs,
(ii) elimination of work-related diseases, and
(iii) mainstreaming the workers' rights as human rights that are inherently the foundation for preventing and protective measures in the world of work.

2.4. Biodiversity

Characterization and linkages

Chemical pollution is one of a major threat to biodiversity. In fact, the third report of Global Biodiversity Outlook[32] (GBO3) identifies pollution as one of the five principal pressures directly driving biodiversity loss. For example, modern industrial processes such as the burning of fossil fuels and agricultural practices, in particular the use of fertilizers, have more than doubled the quantity of reactive nitrogen - nitrogen in the form that is available to stimulate plant growth - in the environment compared with pre-industrial times. Although, nutrient pollution has stabilized in parts of Europe and North America, it is projected to increase in other regions, and remains a significant threat to aquatic and terrestrial biodiversity (GBO4).

Examples of areas of common interest
Biodiversity and chemicals and waste management

- adverse effects of chemical pollution on ecosystem services (e.g. those provided by pollinators, coral reefs)
- impact of pesticides and fertilizers on biodiversity loss and land degradation;
- use of chemicals in plastics, plastic pollution and its waste management;
- chemical pollution deriving from industrial activities and improper waste management;
- excessive nutrients from sewage, industrial waste, agriculture or aquaculture;
- land degradation linked to informal or poorly regulated small-scale gold mining operations.

The primary concern in this cluster is the impact of chemicals and waste management on biodiversity and ecosystem services. One of the major issues of common interest is the use and impact of pesticides and fertilizers on biodiversity loss and land degradation. Similarly, the use of chemicals in plastics, plastic pollution and its waste management is also of concern. Chemical pollution deriving from industrial activities and improper waste management often contribute to ecosystem deterioration and subsequent negative impacts on biodiversity. As highlighted in the first report on Global Wetland Outlook, excessive nutrients from sewage, industrial waste, agriculture or aquaculture cause eutrophication, changing biodiversity, water quality, biomass and oxygen levels[33]. This has a direct impact on the availability and abundance of wildlife, which is crucial for achieving sustainable use and the support of livelihoods, jobs, and economics for many communities. Moreover, the land degradation linked to informal mining or poorly regulated ASGM operations, often using mercury and occurring in the protected areas[34,] needs to be tackled in a collaborative spirit by chemical governance and biodiversity actors.

[32] https://www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf

[33] Global Wetland Outlook

[34] https://www.mdpi.com/2072-4292/10/12/1903/htm

Under the Convention on Biological Diversity (CBD) the Strategic Plan for Biodiversity includes 20 time-bound, measurable targets to be met by the year 2020 (Aichi Biodiversity Targets). Aichi Target 8 highlights the need to manage pollution levels, including from excess nutrients, in order to protect ecosystem functions and biodiversity (in addition to Aichi Target 7, specifically devoted to sustainable agriculture). Given the current efforts to develop the Post-2020 Global Biodiversity Framework, opportunities exist to create linkages with the chemicals and waste process beyond 2020.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) promotes international cooperation for the protection of certain species of wild fauna and flora against over-exploitation through international trade and recognizes the importance of maintaining those species throughout their range at a level consistent with their role in the ecosystem. The CITES Strategic Vision 2021-2030 recognizes that achieving the aim of the Convention is reliant on its successful implementation by people and States, who are and should be the best protectors of their own wild fauna and flora. Necessities thus exist at the national level to ensure that their planning process recognizes the linkages between different impacts to biodiversity, be it for the marine environment, forests, or terrestrial ecosystems.

The Honolulu Strategy[35] is a framework for prevention and management of marine debris developed by UNEP in collaboration with the National Oceanic and Atmospheric Administration Marine Debris Programme. The framework consists of three goals and associated strategies to reduce the amount and impact of marine debris from land-based and sea-based sources and marine debris accumulations. It provides a focal point for improved collaboration and coordination among the multitude of stakeholders across the globe concerned with marine debris. Within the framework the areas of common interest include the chemicals adsorbed onto plastics, as well as those chemicals utilized within the plastic structure that eventually have food chain implications. Moreover, the management of land-based sources of marine debris introduced into the sea is of high concern. A new Plastic Waste Partnership has been established under the Basel Convention to mobilize business, government, academic and civil society to improve and promote the ESM of plastic waste at the global, regional and national levels and to prevent and minimize its generation.[36]

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is an independent intergovernmental body, with the objective to strengthen the science-policy interface for biodiversity and ecosystem services for the conservation and sustainable use of biodiversity, long-term human well-being and sustainable development. Its latest Assessment[37] indicates that little or no progress has been made towards the implementation of the pollution and chemicals related Aichi Target 8, and thus further highlighting the opportunities to tackle the issue in a more collaborative and effective manner.

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[35] https://wedocs.unep.org/bitstream/handle/20.500.11822/10670/Honolulu%20strategy.pdf?sequence=1&isAllowed=y

[36] http://www.basel.int/Implementation/Plasticwastes/PlasticWastePartnership/tabid/8096/Default.aspx

[37] https://www.ipbes.net/system/tdf/ipbes_7_10_add-1-_advance_0.pdf?file=1&type=node&id=35245

The UNEA3 further highlighted the linkages between chemicals and biodiversity clusters through its resolution on "Pollution mitigation by mainstreaming biodiversity into key sectors"[38] by recognizing that fostering cross-sectoral initiatives will provide an opportunity to achieve the goals and objectives of different MEAs and international commitments, including Aichi Targets and SDGs. Moreover, through its resolution on "Marine litter and microplastic"[39] UNEA invited relevant stakeholders, including chemical conventions and SAICM to increase their action to prevent and reduce marine litter and microplastics and their harmful effects and to coordinate where appropriate to achieve that end.

Post-2020 Global Biodiversity Framework vis a vis Strategic Approach and the sound management of chemicals and waste beyond 2020

As part of the process to develop the Post-2020 Global Biodiversity Framework, negotiations are held in the context of OEWG. Three meetings of the Working Group are envisioned for the intersessional period leading up to COP 15, with the first one convened in August 2019 in Nairobi, Kenya. The second one is scheduled to take place in February 2020 in Rome, Italy and the third in mid-October 2020[40]. Earlier global consultations took place during the 9th Trondheim Conference on Biodiversity in July 2019, in Trondheim, Norway[41]. It served as a global consultation on evidence from the natural, economic and social sciences and traditional knowledge systems in support of the Post-2020 Global Biodiversity Framework. Other global consultations are scheduled to take place around the second OEWG meeting in Rome and later on in Bern, Switzerland (see figure below for details). Outlines for these consultation meetings as well as various other opportunities for participation are highlighted in this information note. The zero-draft proposal for the Post-2020 Global Biodiversity Framework[42] was submitted by the co-chairs and will be discussed at second OEWG meeting.

At the same time, the fourth meeting of the Intersessional Process (IP4) for considering SAICM and the Sound Management of Chemicals and Waste Beyond 2020 is expected to continue discussions on a possible post-2020 platform for chemicals and waste. The meeting will take place in Bucharest, Romania form 23 to 27 March 2020. ICCM5 will convene from 5-9 October 2020 in Bonn, Germany.

[38] https://papersmart.unon.org/resolution/uploads/k1800174.english.pdf

[39] https://papersmart.unon.org/resolution/uploads/k1800210.english.pdf

[40] https://sdg.iisd.org/events/second-meeting-of-the-open-ended-working-group-on-the-post-2020-global-biodiversity-framework/

[41] https://trondheimconference.org/

[42] CBD/WG2020/2/3

Post-2020 Global Biodiversity Framework vis a vis Strategic Approach and the sound management of chemicals and waste beyond 2020

Options to coordinate and cooperate

The following provides examples of options for how the biodiversity cluster and the chemicals and waste cluster can coordinate and cooperate (or enhance existing coordination and cooperation):

- Aligning beyond 2020 agendas

  Since the efforts to develop the Post-2020 Global Biodiversity Framework are occurring in parallel with the SAICM intersessional process that aims to prepare recommendations for the Strategic Approach and the sound management of chemicals and waste beyond 2020, close coordination between two clusters provides an opportunity to align the targets and indicators and efforts throughout the remaining consultation process leading up to the decisions. For example, the chemicals and waste cluster can contribute scientific and technical inputs to the zero draft of the post-2020 global biodiversity framework and accompanied preliminary draft monitoring framework[43] . These might include, among others, sharing experience, methodologies and databanks of pollutant monitoring through the application of the existing methodologies for monitoring and baseline assessments against which the progress may be assessed, or identify priority pollutants based on key scientific and technical assessments, including for example bisphenol A, cadmium, triclosan[44], mercury[45] and other heavy metals, POPs, microplastics and endocrine disrupters[46].

- Mobilising the chemicals and waste conventions

  Within the Post-2020 Global Biodiversity Framework the collaboration between clusters could be strengthened by enhancing the participation of the chemicals and waste conventions as well as relevant voluntary agreement and other initiatives in achieving biodiversity goals. The paper 'Mobilising the chemical conventions to protect biodiversity'[47] highlights four potential ways to mobilise the chemicals conventions for biodiversity:

  (i) Expanding the list of pesticides included in the Stockholm and Rotterdam convention annexes

  (ii) Reinforcing institutional collaborations between biodiversity and other clusters, for example by developing joint programmes, such as the strategic initiative on pollinators developed by the CBD and FAO which recommends measures on pesticides.

  (iii) Enhancing non-state and multi-stakeholder cooperation between biodiversity and chemicals actors through platforms like SAICM or partnerships under the MEAs

  (iv) Building collaboration at the level of national instruments and actors

[43] CBD/WG2020/2/3/ADD1

[44] Based on Global Chemical Outlook II, Chapter 5 "Other issue where emerging evidence indicates a risk" and UNEA resolution 4/8

[45] Based on Global Mercury Assessment 2018

[46] https://www.cbd.int/gbo/gbo4/publication/gbo4-en-hr.pdf

[47] https://www.iddri.org/sites/default/files/PDF/Publications/Catalogue%20Iddri/D%C3%A9cryptage/201906-IB0719EN-chemicals%20CBD.pdf

Applying lessons learned from addressing illegal trade

Cross-pollination of knowledge derived from applying technologies and methods for addressing illegal trafficking of wildlife and hazardous chemicals and waste, could be enhanced between the chemicals and waste and biodiversity clusters. For example, sharing and learning from successful case studies might be considered beneficial at national and regional level for many countries. Synergies and opportunities to promote exchange could be enhanced through customs, police and other enforcement authorities.

In addition to the process-oriented options, below are listed several examples of what the options to coordinate and cooperate in the context of post 2020 biodiversity framework could include. The listed options could be further aligned with the zero draft framework proposed by the Co-chairs.

- **Chemicals and waste related targets and indicators of the Post 2020 Biodiversity Framework**

  While designing the post 2020 framework, the relevance and link to the Aichi Target 8: "By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity", could be strengthened for example by:

  (i) **Identifying priority pollutants/chemicals** based on key scientific and technical assessments, e.g., bisphenol A, cadmium, triclosan48, mercury49 and other heavy metals, POPs, microplastics50 and endocrine disrupters

  (ii) **Defining parameters or units**, e.g., amount of chemical used, toxicity, etc., in order to assess the impact on biodiversity and habitats and to target the most harmful substances.

  (iii) **Identifying available data sources** - demonstrate what is available (& possible to measure), where there are baselines and existing methodologies, e.g. existing regional and global data sources and global data sources such as the Global Mercury Assessment (GMA), and where there are gaps.

- **Harmonizing with, capitalizing on and creating links to existing frameworks, C&W MEAs, indicators, data collection methods**, e.g. Sustainable Development Goals, Aichi Target 8 (Annex 1), the 7th Global Environment Facility period(GEF-7) Core Indicators for Pollution, Chemicals and Waste (see Annex 2), Chemicals and waste conventions and agreements (BRS, Stockholm, Minamata, Montreal and SAICM).

- **Plastic pollution**

  Options to coordinate and cooperate on plastic pollution, including marine litter and microplastics include:

  (i) collaboration on the implementation of existing initiatives aimed at tackling the issues; e.g. the Honolulu Strategy, the Global Partnership on Marine Litter51, the New Plastics Economy

[48] Based on Global Chemical Outlook II, Chapter 5 "Other issue where emerging evidence indicates a risk" and UNEA resolution 4/8

[49] Based on Global Mercury Assessment 2018

[50] Based on IPBES Global Assessment Report on Biodiversity and Ecosystem Services – Summary for Policymakers

[51] http://marinelitternetwork.com/the-partnership/

Global Commitment52, the Basel Convention's Plastic Waste Partnership, among others, and

(ii) collaboration on quantitative assessments to characterize pathways of chemical exposure and bioaccumulation from plastics to living marine resources.

Moreover, as per the request of UNEA 4[53], the collaboration among relevant international organizations, including UNEP and WHO, might be considered to harmonize monitoring, reporting and assessment methodologies, in order to strengthen scientific and technological knowledge with regard to marine litter, including marine plastic litter and microplastics,

- Artisanal mining driven land degradation

  In order to minimize the pressure on ecosystems posed by informal or poorly regulated ASGM, particularly in protected areas, linkages with the biodiversity cluster could be strengthened for example through the development of Minamata NAPs that aim to reduce mercury use and provide a framework for sustainable transformation of the sector. The engagement of national biodiversity stakeholders can be enhanced throughout the development and implementation of the NAPs. For example, collaboration on the subject is currently being applied in the context of other ASGM related programmes - GEF funded planetGOLD[54] - where the biodiversity actor - the Conservation International - is a lead implementing partner[55].

- Waterbirds and lead poisoning

  Opportunities to collaborate could be explored under the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA)[56] to eliminate the use of lead shots that contaminate the wetlands, birds that mistake the pellets for food and eventually humans through consumption of contaminated aquatic species.

- Pesticide use and loss of pollinators

  The IPBES publication: "Assessment report on pollinators, pollination and food production"[57] found out that pesticides, particularly insecticides, have been demonstrated to have a broad range of lethal and sublethal effects on pollinators under controlled experimental conditions. The report also highlights some of the research areas where other clusters could potentially coordinate. For example, opportunities exist to develop and promote the use of technologies that reduce pesticides drift and agricultural practices that reduced exposure to pesticides. Moreover, research that aims to reduce pesticide use, including for example Integrated Pest Management principles, might be considered.

- Excess nutrient

  As mentioned before, biodiversity is threatened and damaged by excess reactive nitrogen. Partnerships like the Global Partnership on Nutrient Management

[52] https://www.newplasticseconomy.org/projects/global-commitment
[53] UNEP/EA.4/RES.6: http://wedocs.unep.org/bitstream/handle/20.500.11822/28471/English.pdf?sequence=3&isAllowed=y
[54] https://www.planetgold.org/
[55] https://www.conservation.org/gef/projects/guyana-gold
[56] https://www.unep-aewa.org/en/topics/lead-poisoning
[57] https://www.ipbes.net/assessment-reports/pollinators

(GPNM) provide a platform to steer dialogue and actions to promote effective nutrient management. Other initiatives like the International Nitrogen Initiative (INI) are aiming to optimize nitrogen's beneficial role in sustainable food production and minimize nitrogen's negative effects on human health and the environment resulting from food and energy production through for example promoting meetings, publications and projects or developing awareness raising materials or coordinating regional efforts to improve nitrogen management globally.[58]

[58] https://initrogen.org/content/about-ini

2.5. Climate change

Characterization and linkages

Linkages between climate change and chemicals and waste management range from the remobilization of chemicals due to melting glaciers, to reducing greenhouse gas emissions of the chemical industry, to the potential of chemistry to develop adaptation and mitigation solutions. The chemical industry and downstream sectors therefore have an important role to play in achieving the objectives of the Paris Agreement[59]. Moreover, chemical releases caused by natural hazard events and disasters triggered by climate change are of common interest[60] [61].

Better management of waste can contribute to the reduction of greenhouse gases. Using a lifecycle approach, it has been estimated that a 10 to 15% reduction in global greenhouse gas emissions could be achieved through landfill mitigation and diversion, energy from waste, recycling, and other types of improved solid waste management. Including waste prevention which could potentially increase this contribution to 15 to 20%.[62]

The Paris Agreement is an agreement within the United Nations Framework Convention on Climate Change (UNFCCC), dealing with greenhouse-gas-emissions mitigation, adaptation, and finance, which was adopted on 12 December in 2015 and entered into force on 4 November 2016. Among others, it aims to "enhance the implementation" of the UNFCCC through increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development. This objective is relevant for the chemicals and waste cluster, its potential to contribute to the development and implementation of clean and climate-friendly

Examples of areas of common interest
Climate change and chemicals and waste management

- remobilization of chemicals due to melting glaciers;
- greenhouse gas emissions of the chemical industry;
- potential of chemistry to develop adaptation and mitigation solutions;
- environmentally sound disposal of renewable energy technologies (e.g. solar panels, wind turbines, batteries);
- chemical releases caused by natural hazard events and disasters triggered by climate change;
- emissions from landfills;
- air pollution and quality (short lived pollutants: methane, black carbon, etc);
- recovery of raw materials from e-waste
- reduction of fertilizer use and coupled greenhouse gas emissions
- climate change influenced increase in fossil fuel use for plastic production

[59] GCO-II Introduction p. 10
[60] https://www.amap.no/documents/download/3237/inline
[61] https://www.who.int/ipcs/publications/natech/en/
[62] Global Waste Outlook

technologies and adaptation/mitigation of the climate change triggered pollutant releases.

The Intergovernmental Panel on Climate Change (IPCC) is the international body for assessing the science related to climate change. The IPCC was set up in 1988 by the World Meteorological Organization and UNEP to provide policymakers with regular assessments of the scientific basis for climate change, its impacts and future risks, and options for adaptation and mitigation. As such the IPCC is key in identifying new and advancing on the identified linkages between climate change and chemicals and waste management.

Options to coordinate and cooperate

The following provides examples of options for how the climate change cluster and the chemicals and waste cluster can coordinate and cooperate (or enhance existing coordination and cooperation):

- Achieving the objectives of the UNFCC and the Paris Agreement

  The UNFCC designated the Green Climate Fund as an operating entity of the Financial Mechanism of the Convention. Stakeholders from the chemicals and waste cluster and the climate change cluster could cooperate in developing projects addressing the linkages between chemicals and climate change to secure finances in areas of common interest (see box above). One of the main objectives of the Paris agreement is to strengthen the ability of countries to deal with the impacts of climate change and promote mitigation and adaptation strategies. Within this context, collaboration with the chemicals and waste cluster might be considered in:
  - predicting and mitigating chemical releases due to the extreme weather events;
  - designing and applying clean technologies for climate change mitigation; and
  - encouraging the environmentally sound waste management practices.

- Monitoring

  Improved coordination between policy makers who address climate change and those who address the management of chemicals and waste both domestically and internationally on improving the long-term monitoring data to evaluate the impact of climate change on chemical releases might be considered. This also requires enhanced cooperation and coordination in the respective scientific communities, e.g. in the form of joint research projects (which could also address e.g. the relationship between climate change related extreme weather events and releases of hazardous chemicals and waste).

In addition, the following presents options on topics – areas of common interest – where collaboration might be enhanced and put into practice.

- Climate change triggered chemical release

  Increasing ambient temperatures, and natural disasters, such as floods, wildfires and tsunamis, often intensified by climate change, have been shown to trigger the release of the chemicals[63], in particular

[63] https://www.who.int/ipcs/publications/natech/en/

POPs, accumulated in the soil, ice, homes, industrial-waste sites etc[64]. Increased emissions and the availability of chemicals that enter the food chain leads to bio-accumulation threatening the health of humans and animals. Floodwaters triggered by extreme storm events can also inundate agricultural land where stockpiles of obsolete POPs pesticides banned under the Stockholm Convention are awaiting removal. Stockpiles located in towns or villages and near water bodies pose potential human health and environmental risks. Moreover, the expected increase in the incidence of vector-borne diseases, such as malaria, associated with climate change may lead to enhanced demand for and release of dichlorodiphenyltrichloroethane, commonly known as DDT in some regions[65]. Strengthening collaboration between relevant actors from the Climate Change, Agriculture and Food and Chemicals and Waste clusters might be considered in order to address these issues. For example, joint efforts between experts on chemicals and waste, and the actors involved in the climate change triggered disaster response and mitigation, might be strengthened in order to address the issue in a more effective and comprehensive manner.

- Climate change impacts on contaminants in the ocean

  Climate-change impacts, including deoxygenation, ocean warming, sea-level rise and ocean acidification cause fundamental changes in ocean physics and chemistry, affecting the release, speciation, bioavailability and cycling of many contaminants, including trace elements, radionuclides and organic pollutants. The extent to which environmental changes under climate change will affect the source, behaviour and fate of these contaminants in the marine environment is still poorly understood. The International Atomic Energy Agency is currently consulting with relevant international organization regarding a creation of Working Group: "Climate Change Impacts on Contaminants in the Ocean" under the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection[66]. Joint efforts of actors across climate change, biodiversity and chemicals and waste clusters might be considered.

- Clean technologies

  Contribution of chemicals and the chemical industry in the development of clean technologies to mitigate and combat climate change could be explored. The collaboration could be fostered through platforms such as UNFCCC Climate Technology[67]. Policymakers could explore strategies to systematically foster research and innovation that achieves the dual purpose of combatting climate change while at the same time relying on green and sustainable chemistry solutions that minimize adverse trade-offs (e.g. re. recyclability of materials used in renewable energy solutions such as solar panels and wind turbines), for example by setting up – in cooperation with the private sector –

[64] Climate change and POPs: Predicting the Impacts: http://chm.pops.int/Implementation/GlobalMonitoringPlan/AdditionalResources/tabid/1607/Default.aspx

[65] Climate change and POPs: Predicting the Impacts: http://chm.pops.int/Implementation/GlobalMonitoringPlan/AdditionalResources/tabid/1607/Default.aspx

[66] http://www.gesamp.org

[67] https://unfccc.int/ttclear

research hubs, creating awards for start-ups etc.

- E-waste

  By applying the circular approach to the entire supply chain of the electronic industry, raw materials from discarded electronics might be recycled, natural resources preserved, and air and water pollution caused by hazardous disposal avoided. At the same time, recycling e-waste from landfills reduces methane emissions, which are 25 times more potent than carbon dioxide at trapping heat in the atmosphere. Moreover, by extracting the raw materials from landfills, energy consumption, greenhouse gas emissions and overall environmental impact associated with primary extraction and production processes are avoided as well. Initiatives such as the UNFCCC "E-waste: From Toxic to Green"[68] could be replicated in order to enhance and strengthen collaboration between actors across the chemicals and waste and climate change clusters. At the national level, as shown by the example in India, the training of waste pickers, and a close collaboration between the public and private sector have demonstrated a significant reduction in the emission of greenhouse gases and at the same time provided green livelihood to over 25,000 people. The E-Waste: From Toxic to Green initiative can serve as a model to help other countries recycle e-waste and fight poverty.

- Climate change impact of fossil fuel use on plastic production

  As the global efforts to mitigate[69] climate change through the reduction of fossil fuel use as an energy source start to take effect, oil companies are looking into channelling the surplus of oil and gas into plastic production. This unintended effect caused by trends in one area, is proof that coordinated action across various clusters must be ensured in order to avoid negative consequences emerging in other areas. For example, coordinated actions across private and public actors might be considered to fully understand the impacts of limiting fossil fuels as an energy source and how to anticipate and channel the resulting trends in oil industry.

Other examples of enhancing cooperation, include joint activities across the chemicals and waste, agriculture and food, and climate change clusters to

(i) better manage fertilizer use and the coupled reduction of greenhouse gasses emissions[70], and

(ii) cooperation to better address the chemicals that contribute to air pollution and the climate.

[68] https://unfccc.int/climate-action/momentum-for-change/lighthouse-activities/e-waste-from-toxic-to-green

[69] https://www.wired.com/story/a-surge-of-new-plastic-is-about-to-hit-the-planet/?utm_source=onsite-share&utm_medium=email&utm_campaign=onsite-share&utm_brand=wired

[70] For example a study from China: https://www.nature.com/articles/nature25785

2.6. Agriculture and food

Characterization and linkages

The agricultural sector is one of the most hazardous work sectors worldwide (ILO 2009), mainly due to use of hazardous chemicals and large machinery. It is estimated that every year 2 to 5 million people suffer from acute poisoning, 40 000 die, and millions of injuries occur to agricultural workers, at least 170 000 of them fatal.[71]

Examples of areas of common interest
Agriculture and food and chemicals and waste management

- use of harmful pesticides and herbicides;
- exposure of farmers due to unsound use of pesticides;
- contamination of groundwater;
- use of chemical fertilizers;
- food packaging, including potential contamination of food via this route;
- use of food conservation, colouring agents, food safety (pesticides residues); and
- addressing food waste, in terms of potential chemicals release from the chemical additives and packaging.

Chemicals play a major role with respect to agriculture and food, for example in plant protection, yield augmentation food conservation. This link has long been recognized, and many countries have long-standing legislation to control chemicals used in agriculture and food production. International agreements and bodies that address these and related topics include the Code of Conduct and the Codex Alimentarius, which is a collection of international food standards[72].

In addition to its leading role in providing guidance on pesticides management at the international level and technical support at national level, FAO[73]:

- in particular through its Plant Production and Protection Division and its regional offices, provides support to countries to effectively implement and meet their obligations under the Rotterdam convention;
- works closely with the WHO to provide guidance to Codex Alimentarius, the world's food standard setting body;
- leads on the provision of standard technical specifications for pesticides which helps countries ensure that pesticidal products are effective and do not contain possible harmful impurities,
- promotion of the Integrated Pest Management approach to crop protection

[71] The Economics of Ecosystems and Biodiversity (TEEB) (2018). Measuring what matters in agriculture and food systems: a synthesis of the results and recommendations of TEEB for Agriculture and Food's Scientific and Economic Foundations report. Geneva: UN Environment http://teebweb.org/agrifood/wp-content/uploads/2018/10/Layout_synthesis_sept.pdf

[72] GCO-II Introduction p. 10

[73] http://www.fao.org/3/ai551e/ai551e00.pdf

for both sustainable intensification of crop production and pesticide risk reduction[74].

An example of ongoing collaboration between agriculture and food cluster and chemicals and waste cluster within the United Nations system, is the Secretariat of the Rotterdam Convention that is partly co-hosted by the FAO and benefits from close cooperation with the FAO Pesticide Management Programme, particularly in regard to the implementation of pesticide risk reduction projects. In return, the FAO Pesticide Management Team has integrated aspects related to the implementation of the Rotterdam Convention, as well as aspects of the Basel and Stockholm conventions into its activities, where appropriate. Moreover, regular meetings with representatives of the FAO regional and sub regional offices offer an opportunity to incorporate topics specific to the Rotterdam Convention into their work plans.

The International Plant Protection Convention (IPPC) is an international treaty that applies to most nations involved with international trade in any commodity that could introduce a new plant pest into a new area. Since it is applicable to other trans-boundary movements, it is of relevance to MEAs dealing with pesticides like the Rotterdam and Stockholm conventions.

The International Code of Conduct on Pesticide Management[75] is the voluntary framework on pesticide management for all public and private entities engaged in production, regulation and management of pesticides. The new Code of Conduct on Pesticide Management was approved by the FAO Conference in June 2013.

The International Code of Conduct for the Sustainable Use and Management of Fertilizers[76] provides a locally-adaptable framework and voluntary set of practices to serve the different stakeholders that are directly or indirectly involved with fertilizers. The Fertilizers Code promotes practices including nutrient recycling, and agronomic and land management to improve soil health; and recommends regulation related to the sale, distribution and labelling of fertilizer products wherever appropriate. It also promotes capacity development and education programs for all stakeholders involved in the fertilizer value chain, and encourages developed countries to assist others in developing infrastructures and capacity to manage fertilizers throughout their life cycle

Options to coordinate and cooperate

The following provides examples of options for how the agriculture and food cluster and the chemicals and waste cluster can coordinate and cooperate (or enhance existing coordination and cooperation):

- Implementation of the International Code of Conduct on Pesticide Management

  Coordination with the chemicals and waste management cluster is encouraged in the adoption and implementation of the Code of Conduct on Pesticide Management. The linkages and options to coordinate and collaborate are highlighted in Article 1 of the Code: "promote participation in

[74] http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/ipm/en/

[75] http://www.fao.org/fileadmin/templates/agphome/documents/Pests_Pesticides/Code/Code_ENG_2017updated.pdf

[76] http://www.fao.org/global-soil-partnership/resources/highlights/detail/en/c/1200213/

information exchange and international agreements identified in the Annex , in particular the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade", and Article 3: "Governments should, where appropriate, take note of and may consider using the Globally Harmonized System of Classification and Labelling of Chemicals". Further cooperation and coordination, in particular among environment, agriculture and health Ministries at the national level, is needed to implement the Code of Conduct in all countries as well as fully implement best practices. Intergovernmental organizations, civil society, the private sector and other actors can scale up coordinated efforts to raise awareness of the code of conduct and undertake capacity building activities in countries where it is currently not implemented.

- Applying lessons learned for the transboundary movement of pesticides

  The Green Customs Initiative, launched in 2004, is a partnership of international organisations cooperating to prevent the illegal trade in environmentally-sensitive commodities and substances and to facilitate the legal trade. Its objective is to enhance the capacity of customs and other relevant border control officers to monitor and facilitate the legal trade and to detect and prevent illegal trade in environmentally sensitive commodities covered by relevant trade related MEAs and international conventions.[77] Learning from established initiatives like these and finding further areas of collaboration within these initiatives may be helpful in moving forward. Relevant IGOs could scale up cooperation with the OECD in disseminating the OECD Best Practice Guidance to Identify Illegal Trade of Pesticides. Lessons learned from agencies such as Europol in tackling counterfeit pesticides could be shared with other interested agencies.

  The OzonAction Compliance Assistance Programme[78] has developed material and information resources specifically for customs and enforcement officers. Similarly, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal has undertaken a considerable amount of work to assist Parties to control transboundary Movement. The IPPC might consider this work when addressing the trans boundary movement of pesticides.

- Implementation of the Fertilizer Code

  Opportunities exist to enhance collaboration on the implementation of the newly adopted voluntary Code of Conduct for the Sustainable Use and Management of Fertilizers, in particular regarding the reduction of the negative impact of excess nutrients in ground and surface waters; and minimization of negative effects and potential toxicity of contaminants in fertilizers.

[77] https://www.greencustoms.org/who-we-are

[78] https://www.unenvironment.org/ozonaction/who-we-are

- **Lessons learned from FAO training programme**

  Half a million tonnes of obsolete pesticides are scattered throughout the developing world. These toxic chemicals, often stored outdoors in leaking containers, are seeping into the soil and water. The FAO Programme on Prevention and Disposal of Obsolete Pesticides has developed an extensive training programme, published guidelines and other resources for countries to effectively and safely conduct the necessary activities to dispose of stockpiles and implement specific measures to avoid their re-accumulation. In this regard, the programme also provides technical and legal advice to make sure that obsolete pesticide projects are carried out effectively.[79] Furthermore, there are a number of technical assistance activities in which FAO is already working closely with the BRS conventions (Details can be found in the information document 'Report on the implementation of the technical assistance plan for the period 2018–2021 in the biennium 2018–2019').[80]

  MEAs dealing with contaminated sites (Minamata Convention, Article 12) may consider building on the experience of FAO and explore the possibility of enhancing coordination on the subject.

- **Climate change triggered pesticides release**

  Floodwaters triggered by extreme storm events can also inundate agricultural land where stockpiles of obsolete POPs pesticides banned under the Stockholm Convention are awaiting removal[81]. Strengthening collaboration between relevant actors from the Agriculture and Food, Climate Change and Chemicals and Waste clusters might be considered in order to address the issue. For example, joint efforts between scientific communities from the chemicals and waste and agriculture and food clusters might be considered in order to better understand the fate and exposure to obsolete POP releases and design mitigation and reclamation strategies.

[79] http://www.fao.org/agriculture/crops/obsolete-pesticides/prevention-and-disposal-of-obsolete-pesticides/en/

[80] BRS COP9: Document UNEP/CHW.14/INF/25/Rev.1-UNEP/FAO/RC/COP.9/INF/24/Rev.1-UNEP/POPS/COP.9/INF/25/Rev.1.

[81] Climate change and POPs: Predicting the Impacts: http://chm.pops.int/Implementation/GlobalMonitoringPlan/AdditionalResources/tabid/1607/Default.aspx

2.7. Sustainable consumption and production

Characterization and linkages

Target 12.4 is embedded in SDG 12, "Ensure sustainable consumption and production patterns", reflecting the insight that chemicals and waste management is inextricably linked to the broader quest for resource efficiency, waste reduction, and the need to decouple economic growth from natural resource use and environmental impacts. Individuals, companies and organizations play a critical role through their consumption choices and directly or indirectly impact chemicals production. The realization that a global shift towards sustainable consumption and production (SCP) would require the commitment of diverse actors throughout the world spurred Heads of State and Governments at Rio+20 to adopt the 10YFP. The 10YFP seeks to develop, replicate and scale up SCP policies and initiatives in areas such as public procurement, consumer information, education and lifestyles, buildings and construction, and food systems. All these areas are highly relevant from a chemicals and waste perspective, pointing towards opportunities to strengthen linkages with the 10YFP[82].

Examples of areas of common interest
SCP and chemicals and waste management

- information exchange on chemicals in products;
- innovation for products that are "benign by design";
- minimizing releases in production processes;
- consumer choices and awareness;
- leveraging sustainable procurement practices;
- use of life cycle assessment tools;
- increasing resource efficiency in production processes; and
- designing for recyclability.

The UNEA2 Resolution 2/7 on Sound management of chemicals and waste requested the Executive Director of UNEP to prepare a report analyzing the information received to assist SAICM in considering the opportunities presented by sustainable chemistry, including linkages to SCP policies, and the possibilities that sustainable chemistry may offer in contributing to the achievement of the 2030 Agenda[83]. The resulting report provides a good basis for future work on sustainable chemistry by highlighting initiatives and actions by stakeholders referring to sustainable chemistry. It also analyzes cases on how sustainable chemistry potentially addresses all stages of the life cycle, including chemical and non-chemical alternatives; efficient and safe use and reduction of emissions and exposure; and waste management, recycling and remediation of pollution, thus

[82] Global Chemicals Outlook II
[83] UNEP resolution 2/7. Sound management of chemicals and waste

promoting potential synergies between chemicals and waste and resource efficiency.[84]

The 4th meeting of UNEA has further highlighted the importance of SCP for advancing the SDGs through its resolution on Innovative pathways to achieve sustainable consumption and production[85]. For example, the collaboration across various clusters through internalization of the outcomes of the analysis provided by the International Resource Panel, the Global Environment Outlook (GEO), GCO, the Global Waste Management Outlook, IPBES, IPCC and other global assessments was requested when carrying out activities under SCP and implementing previous resolutions related to the broader nexus of production and the efficient use and sustainable management of resource.

Options to coordinate and cooperate

The following provides examples of options for how the SCP cluster and the chemicals and waste cluster can coordinate and cooperate (or enhance existing coordination and cooperation):

- Resource management and efficiency

  One of the key messages from the report by the International Resource Panel 'Assessing global resource use: A systems approach to resource efficiency and pollution reduction'[86] highlights a simple but very important point: the level of resource use determines the magnitude of final waste and emissions released to the environment, making resource management and efficiency key strategies for environmental protection. This is an important consideration for all chemicals and waste MEAs and potential areas of collaboration to increase efficiency could be identified. In particular, the below listed examples of areas of collaboration could be considered:

  (i) Nature-based inspired solutions and models based on circularity[87] keep materials at the highest possible value along the value chain, through value retention processes (reduce by design, refuse, reuse, reduce, refurbishment, remanufacturing repair, repurpose and recycling. Circularity requires creativity and cooperation among all value chain actors to transition towards more sustainable consumption and production patterns. In this context, hazardous chemicals should be phased out or easy-to-separate from recycled streams.,

  (ii) Green/ sustainable chemistry could be an asset to reduce material use and increase material efficiency, and would positively support sustainable consumption and production, should the adoption of green / sustainable chemistry lead to a lower impact on the environment across the entire product life cycle

  (iii) A shift towards SCP means less resources that become waste, and therefore directly supporting waste prevention. In addition, with proper

84 http://www.saicm.org/Portals/12/Documents/meetings/OEWG3/inf/OEWG3-INF-22-Analysis.pdf

85 http://wedocs.unep.org/bitstream/handle/20.500.11822/28517/English.pdf?sequence=3&isAllowed=y

86 https://www.resourcepanel.org/sites/default/files/documents/document/media/assessing_global_resource_use_amended_130318.pdf

87 www.unep.org/circularity

product design, traceability and regulatory measures, what is considered waste today, could be seen as a secondary resource tomorrow.

In addition, the following presents topics – areas of common interest – where collaboration could be enhanced and put into practice.

- **Applying safer, responsible production and eco-innovation in chemical intensive sectors, and strengthening linkages with the 10YFP programmes**

  Since approximately 30% of chemicals are directly sold to consumers[88], and the rest are used at various stages of the value chain to make products in other industries. Applying safer, responsible production and eco-innovation in the chemical sector and in chemical intensive sectors (construction, agriculture, textiles, petroleum, extractive industry, cleaning products, etc.) will have a strong impact on the way societies produce and consume, and would therefore advance SCP. Collaboration across the sectoral and thematic programmes of the One Planet network - Public Procurement, Buildings and Construction, Tourism, Food Systems, Consumer Information, and Lifestyles and Education – could be further explored to ensure the removal of hazardous chemicals at the design stage and partnerships to identify cleaner and safer options, as well as a shift towards sustainable business strategy based on the life cycle approach along the value.

- **Eco-innovation and private sector engagement**

  Eco-innovation can help small and medium enterprises (SMEs) access new and expanding markets, increase productivity, attract new investment into the business, increase profitability across the value chain, and help them stay ahead of regulations and standards. Eco-innovation guides SMEs in adopting more sustainable and circular practices, which contribute to implementing sound management of chemicals and pay attention to chemicals of concern, while at the same time engaging government and the entire value chain for enabling conditions to be put in place. Close collaboration with UNEP's Eco-innovation programme[89] should be considered in order to ensure that the chemical sector is considering sustainability at the heart of its strategic development and supporting other industries that use chemicals (e.g. construction, energy, textiles, etc.) in engaging in sustainable value chains. UNEP's eco-innovation methodology has already been applied in the chemical sector, and specific guidance exists.

- **Lessons learned from the Life Cycle Initiative**

  The Life Cycle Initiative is a public-private, multi-stakeholder partnership enabling the global use of credible life cycle knowledge by private and public decision makers. It provides a global forum to ensure a science-based, consensus-building process to support decisions and policies towards the shared vision of sustainability as a public good. It delivers authoritative

[88] http://unep.ecoinnovation.org/wp-content/uploads/2017/11/UN_Environment_Eco—i_Manual_Chemicals_Supplement.pdf

[89] http://unep.ecoinnovation.org/

opinion on sound tools and approaches by engaging its multi-stakeholder partnership (including governments, businesses, scientific and civil society organizations).[90] Among others, it has delivered and continues to improve the USEtox model to assess the toxicity of chemicals in Life Cycle Assessments, which is important to avoid regrettable substitutions and provide a holistic assessment of alternatives. The SAICM knowledge clearinghouse has a similar mandate with relevant stakeholders. Building on the experience of and looking at what has worked for the initiative may be something to consider. For example, how effective is the e-learning course on introduction to the life cycle thinking?

- Promoting life cycle approach for environmentally sound management (ESM) of wastes

  The 'Framework for the environmentally sound management of hazardous wastes and other wastes' establishes a common understanding of what ESM encompasses and identifies tools and strategies to promote the implementation of ESM. The framework promotes the integrated life cycle approach as a guiding principle and includes guidance on waste prevention and minimization, extended producer responsibility etc. [91]

- Informing consumers about chemicals of concern in products.

  Unsustainable consumption patterns increase the pressure on natural resources, and intensify the human footprint, pollution, greenhouse gas emissions, waste generation, water degradation, resource depletion and loss of biodiversity. The lack of reliable information on sustainability aspects across products' life cycles leads to the lack of support for informed decision making and perpetuate unsustainable consumption. A collaboration in raising awareness and improving the information available to consumers about chemicals of concern in products (e.g. by applying the Guidelines for Providing Product Sustainability Information or by creating/improving labels) can help consumers to make more sustainable choices, leading to phasing out referred chemicals.

- Leveraging sustainable and circular procurement practices to phase out chemicals of concern

  Public procurement wields enormous purchasing power, accounting for an average of 12% of GDP in OECD countries and up to 30% of GDP in many developing countries. the combination of public and private sector demand for sustainable products and services can help scale the market for these products and services. For example, buyers can develop and use circular procurement criteria in tenders' specifications such as the limitation and ultimately the elimination of the use of hazardous chemicals and/or ensure the non-toxicity of components, which can hinder high quality recycling.

[90] https://www.unenvironment.org/explore-topics/resource-efficiency/what-we-do/life-cycle-initiative

[91] http://www.basel.int/Implementation/CountryLedInitiative/EnvironmentallySoundManagement/Overview/tabid/3615/Default.aspx

2.8. Human rights

Characterization and linkages

Hazardous substances and wastes, including toxic chemicals, are associated with a broad range of civil, cultural, economic, political and social rights. Since 1995 the Commission on Human Rights and its successor, the Human Rights Council (HRC), have mandated a Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes (UN Special Rapporteur) to report on the implications for human rights of the ESM and disposal of hazardous substances and wastes. In 2011 the Human Rights Council affirmed "that the way hazardous substances and wastes are managed throughout their lifecycle, including manufacturing, distribution, use and final disposal, may have an adverse impact on the full enjoyment of human rights".[92]

According to the October 2018 report of the UN Special Rapporteur, "exposure to hazardous substances is fundamentally about the right to life, nondiscrimination and the right to bodily integrity, and dependent on the realization of everyone's right to information, meaningful participation, freedoms of association and assembly, and the right to an effective remedy, among others". The report also notes alleged cases "illustrating the impacts of toxics and pollutants throughout the lifecycle of consumption and production. These impacts are visible across various economic sectors, and industrial activities". Including those of specific groups "most vulnerable in society, including the rights of the child, older persons, workers, indigenous peoples, the poor, and migrant and minority communities." It proposes that "the future framework for chemicals and wastes should have a special focus on the gendered impact of exposure, and on childhood exposure"[93].

If citizens are to develop knowledge and make informed choices, the right to know about chemicals and waste is a key factor. Right-to-know is essential in order to give effect to other rights, such as the right to participate in decision-making and policymaking, due process, and the right to an effective remedy. To realize the right to information, information about the potential impacts of chemicals must be available, accessible, functional and non-discriminatory[94].

An early measure taken at the international level was the adoption of Principle 10 of the Rio Declaration at the UN Conference on Environment and Development in 1992. Principle 10 states that "environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous

[92] GCO-II Part IV p. 599 & 601 - https://www.ohchr.org/EN/Issues/Environment/ToxicWastes/Pages/Righttoinformation.Aspx

[93] http://www.srtoxics.org/wp-content/uploads/2018/10/2018-GA-Report-SR-Toxics-A_GA73_45821.pdf

[94] GCO-II Part IV p. 590 - http://www.srtoxics.org/issues-of-interest/right-to-information/.

materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided" [95].

Laws around the world provide for public access to information held by public authorities. Where countries do not have such provisions, they can adopt them pursuant to Guideline 15 of the United Nations Environment Programme Guidelines for the Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental Matters (the Bali Guidelines), adopted by the UNEP Governing Council in 2010. Guideline 15 establishes that "States should ensure that any natural or legal person who considers that his or her request for environmental information has been unreasonably refused, in part or in full, inadequately answered or ignored, or in any other way not handled in accordance with applicable law, has access to a review procedure before a court of law or other independent and impartial body to challenge such a decision, act or omission by the public authority in question" [96].

A number of international chemicals and waste agreements have provisions to advance right-to-know. The Minamata Convention on Mercury is a recent expression of the principle that information about chemicals and hazards belongs in the public domain[97]. The 1998 Rotterdam Convention for example requires that importing parties "ensure, to the extent practicable, the public has appropriate access to information on chemical handling and accident management and on alternatives that are safer for human health or the environment to the chemicals listed"[98]. Meanwhile, the 1972 Stockholm Convention on POPs requires that Parties provide to the public all available information on POPs and that the information is kept up-to-date[99]. It also recommends that Parties can provide such information through the use of safety data sheets, reports, mass media, and other means of communication, as well as by establishing information centres at national and regional levels[100].

The SAICM Overarching Policy Strategy (OPS) adopted in 2006 includes a range of provisions striking a balance between the disclosure of information and protecting legitimate, legally protected interests. Other than SAICM, both the UNECE Aarhus Convention, in force since 2001[101] and the recently adopted 2018 Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (Escazú Agreement)[102] establish an enforceable right to access environmental information, including information on chemicals and waste management. The Kiev Protocol on PRTRs of the

[95] GCO-II Part IV p. 588.
[96] GCO-II Part IV p. 591 - https://wedocs.unep.org/bitstream/handle/20.500.11822/11201/UNEP%20MGSB-SGBS%20BALI%20GUIDELINES-Interactive.pdf?sequence=1&amp%3BisAllowed=y.
[97] GCO-II Part IV p. 590 - https://wedocs.unep.org/bitstream/handle/20.500.11822/11201/UNEP%20MGSB-SGBS%20BALI%20GUIDELINES-Interactive.pdf?sequence=1&amp%3BisAllowed=y.
[98] Rotterdam Convention, article 15(2).
[99] Stockholm Convention on Persistent Organic Pollutants, 22 May 2001, U.N. Doc. UNEP/POPS/CONF/4, articles 10 (1)(b), 10(2) - http://chm.pops.int/Portals/0/Repository/conf/UNEP-POPS-CONF-4-AppendixII.5206ab9e-ca67-42a7-afee-9d90720553c8.pdf.
[100] Ibid. Article 10(4).
[101] Adopted in 1998 on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters
[102] On Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean

Aarhus Convention has an objective "to enhance public access to information through the establishment of coherent, nationwide" PRTRs. Parties to the Protocol do not have to be Parties to the Convention which opens this Protocol up beyond the region[103]. Although the scope of these agreements is broader than chemicals and waste management and the in the case of the Escazú Agreement it has yet to enter into force, they support chemicals and waste management actions under topics such as labelling of chemicals, providing communities with data on chemical releases by major facilities in their vicinity, and accessing the courts when citizens' rights to a healthy environment have been violated.

Some regional, national and sub national regulations also have consumer/ public right-to-know as a provision, for example the California Proposition 65 (or the Safe Drinking Water and Toxic Enforcement Act of 1986), and the European REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) Regulation[104].

Workers' right-to-know refers to their right to information about chemicals in the workplace. The ILO Chemicals Convention of 1990 (No. 170) states that "workers have a need for, and right to, information about the chemicals they use at work" and includes specific obligations in this regard[105].

In an August 2018 report to the HRC, the UN Special Rapporteur proposes 15 principles which are relevant to strengthening chemicals and waste management beyond 2020. They aim at helping governments and businesses ensure protection from exposure to hazardous chemicals, which the UN Special Rapporteur referred to as a global health crisis. The proposed principles broadly cover the responsibilities and duties of businesses and governments; worker access to information; and "remedies" to hold those who violate workers' rights accountable[106].

The UN Special Rapporteur in October 2018 subsequently explored opportunities to further integrate the human rights dimension of chemicals and waste into the beyond 2020 framework and reports that the exploitation of workers can take many other forms, including in particular the exposure of workers to toxic substances. "The right to safe and healthy work is a right in itself; however, it also encompasses many other interrelated and interdependent human rights of workers, including the rights to life, to health, to bodily (physical) integrity and security of the person. They are indivisible from the rights to information, meaningful participation, freedoms of expression assembly and association, as well as the right to an effective remedy"[107].

In September 2019 the HRC notes with appreciation the reports of the UN Special Rapporteur and condemns "the violations and abuses of the rights of workers in all parts of the world through unsafe exposure to toxic and hazardous substances". Furthermore, the HRC urges "States to safeguard reproductive health from unsafe exposure to hazardous substances at work as an obligation of States in the

[103] http://www.unece.org/index.php?id=2948&type=111
[104] GCO-II Part IV p. 591 - 592 - Where are the SVHCs? https://doi.org/10.1186/s12302-017-0122-0
[105] GCO-II Part IV p. 594 https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_INSTRUMENT_ID:312315
[106] http://www.srtoxics.org/wp-content/uploads/2018/09/2018-HRC-report-on-Workers-Rights-EN.pdf
[107] http://www.srtoxics.org/wp-content/uploads/2018/10/2018-GA-Report-SR-Toxics-A_GA73_45821.pdf

elimination of discrimination against women in employment"[108].

A large majority of UN Member States have constitutional provisions that include the right to a healthy environment in some form, which can be considered an economic, social or cultural right. As elaborated in Stockholm Principle 1 adopted in 1972, the natural environment is essential to the enjoyment of basic human rights and the right to life itself[109]. The September 2016 report of the UN Special Rapporteur states that "the right to an effective remedy is well established under international human rights law and is a core procedural right relating to environmental policymaking. For example, The International Covenant on Civil and Political Rights (art. 2, para. 3) guarantees victims of human rights violations an effective remedy. This has been interpreted to include environmental wrongs that adversely affected human rights. The two aspects to the right to a remedy are access to justice and substantive redress"[110]. Access to justice is a basic principle of the rule of law, it helps ensure public authorities' accountability to the public[111].

According to the October 2018 report of the UN Special Rapporteur, "studies suggest that only the smallest fraction of victims of exposure to hazardous substances have access to remedies. One of the greatest obstacles for victims who are harmed by hazardous substances to access an effective remedy is the often-insurmountable burden placed on them to prove causation between their exposure and the adverse effects that are alleged to be a result of that exposure. Major obstacles to accountability and remedy include the unreasonably high burden of proof, the long latency periods for consequences to manifest in some cases and the difficulty in establishing causation; substantial information gaps with respect to the identification of hazards, measurement of exposure and specification of the epidemiological impacts; possible exposure to a multitude of different chemicals in various occupational settings and over a working lifetime; and the provisions of contractual relationships between suppliers and purchasers which can shift responsibility up or down a supply chain"[112].

The UNEP Environment Rights Initiative is the current phase of UNEP's work on human rights and the environment. It is focused on building a coalition of state and non-state actors united to promote, protect, and respect environmental rights. The initiative supports rights of access to information on environmental matters, helps governments fulfil rights obligations related to the environment and provides legal and technical support[113].

Options to coordinate and cooperate

- Engage with the Office of the United Nations High Commissioner and with the Special Rapporteur on hazardous substances and wastes (toxics), especially on (but not limited to) issues regarding the rights of workers, children, and indigenous peoples,

[108] https://documents-dds-ny.un.org/doc/UNDOC/LTD/G19/281/51/PDF/G1928151.pdf?OpenElement - A/HRC/42/L.27
[109] GCO-II Part IV p. 599 - 600
[110] https://www.ohchr.org/EN/HRBodies/HRC/RegularSessions/Session33/_layouts/15/WopiFrame.aspx?sourcedoc=%2FEN%2FHRBodies%2FHRC%2FRegularSessions%2FSession33%2FDocuments%2FA_HRC_33_41_Add%2E2_en%2Edocx&action=view&wdparaid=7104B6A7
[111] GCO-II Part IV p. 597- 598
[112] http://www.srtoxics.org/wp-content/uploads/2018/10/2018-GA-Report-SR-Toxics-A_GA73_45821.pdf
[113] https://www.unenvironment.org/explore-topics/environmental-rights-and-governance/what-we-do/advancing-environmental-rights

the responsibilities of business enterprises as well as on integrating the human rights dimension of chemicals and waste into the beyond 2020 framework.

Right to know/ Right of Access to Information

- Develop and strengthen worker, consumer and general public right-to-know policies and laws and ensure that relevant and complete information concerning hazards and possible exposures to chemicals is made available.

- Collaborative steps with industry and the private sector may be taken to advance the right-to-know of workers and consumers. Important steps companies may take to prevent and address human rights impacts related to their production and products include the use of a life cycle approach. Greater efforts by authorities and manufactures are important in building trust and providing easily understandable information. Stricter regulation that requires clear and consumer-friendly advice for using harmful products in a safe way may be considered.

- Increase efforts to promote global participation in PRTRs and compliance with GHS.

- Consumers and workers may not be capable of using information about chemicals in products adequately, even if they have a high educational level. An enhanced strategy to communicate chemical risks in consumer products may thus be warranted and might be undertaken as a joint effort across the SCP, word of work, health, chemicals and waste and human right clusters.

Access to Justice and to an effective remedy

- At the national level, collaboration for example among human rights entities, environmental NGOs and relevant Ministries might be enhanced in order to ensure that citizens can access the courts (or other grievance mechanisms) in matters of chemical pollution and human health protection related to chemicals and waste. Public concern about the environment, human health and exposure to chemicals, and other hazards and risks, can be harnessed to help public authorities enforce environmental laws.

- Engagement among human rights entities and UNEP's Environmental Rights Initiative might be considered in order to address jointly the interventions related to the promotion of environmental justice.

Awareness raising/ Information sharing

- Steps may be taken to protect the rights of workers, children, low-income communities and other vulnerable groups from exposure to pollutants and other harmful chemicals and waste. Lessons can be drawn from the NAPs of the Minamata Convention, that include inter alia, strategies to address child labor, strategies to prevent exposure of vulnerable population, and strategies to share information.

- Continued efforts should be made in encouraging the generation of scientific information and assessing chemical hazards and risks to human health.

- Raise awareness and build capacity on the respective obligations and responsibilities of the Governments and

all business enterprises to prevent and address adverse business-related human rights impacts in line with the Guiding Principles on Business and Human Rights.

3. Advancing the 2030 Agenda and beyond

Cross cutting themes

While reviewing the linkages and options for collaboration, several cross-cutting themes, relevant for all the discussed clusters became apparent. Examples of the horizontal issues include: science policy interface, national coordination, and stakeholder involvement.

Strengthening the science-policy interface

The field of chemicals management is highly technical, and a variety of fora already exist for the provision of scientific or technical advice on a wide range of issues. In recognition of the fact that good policies and decisions require a solid and credible scientific basis, many of the organizations have established strict guidelines for choosing experts and rigorous processes to follow in the development of scientific advice. In many cases, these organizations have already successfully bridged the gap between science and policy. For issues for which a forum does not already exist, there is a great deal of scope within current organizational structures and mandates to create new committees or panels to cover a broad range of chemicals related aspects. [114]

The GCO and GEO provide a good basis for policy makers to taking informed decisions. Opportunities exist to explore how the lessons from these processes can be used to strengthen science-policy linkage. Moreover, experiences from the climate change science-policy body IPCC, or Biodiversity and Ecosystem platform IPBES, could be considered while moving forward with the discussions on strengthening science-policy interface for the chemicals and waste cluster.

The 2019 report by the International Panel on Chemical Pollution entitled 'Strengthening the Science-Policy Interface in International Chemicals Governance: A Mapping and Gap Analysis'[115] provides a detailed analysis of the pros and cons of establishing a dedicated Intergovernmental science policy mechanism. The findings from the study and lessons learned from the Biodiversity science policy platform IPBES could be given due consideration while moving ahead.

Another example and opportunity for collaboration across all the clusters to strengthen science policy interface is the UNEP initiative - Internationally Agreed Environmental Goals (IAEGs) Monitor[116] that aims to provide easy-to-use and up-to-date statistical and geospatial information on the progress towards

[114] http://www.saicm.org/Portals/12/documents/meetings/IP2/IP_2_INF_12_Science_Policy_Interface.pdf

[115] https://www.ipcp.ch/wp-content/uploads/2019/02/IPCP-Sci-Pol-Report2019.pdf

[116] https://www.mapx.org/projects/eo-allert-identifying-priority-areas-to-be-preserved-from-the-impacts-of-alluvial-small-scale-mining

environmental goals across MEAs, through an integrated platform that would also give access to related knowledge and legal documents. The project will contribute to strengthening the science policy interface on the national level based on the data, information and policy analysis in the areas of, among others, air quality, water quality, ecosystems, biodiversity, waste and hazardous chemicals, the marine environment and emerging issues. Engaging actors across all the clusters is fundamental to identify the indicators, data custodians and monitor process made in achieving common or complementary goals and targets across multiple agreements.

National coordination

The result of the here-discussed options to enhance collaboration among the clusters will ultimately depend on the implementation on an international, regional and national level. Although regional coordinating mechanisms do provide a good platform to share experience and learn from each other, it is the national implementation which is the decisive key to the success of all the options mentioned in the previous chapters. Therefore, the national coordination between various Ministries and sectors (civil society, industry, academia) is prerequisite to achieve the desired results. Several examples of enhancing national coordination between environment and health actors are discussed in the chapter 2.2 on "Health".

For example, national collaboration is required in implementing many health-related articles of the Minamata Convention. Including the actions on mercury-containing medical devices used in health care, and the development of actions on ASGM where ministries of health and other relevant ministries need to collaborate on the development and implementation of the public health strategies.

Another example of multisectoral collaboration in the context of the health cluster is the Ministerial Conference for Health and Environment, organized every five years by the European Regional office of the WHO in close collaboration with other UN agencies. The conference brings together relevant stakeholders to develop policies and actions on environment and health.

Stakeholder involvement

In line with SDG 17, the efforts to strengthen the means of implementation and revitalize the global partnership for sustainable developments are crucial for enhancing the linkages and collaboration between clusters. Options to enhance cross thematic stakeholder involvement might be considered, including:

(i) mapping the relevant events and parallel processes across various clusters, for example through platforms such as IOMC or SAICM;

(ii) increasing participation in each other's governing body meetings;

(iii) enhancing the visibility and information sharing within and among clusters;

(iv) exploring and strengthening the resource mobilization for the cross thematic initiatives;

(v) enhancing multi sectorial and multi-thematic partnerships for example, by promoting sustainability of already established working groups/coordination mechanisms.

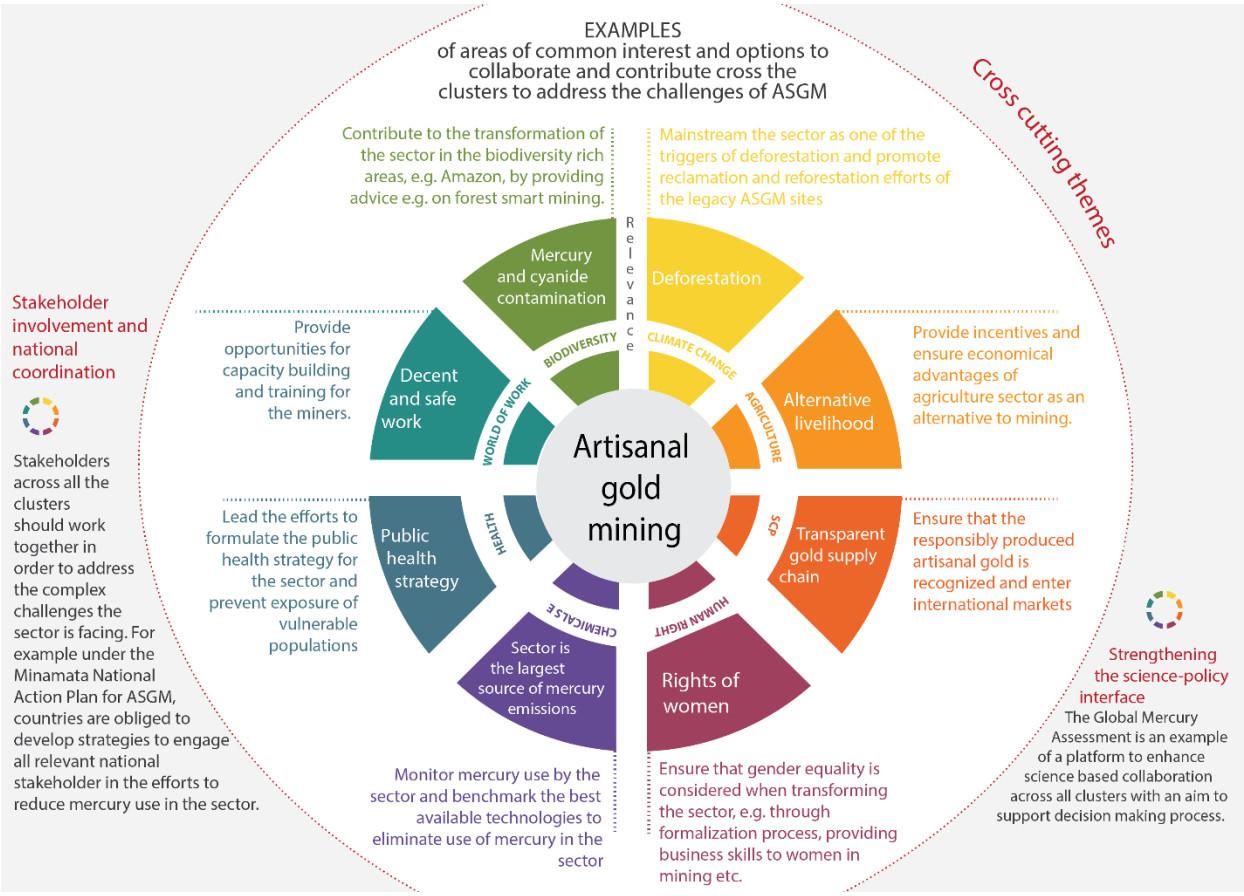
(vi) Increasing public awareness on the interconnectedness of issues between clusters to encourage behavioural change. For example, relevance of pesticide use and mercury use in ASGM

across all clusters. (see the examples in executive summary and below)

(vii) Increase collaboration between scientific/technical bodies across clusters to conduct research and analysis and provide robust information to policy makers

The relevance of the identified linkages and options for collaboration in a broader sustainable development agenda context

The 2030 Agenda offers an excellent platform to strengthen cooperation across the whole society – both in terms of clusters and relevant actors. Due to the nature of the request, options presented in this paper explore the linkages between the chemicals and waste cluster and each one of the clusters separately. Nevertheless, in multiple instances the collaboration across several clusters is necessary and might be considered. For example, in order to effectively address challenges associated with the use of pesticides, joint efforts across chemicals and waste management, world of work, biodiversity, agriculture and health clusters should be strengthened. Similarly, minimizing the risk associated with chemical releases triggered by climate change should be tackled in a collaborative manner by health, climate change and chemical waste clusters. This paper attempted to explore the 'traditional' clusters and interlinkages between them. However, there are alternative platforms which may be used to identify and advance the common objectives of the SDGs. For example, environmental media or ecosystem-based platforms could be strengthened in order to



bring together interested parties. The "marine environment" platform is an illustration of how the approach could be applied and contribute to the advancement of SDG 14 "Conserve and sustainably use the oceans, seas and marine resources for sustainable development". The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities[117] might serve as a starting point to enhance engagement of the interested parties, including actors across all the clusters discussed in the paper. Potential joint funding opportunities could be explored, for example through GEF International waters focal areas[118]. Moreover, strengthening of the collaboration among actors at all levels (including local community leaders, civil society, academia, industry, national governments and international organizations) is a key for successful implementation of joint actions.

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[117] https://www.unenvironment.org/explore-topics/oceans-seas/what-we-do/addressing-land-based-pollution
[118] https://www.thegef.org/topics/international-waters

Annex: Examples of agreements, platforms and other initiatives identified for each of the clusters presented in the assessment – initial mapping.

Clusters	Topic of relevance for CW cluster	Multilateral treaties	Voluntary agreements and initiatives	Science policy platforms and other key publications/information sharing materials and documents
Chemicals and Waste -		Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal Minamata Convention Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade Stockholm Convention on Persistent Organic Pollutants Vienna Convention for the Protection of the Ozone Layer and its Montreal protocol on Substances that Deplete the Ozone Layer	SAICM Harmonized System of Classification and Labelling of Chemicals (GHS) Pollutant Release and Transfer Register (PRTR)	Global Chemicals Outlook II Second Global Monitoring Report under the Global Monitoring Plan on POPs Global POPs Monitoring Plan Data Warehouse Climate Change and POPs: Predicting the Impacts (2011) Various publications and leaflets under the BRS conventions that link the work of the conventions with specific human health and environmental issues Document the pollution and impacts EMG publication entitled: United Nations and Sound Chemicals Management: Coordinating delivery for Member States and sustainable development (2015)

Health	Chemical safety, Exposure risk assessment, including residential areas close to landfills, dumping sites for hazardous and other wastes, incinerators and other industrial and polluting activities., Health impacts Environmental Persistent pharmaceutical pollutants, Medical Waste, Antimicrobial resistance	International Health Regulations	WHO Chemicals Road Map UNEP/EA.3/Res.4	
World of work	Occupational exposure; prevention and reduction of workplace risks and hazards, as well as injuries, disease and deaths; industrial accidents; greening industries and promoting green jobs; promotion and creation decent work opportunities …… (Asbestos, pesticides exposure, child labour in mining e.g.)	ILO Chemicals Convention, 1990 (No. 170) ILO Prevention of Major Industrial Accidents Convention, 1993 (No. 174) Additional ILO sectoral Conventions: Safety and Health in Agriculture Convention, 2001 (No. 184), etc Hazard specific conventions: ILO Asbestos Convention, 1986 (No. 162), etc	Harmonized System of Classification and Labelling of Chemicals (GHS)	Decent work and the 2030 Agenda for sustainable development 2030 Development agenda: ILO Focus targets *Resolution from last ILO Conference regarding the prevention of worker from occupational hazards, including chemicals ILO Codes of Practice related to chemicals and waste management ILO OSH-MS 2001

Climate change	Air pollution, Role of chemicals in adaptation and mitigation solutions, climate technology Climate change effects on chemicals (emissions, pathways, occurrence and fate, exposure and effects) Co-benefits to reduce emissions of GHG and other air pollutants Co-benefits to reduce emissions of GHG and to promote sound waste management	Vienna Convention on Ozone and its Montreal Protocol UNFCCC Including Kyoto Protocol and Paris Agreement	Climate and Clean Air Coalition Breath Life Campaign	The Intergovernmental Panel on Climate Change Action on Climate and SDGs Climate Technology Climate Change and POPs: Predicting the Impacts (2011) BRS Leaflet "The UN 2019 Climate Action Summit: Opportunities to advance sound management of chemicals and wastes"

Biodiversity	Impact of pollution on biodiversity and ecosystem services, Pollution from land-based activities marine plastic pollution, impact on land degradation, lead shot and migratory birds (AEWA) "Cooperation and synergies among conventions" in the post 2020 Global Biodiversity framework	Convention on Biological Diversity Convention on Migratory Species Ramsar Convention on Wetlands Antarctic Treaty Arctic Treaty (and related CAFF) CITES	Strategic Plan for Biodiversity 2011-2020, and beyond 2020 Honolulu Strategy – a global framework for prevention and management of marine debris. UNEP/EA.3/Res.2 UNEP/EA.3/Res.7 UNEP/EA.4/Res.12	IPBES Global Assessment 2019 Aichi Biodiversity Targets (Quick guide to target 8 – pollution reduction) Mobilizing chemical Conventions to protect biodiversity Health and Biodiversity Marine plastic debris and microplastics – Global lessons and research to inspire action and guide policy change GBO 3 & 4, GEO 6, Global Wetlands Outlook 1
Agriculture and food	Pesticides, herbicides, food conservation agents, fertilizers	International Plant Protection Convention	International Code of Conduct on Pesticide Management	Codex Alimentarius - Codex Committee on Contaminants in Food

Sustainable consumption and production	Chemicals in products (in products and used to produce things Industrial chemicals and waste, Eco-design Linkage with private sector, CSR Governance aspects related to SCP	….	10YFP – One Planet Network International Resource Panel UNEP's Extractives Hub UNEP/EA.3/Res.9 UNEP/EA.4/Res.7	Sustainable public procurement Consumer Information for SCP Life cycle Initiative Eco Innovations UNEP circularity platform
Human rights	Right to life, Right to health, Right to equality before the law, Right of access to information, accountability and transparency in government decision-making, Right to education, Right to an effective remedy, Right to food, Right to safe water and sanitation, Right to healthy environment,	[1948 Universal Declaration of Human Rights (UDHR)][119] 1966 International Covenants on Civil and Political Rights and on Economic, Social and Cultural Rights 1990 Convention on the Rights of the Child, 2007 UN Declaration on the Rights of Indigenous Peoples Etc.	Environnent Emergency Center UNEP's Environmental Rights Initiative (includes engagement with UNPFII)	UN Special Procedures: Human Rights and Toxics; Human Rights and the Environment; Human Rights Defenders; UN Working Group on Business and Human Rights Report of the Special Rapporteur on Human Rights and Toxics relating to the rights of workers and exposure to toxic substances Report of the Special Rapporteur on Human Rights and the Environment on air pollution Environmental Defenders

[119] The Universal Declaration of Human Rights (UDHR) is the foundation of international human rights law. Adopted in 1948 by the UN General Assembly through Resolution 217 A, the UDHR represents a milestone and a commitment by the international community towards human rights, and has inspired a rich body of legally binding international human rights treaties: the UDHR has inspired more than 80 international human rights treaties and declarations, a great number of regional human rights conventions, domestic human rights bills, and constitutional provisions, which together constitute a comprehensive legally binding system for the promotion and protection of human rights.

	Children's rights, Right of access to justice Right to safe and healthy working conditions, Rights of workers, Etc.	Regional multilateral treaties: - Europe: The United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention); - Latin America and the Caribbean: The UN Economic Commission for Latin America and the Caribbean (ECLAC) Treaty 'ESCAZU' on "Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean"		