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**Fourth meeting of the intersessional process considering the Strategic Approach and sound management of chemicals and waste beyond 2020 (IP4)**

Bucharest, Romania, 29 August – 2 September 2022

Nairobi, Kenya, 27 February – 3 March 2023\*

## **Inventory and analysis report: existing indicators on chemicals and waste management**

### **Note by the secretariat**

1. The annex to the present note contains the document entitled “*Inventory and analysis report: existing indicators on chemicals and waste management*”. The document presented in the annex has been submitted by Inter-Organization Programme for the Sound Management of Chemicals (IOMC). The annex has not been formally edited.

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<sup>1</sup> Reissued for technical reasons.

\* The fourth meeting of the intersessional process considering the Strategic Approach and sound management of chemicals and waste beyond 2020 (IP4) was held from 29 August to 2 September 2022 in Bucharest, Romania. The meeting was adjourned on 2 September 2022 and will be resumed from 27 February to 3 March 2023 in Nairobi, Kenya.

## IOMC Indicators Project Working Group<sup>1</sup>

### Inventory and analysis report: existing indicators on chemicals and waste management

13/01/2023

#### Cover note to the INF document for IP4.2

This document identifies an initial “long list” of 279 existing indicators that are relevant and/or meaningful to the chemicals and waste agenda. These include indicators from various custodian agencies and/or frameworks. A screened list of 62 indicators were selected in three steps which met several criteria and by which availability of data to establish a baseline, existence of custodian agency and a methodology to measure progress against the indicator are confirmed. The screened indicators contribute to the 28 proposed targets in the sound management of chemicals and waste beyond 2020 framework available at the time of issuing of this document (i.e., from the outcome of IP4.1).

As a result of this analysis, three recommendations are proposed:

#### Suggested Recommendation 1

**Include the screened indicators as an annex to the beyond 2020 framework. These indicators are already available and can represent an initial basis for measuring the progress of the framework but are not sufficient. Further work is necessary to have a comprehensive measurement of the progress and impact of the beyond 2020 instrument, including the development of high-level indicators as well as indicators for determined targets.**

The indicators are observed to be measurable, have a concise and clear description, and have a custodian agency<sup>2</sup> that has been already collecting various levels of data at regular intervals. The advantage of these screened indicators includes that they (a) can be monitored effectively through their custodian agency, and (b) provide a reliable starting point upon which progress can be built and tracked.

Reporting on these screened indicators can take place directly through the custodian agency or SAICM Secretariat can follow up with the custodians through regular updates at International Conferences on Chemicals Management (ICCMs) or at future conferences of the beyond 2020 instrument. It is important to highlight that the screened list of indicators is not comprehensive in their linkages to the 28 proposed targets for the SAICM beyond 2020 framework. A mapping exercise showed that there are several targets to which no indicators

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<sup>1</sup> The IOMC indicators working group included: FAO, ILO, UNEP, UNDP, UNIDO, UNITAR, OECD, WHO, UNECE, UNICEF, SAICM Secretariat, BRS Secretariat, and the Secretariat of the Minamata Convention.

<sup>2</sup> Already agreed by other intergovernmental processes - e.g. UN Statistics authorities in case of SDG related indicators.

could be associated. When a link could be made, it resulted, in most cases, in a partial view on the target.

Furthermore, the document reflects work-in-progress with regards to the status of the targets. This work and the relationships between the indicators and how they contribute to the targets may be further elaborated after the fourth meeting of the intersessional process (IP4.2) that is scheduled to take place in Nairobi, Kenya from 27 February to 3 March 2023. The effective assessment of the progress of the instrument in meeting the vision statement would require measuring, not only targets, but also at high level to assess progress and impact of the instrument. The SAICM intersessional process has taken high-level indicators into consideration in the discussions on targets, indicators and milestones. Indeed, the Technical Working Group on the above-mentioned topic agreed to include in its report, the following two health and environment indicators proposed by IOMC members, indicating it required further discussion: 1. Burden of disease attributable to chemicals; 2. Burden of chemical and waste pollution on the environment.

The inventory of screened indicators also contains a few of the proposed indicators by the IOMC which could be helpful to consider in characterizing progress with the vision of the beyond 2020 instrument and communicating the importance of chemical and waste management.

## **Suggested Recommendation 2**

**Criteria for the selection of indicators should be considered by stakeholders for inclusion in the measurability structure for the beyond 2020 instrument. The following criteria could be considered by stakeholders to be included in the text of the instrument.**

Criteria for selecting indicators are used by the IOMC in this Indicators Analysis Report. These criteria supported screening and qualifying indicators that are already in use. Some of these criteria may serve as a basis when considering the measurability of the progress and impact of the beyond 2020 instrument. They may also serve in the further selection of additional indicators, with considerations of feasibility and timeline for methodology, and baseline and custodian agency nomination, for example.

Below is the list of criteria used by IOMC to screen or qualify existing indicators:

- their relevance /meaningfulness to the chemicals and waste agenda
- already in use / selected to be used in international processes, or widely spread / used at other levels
- availability (and location/source) of data to create a baseline for and assess progress towards achieving the indicator existence of custodian agency, or in case of new indicator(s), a process needed to name a custodian
- comparability of the data (e.g., is a standardized methodology being used?)
- type of indicator (i.e., process, impact)
- use in other sectors (e.g., biodiversity, SDGs)
- resource/sustainability issues; When was data last updated, if known?
- transparency - easy access to information and stakeholder participation

### **Suggested Recommendation 3**

#### **A measurability structure should be developed to support and monitor the new framework.**

A measurability structure is referred to in the co-chairs consolidated paper (“2. *[A measurability structure at Annex x illustrates the different categories of indicators that may be used to track progress and impact of the instrument.]*”).

The measurability structure should allow for reporting and monitoring progress in the implementation of the new framework, and its impact, in a comprehensive manner. IOMC proposes to have indicators to reflect, thereof, the new framework components, e.g.: vision and objectives, targets, mechanisms to support implementation (including potential programmes for implementation, workplans), financial considerations and eventually institutional arrangements.

Structures under other instruments, such as the recently approved Kunming-Montreal global biodiversity framework (GBF), deserves special attention and could be further considered when addressing the measurability structure. The monitoring framework for the GBF is composed of 4 types of proposed indicators, (a) Headline indicators, (b) Global level indicators, (c) Component indicators and (d) Complementary indicators, and it can be supplemented by additional national and subnational indicators.<sup>3</sup>

Further thinking on the measurability structure is needed, including on reporting mechanisms.

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<sup>3</sup> Draft decision on Kunming-Montreal Global biodiversity framework (includes targets): <https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf>  
Draft decision on monitoring framework: <https://www.cbd.int/doc/c/179e/aecb/592f67904bf07dca7d0971da/cop-15-l-26-en.pdf>

## IOMC Indicators Project Working Group

### Inventory and analysis report: existing indicators on chemicals and waste management

*Acknowledgement: The IOMC working group thanks Ms Mernoosh Azodi, for her support in conducting this study and all participating organisations in the working group.*

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## Executive summary

By gathering current indicators that are in use, are measurable, have enough data for a baseline, and have a custodian organization, this analysis seeks to improve the understanding of existing indicators for chemicals and waste. An overview of the indicators that are currently used in this domain at the global level will help stakeholders identify areas where their progress toward the responsible management of chemicals and waste is more effectively measured. It will also help identify what is not measured at this stage and may deserve attention and further work. It may also contribute to the discussion during intersessional processes towards an effective measurability framework for the Beyond 2020 framework.

This analysis compiled and reviewed 279 existing indicators that are of direct relevance to the sound management of chemicals and waste and its implications for the human health and the environment. They cover a large array of topics, but significant gaps remain. The compiled indicators cover, amongst others, biodiversity, health, climate change, food and agriculture, labor, electric and electronics, and waste. Some indicators also capture, impacts of chemicals and waste on air, water, land, marine and coastal environment as well as measuring the impacts of pollution on the ecosystems and species as well as the human health.

In a three-step screening process, the indicators were evaluated against a set of criteria which resulted in 62 unique indicators. The indicators in the screened list are included in a metadata file (hereafter called *screened indicators*). These indicators are already in use by their custodian agency, and a standard methodology is developed to measure their progress. Moreover, these indicators have adequate data to establish a baseline. The metadata stores the detailed data and information on each individual indicator that has been screened.

The analysis looked at the linkages of the screened indicators with the United Nations Sustainable Development Goals, the 28 proposed targets for the SAICM beyond 2020 (as of the IP4.1 discussions), as well as the linkages with the Emerging Policy Issues (EPIs) and Other Issues of Concern of the Strategic Approach to International Chemicals Management (SAICM). Finally, it highlights the relationship of screened indicators with other international processes which have close linkages to chemicals and waste.

The analysis found that the linkages of the screened indicators to the 28 proposed targets is often partial and not always straightforward. The screened indicators may address parts of a certain target. Indeed, for the majority of targets, the linkage to the indicators is often partial and not comprehensive of the entire essence of the respective target. In addition, the mapping exercise to the 28 proposed targets for the SAICM beyond 2020 framework indicates that there are several targets to which neither of the indicators could be associated.

The analysis underlined the significance of impact indicators versus process indicators. In moving forward, it is encouraged to select a collection of impact indicators which can help quantify the effect of chemicals and waste on humans and the environment.

Furthermore, developing a set of High-level indicators, or indices, could be helpful in measuring the Beyond 2020 framework's vision and make it easier to explain to the public and policymakers the significance of chemical and waste management and its effects on both human health and the environment.

In moving forward, it is helpful to reflect on the findings of the previous work on indicators, including but not limited to the analysis of the indicators in the progress report of the SAICM

for the period 2014-2016. It is also of importance to reflect upon the lessons learnt in other areas in particular the indicators of the Strategic Plan for Biodiversity.<sup>4</sup>

Furthermore, work under the ad hoc technical expert group of the CBD, to advise on the further operationalization of the monitoring framework for the Kunming-Montreal global biodiversity framework, deserves special attention as target 7 has strong linkages to the chemicals and waste agenda.<sup>5</sup>

As the chemicals and waste is a dynamic domain, a periodic review of the long list of indicators and the metadata may prove helpful, as more indicators are developed over time and the existing indicators may meet the set criteria in the future to find their way into the metadata file.

### **Uptake within beyond 2020:**

This document aims to provide an evidence-based overview of existing indicators to enable the discussions of decision-makers and stakeholders towards the sound management of chemicals and waste. The findings of this work on existing indicators, including the limitations with respect to coverage of the current targets, may inform discussions during the intersessional processes of the beyond 2020 process.

As a result of this analysis, three recommendations are proposed:

#### **Suggested Recommendation 1**

**Include the screened indicators as an annex to the beyond 2020 framework. These indicators are already available and can represent an initial basis for measuring the progress of the framework but are not sufficient. Further work is necessary to have a comprehensive measurement of the progress and impact of the beyond 2020 instrument, including the development of high-level indicators as well as indicators for determined targets.**

The indicators are observed to be measurable, have a concise and clear description, and have custodian agency<sup>6</sup> which have been already collecting various levels of data at regular intervals. The advantage of these screened indicators includes that they (a) can be monitored effectively through their custodian agency, and (b) provide a reliable starting point upon which progress can be built and tracked.

Reporting on these screened indicators can take place directly through the custodian agency or SAICM Secretariat can follow up with the custodians through regular updates at International Conferences on Chemicals Management (ICCMs) or at future conferences of the beyond 2020 instrument.

It is important to highlight that the screened list of indicators is not comprehensive in their linkages to the 28 proposed targets for the SAICM beyond 2020 framework. A mapping exercise showed that there are several targets to which no indicators could be associated.

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<sup>4</sup> CBD/COP/14/INF/40

<sup>5</sup> Draft decision on Kunming-Montreal Global biodiversity framework (includes targets):  
<https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf>

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<sup>6</sup> Already agreed by other intergovernmental processes - e.g. UN Statistics authorities in case of SDG related indicator

When a link could be made, it resulted, in most cases, in a partial view on the target. Furthermore, the document reflects work-in-progress with regards to the status of the targets. This work and the relationships between the indicators and how they contribute to the targets may be further elaborated after the fourth meeting of the intersessional process (IP4.2) that is scheduled to take place in Nairobi, Kenya from 27 February to 3 March 2023.

The effective assessment of the progress of the instrument in meeting the vision statement would require measuring, not only targets, but also at the high level to assess progress and impact of the instrument. The SAICM intersessional process has taken high-level indicators into consideration in the discussions on targets, indicators and milestones. Indeed, the Technical Working Group on the above-mentioned topic agreed to include in its report, the following two health and environment indicators proposed by IOMC members, indicating it required further discussion: 1. Burden of disease attributable to chemicals; 2. Burden of chemical and waste pollution on the environment

The inventory of screened indicators also contains a few of the proposed indicators by the IOMC which could be helpful to consider in characterizing progress with the vision of the beyond 2020 instrument and communicating the importance of chemical and waste management.

## **Suggested Recommendation 2**

**Criteria for the selection of indicators should be considered by stakeholders for inclusion in the measurability structure for the beyond 2020 instrument. The following criteria could be considered by stakeholders to be included in the text of the instrument.**

Criteria for selecting indicators are used by IOMC in the Indicators Analysis Report. These criteria supported screening and qualifying indicators that are already in use. Some of these criteria may serve as a basis when considering the measurability of the progress and impact of the beyond 2020 instrument. They may also serve in the further selection of additional indicators, with considerations of feasibility and timeline for methodology, baseline and custodian agency nomination, for example.

Below is the list of criteria used by IOMC to screen or qualify existing indicators:

- their relevance /meaningfulness to the chemicals and waste agenda
- already in use / selected to be used in international processes, or widely spread / used at other levels
- availability (and location/source) of data to create a baseline for and assess progress towards achieving the indicator existence of custodian agency, or in case of new indicator(s), a process needed to name a custodian
- comparability of the data (e.g., is a standardized methodology being used?)
- Type of indicator (i.e., process, impact)
- Use in other sectors (e.g., biodiversity, SDGs)
- resource/sustainability issues; When was data last updated, if known?
- transparency - easy access to information and stakeholder participation

## **Suggested Recommendation 3**

**A measurability structure should be developed to support and monitor the new framework**



A measurability structure is referred to in the co-chairs consolidated paper (“2. [A measurability structure at Annex x illustrates the different categories of indicators that may be used to track progress and impact of the instrument.]”).

The measurability structure should allow for reporting and monitoring progress in the implementation of the new framework, and its impact, in a comprehensive manner.

IOMC proposes to have indicators to reflect, thereof, the new framework components, eg: vision and objectives, targets, mechanisms to support implementation (including potential programmes for implementation, workplans), financial consideration and eventually institutional arrangements.

Structures under other instruments, such as the recently approved Kunming-Montreal global biodiversity framework (GBF), deserves special attention and could be further considered when addressing the measurability structure. The monitoring framework for the GBF is composed of 4 types of proposed indicators, (a) Headline indicators, (b) Global level indicators, (c) Component indicators and (d) Complementary indicators, and it can be supplemented by additional national and subnational indicators.<sup>[2]</sup>

Further thinking on the measurability structure is needed, including on reporting mechanisms.

## I. Introduction

This document provides information on existing indicators for chemicals and waste in line with the plan of the project that was agreed at the 56<sup>th</sup> Inter-Organization Programme for the Sound Management of Chemicals (IOMC) meeting in October 2021.<sup>7</sup> This document is a deliverable of the IOMC coordinated project (including other interested organizations) on supporting an inventory on indicators relevant to chemicals and waste.<sup>8</sup> Furthermore, this work is put forward as a contribution to the sound management of chemicals and waste beyond 2020 framework.

This document includes an analysis of the existing indicators, some of which could be used to measure the progress towards the sound management of chemicals and waste in the context of the beyond 2020 targets and objectives.

The document consists of a summary description of the methodology to search and compile an inventory of (i.e. long list) indicators. This inventory of indicators was then assessed using a three-step screening criteria, resulting in a more compact and screened list of indicators all of which meet steps one to three. This document includes an analysis of the screened indicators, explores the linkages with the 28 proposed targets for the beyond 2020 (as of the IP4.1 discussions), United Nations Sustainable Development Goals (UN SDGs) as well as the linkages with the Emerging Policy Issues (EPIs) and Other Issues of Concern of the Strategic Approach to International Chemicals Management (SAICM). The analysis looks for the strengths and gaps in the screened indicators and how they are relevant to keeping track of progress on chemicals and waste management.

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<sup>7</sup> The Inter-Organization Programme for the Sound Management of Chemicals (IOMC) was established by an MOU among the 9 Participating Organizations (FAO, ILO, UNDP, UNEP, UNIDO, UNITAR, World Bank, WHO and OECD)

<sup>8</sup> The IOMC indicators working group included: FAO, ILO, UNEP, UNDP, UNIDO, UNITAR, OECD, WHO, UNECE, UNICEF, SAICM Secretariat, BRS Secretariat, and the Secretariat of the Minamata Convention.

This document further analyses screened indicators, looking at process versus impact/outcome indicators. The document reflects work-in-progress and may be further elaborated after the resumed fourth meeting of the intersessional process (IP4.2) that is scheduled to take place in Nairobi, Kenya from 27 February to 3 March 2023.

## **II. Methodology**

279 indicators were identified that are relevant and/or meaningful to the chemical and waste agenda<sup>9</sup>. Existing international processes and frameworks on environment, climate, chemical and waste management, labour, health and private sector initiatives among other agendas were screened in search for indicators already in use or indicators that are under development. The result is an inventory of indicators which are referred to hereafter as the “long list of indicators”, that address different aspects of chemical and waste management or are relevant to the issue of waste and the life cycle of chemicals in a broader sense. The long list of indicators originates from literature research with resources from: Basel, Rotterdam and Stockholm Conventions, Minamata Convention, Ramsar Convention, Convention on Biological Diversity, United Nations Framework Convention on Climate Change, Water Convention, IOMC participating organisations, including the United Nations Environment Programme (UNEP) and Organisation for Economic Co-operation and Development (OECD), SAICM, UN-Habitat, Ozone Secretariat, IPEN, United Nations Economic Commission for Europe (UNECE), United Nations Statistics Division (UNSD), International Council of Chemical Associations (ICCA), International Nitrogen Initiative, International Union for Conservation of Nature (IUCN).

The indicators labelled as IOMC indicators, in this paper, are taken from the list of indicators of progress proposed by IOMC.<sup>10</sup> Custodian agencies are IOMC participating organisations.

The basis of selection and inclusion of an indicator in the long list was primarily its relevance to chemical and waste management issues.

The outcome or impact vs process indicators were highlighted where known. The definition of outcome and impact vs process indicators is taken from the CBD report, ‘National Indicators and Approaches to Monitor Progress towards the Aichi Biodiversity Targets’<sup>11</sup>. Accordingly, outcome or impact indicators are those that measure a change in the status whereas process indicators are those that measure actions taken.

The long list of indicators was then further screened against a set of criteria in a stepwise approach.

### **a. Criteria for the screening of the indicators**

The IOMC group has deliberated on the below list of criteria for the indicators of chemicals and waste, that are used to screen indicators:

- a) their relevance /meaningfulness to the chemicals and waste agenda

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<sup>9</sup> There may be duplications of some indicators because an indicator may be used by more than one framework, for instance the SDG indicators which are also separately used by their custodian organisations. Duplications are only removed in the last step and for the indicators that are included in the metadata.

<sup>10</sup> [IOMC indicators of progress in implementing SAICM \(who.int\)](#)

<sup>11</sup> UNEP/CBD/SBSTTA/20/INF/34

- b) already in use / selected to be used in international processes, or widely spread / used at other levels
- c) availability (and location/source) of data to create a baseline for and assess progress towards achieving the indicator
- d) existence of custodian organization, or in case of new indicator(s), a process needed to name a custodian
- e) comparability of the data (e.g.ow . is a standardized methodology being used?)

The criteria are prioritised as below, and the indicators are screened further in the following three steps:

Step one– in this step the indicators are checked against the criterion (a) on relevance and meaningfulness to the chemicals and waste agenda. The long list of indicators (i.e., 279 indicators) meets the criterion in this step.

Step two– the indicators were screened to only keep those which meet the criterion (b) already in use / selected to be used in international processes, or widely spread / used at other levels. A group of 141 indicators in the long list met this criterion. This step helped to limit the list of indicators to those that meet certain critical criteria. In this case, IOMC agreed that the indicators that have gone through an intergovernmental process and therefore are already in use by a formal process could be considered for further screening and analysis for the purposes of this assessment. The eliminated indicators at this step are those that are not formally adopted or are not in use at the time of writing this summary. It is important to note that there are a collection of indicators that have been proposed under the intersessional process considering the Strategic Approach and sound management of chemicals and waste beyond 2020. The SAICM Secretariat could be considered as the custodian organization for these indicators, however no formal agreement has been reached yet at the time of developing this analysis. This collection of indicators is included in the long list of indicators that can be found in Annex I.

Step three – the remaining 141 indicators were screened individually against the following criteria:

- c) availability (and location/source) of data to create a baseline for and assess progress towards achieving the indicator
- d) existence of custodian organization, or in case of new indicator(s) a process needed to name a custodian
- e) comparability of the data (e.g., is a standardized methodology being used?)

67 indicators met all the criteria in steps one to three. Some of these indicators are duplicated because they are also used as SDG indicators; the following indicators are also used as SDG indicators:

- Air quality monitoring systems (PM concentrations) (indicator to SDG target 11.6.2)
- Aichi CBD Ind. 6 T8 - Index of Coastal Eutrophication (ICEP) and Floating Plastic debris Density (indicator for SDG target 14.1)
- Aichi CBD Ind. 7 T8 - Mortality rate attributed to household and ambient air pollution (indicator for SDG target 3.9)
- Aichi CBD Ind. 9 T8 - Mortality rate attributed to unintentional poisoning (indicator for SDG target 3.9)

- Aichi CBD Ind. 15 T8 - Proportion of bodies of water with good ambient water quality (indicator for SDG target 6.3)
- Aichi CBD Ind. 16 T8 - Percentage of wastewater safely treated (indicator for SDG target 6.3)
- UNSD waste Ind. 1 - Municipal waste collected per capita (Total amount of municipal waste collected) (Indicator for SDG target 11.6.)
- UNSD waste Ind. 2 - Proportion of municipal waste treated (Total amount of municipal waste collected AND Municipal waste managed in the country) (Indicator for SDG target 11.6.)
- UNECE Ind. I3 - Waste reuse and recycling (Indicator for SDG target 12.5.1)

Thus, after removing the duplicates, a metadata file (i.e., Excel spreadsheet) has been developed for 62 indicators.

### **b. Metadata**

The metadata stores the detailed data and information on each individual indicator that have been screened in three steps. The indicators which are included in the metadata file, are already in use by their custodian agency, and a standard methodology is developed to measure their progress. Moreover, these indicators have adequate national, regional, or global data to establish a baseline. The metadata is in Excel spreadsheet format which facilitates regular updates and ease of search for and access to information<sup>12</sup>. The data in each column can be filtered to for instance view only certain indicators from a particular sector, MEA, or framework, etc. The metadata file contains the following information for each screened indicator:

- Indicator title
- Reference framework (i.e. goal, objective, target if exists)
- Custodian agency
- Definition and/or concepts
- Unit of measure (if exists)
- Is a standard methodology being used?
- Reference to the methodology (if exists)
- When was data last updated, if known?
- Data source/location
- Type of indicator<sup>13</sup> (i.e. process, impact)
- Use in other sectors (e.g. biodiversity, SDGs)
- Additional resources

Where data exists, the following were discussed for a few indicators in the analysis section of this report.

- resource/sustainability issues
- transparency - easy access to information and stakeholder participation

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<sup>12</sup> The template of the metadata can be found in the Annex II.

<sup>13</sup> A few High level indicators were briefly reflected upon in the conclusion section to this analysis.

### III. Analysis

#### a. Observations from the metadata inventory

Out of a total 279 indicators, 62 unique indicators met the criteria in steps one to three by which availability of data to establish a baseline, existence of custodian organization and a methodology to measure progress against the indicator are confirmed.

These indicators are in use by a wide range of sectors including biodiversity, health, climate change, food and agriculture, labor, electric and electronics, and waste. The indicators capture the impacts of chemicals and waste on air, water and land pollution and the pressure on the ecosystems and species as well as the human health. In this collection, there are indicators which address implications of chemicals on labour force, as well as on burden of disease and death by chemical accidents. The chemicals used in agriculture (e.g., pesticides), industrial chemicals, plastic pollution and illegal trafficking of chemicals are also addressed to various extents by the indicators.

#### *Basel, Rotterdam, Stockholm and Minamata Conventions*

The screened list of indicators also includes several indicators from the above conventions. For instance, the status of ratification of some of the chemical and waste Multilateral Environmental Agreements (MEAs) are tracked with an IOMC indicator on “*Number of parties to the Basel, Rotterdam, Stockholm and Minamata Conventions*”. This indicator is also used as SDG indicator 12.4.1 on “*Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement*”.

The Basel and Stockholm Conventions have a framework<sup>14</sup> in place to collect data regularly for several indicators related to the implementation of the Basel and Stockholm conventions, including:

- Basel Ind.1 Obj1.1 The number of agreed technical guidelines that assist Parties in reaching a common understanding on definitions, interpretations and terminologies covered by the Basel Convention.
- Basel Ind.1 Obj1.2 Parties have reached an adequate level of administrative and technical capacity (in the form of Customs, police, environmental enforcement and port authorities, among others) to prevent and combat illegal traffic and judicial capacity to deal with cases of illegal traffic.
- Basel Ind.1 Obj1.3 Percentage of parties that have notified national definitions of hazardous wastes to the Secretariat in accordance with Article 3 of the Basel Convention.
- Basel Ind.1 Obj1.4 Percentage of parties reporting information to the Secretariat under Article 13.
- Basel Ind.1 Obj2.1 Number of parties with national hazardous waste management strategies or plans in place.

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<sup>14</sup> The Basel Indicators are from the strategic framework for 2012-2021. The framework is currently being revised and may differ in the future.

- Basel Ind.1 Obj2.2 Number of parties that have developed and implemented national strategies, plans or programmes for reducing the generation and hazard potential of hazardous and other wastes.
- Basel Ind.1 Obj2.3 Number of parties that have developed and implemented national strategies, plans or programmes for hazardous waste minimization.
- Basel Ind.1 Obj2.4 Number of programmes, projects or activities carried out by parties, jointly with other parties or together with other stakeholders (regional and international organizations, conventions, industry bodies, etc.), aimed at the environmentally sound management of priority waste streams that have been monitored and assessed to achieve this goal.
- Basel Ind.1 Obj2.5 Percentage of parties that collect information on the generation, management and disposal of hazardous and other wastes.
- Basel Ind.1 Obj3.1 Number of parties reporting, through the Secretariat, to the Conference of Parties on the integration of waste and hazardous waste issues into their national development plans or strategies.
- Stockholm Art.1 Outcome Ind. 1 Changes in levels of each of the listed persistent organic pollutants in air
- Stockholm Art1. Outcome Ind. 2 Changes in levels of the listed persistent organic pollutants in humans
- Stockholm Art.1 Outcome Ind. 3 Changes in levels of the listed persistent organic pollutants in other environmental media, as available
- Stockholm Art.3 Process Ind.4 The number of parties with regulatory and assessment schemes for new pesticides and/or new industrial chemicals

In the absence of a set framework and indicators, Rotterdam Convention collects limited data, namely under the agenda item “Status of implementation”<sup>15</sup> and under its compliance mechanism. The Rotterdam Convention has a process on enhancing the effectiveness of the Rotterdam Convention where it was noted that there is no evaluation process set up under the Convention. The working group has asked the Secretariat to compile information on effectiveness evaluation practices under other chemicals and wastes conventions, taking into account the specificities of the Rotterdam Convention, and prepare options for a framework on the assessment of the effectiveness of the Rotterdam Convention for consideration at the ninth meeting of the Conference of the Parties. This document was prepared for COP-9<sup>16</sup>, however no decision was taken by the COP to further work on this topic.

The Minamata Convention has ‘a set of proposed indicators’ which are not yet adopted and thus not in use. The COP4 decided to advance the work on the proposed indicators in accordance with the document “Arrangements for the first effectiveness evaluation of the Minamata Convention on Mercury”<sup>17</sup>. The Parties to the Convention will work with the secretariat on a revised list of indicators to be presented at the COP5 for adoption.<sup>18</sup>

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<sup>15</sup> e.g., UNEP/FAO/RC/COP.10/INF/6 | UNEP/FAO/RC/COP.9/INF/6 | UNEP/FAO/RC/COP.8/INF/6

<sup>16</sup> UNEP/FAO/RC/COP.9/INF/22

<sup>17</sup> UNEP/MC/COP.3/Dec.10

<sup>18</sup> The proposed indicators are taken from the doc, ‘UNEP/MC/COP.3/Dec.10’ and included in the long list of indicators.

### *Pollutant Release and Transfer Registers*

According to the Assessment Report on Issues of Concern, and the Global Chemicals Outlook II – From Legacies to Innovative Solutions: Implementing the 2030 Agenda for Sustainable Development”, the Aarhus Convention and the Protocol on PRTRs are listed as key options on how, and on what topics opportunities exist, to coordinate and cooperate between the chemicals and waste cluster and other clusters.<sup>19</sup> The Global Chemicals Outlook II<sup>20</sup> further identifies significant implementation gaps in achieving the sound management of chemicals and waste. Gaps in the establishment of PRTRs are listed as a major gap in this context. Furthermore, the Global Chemicals Outlook II mentions PRTRs as a solution to a variety of issues and in the following key findings:

- (a) The extent of atmospheric releases of manufactured chemicals from industrial sources in lower-income countries is difficult to determine in the absence of national monitoring systems, such as national PRTRs, in many of these countries;
- (b) The target set in the Strategic Approach to International Chemicals Management Global Plan of Action for PRTRs to be established in all countries by 2015 has not been achieved;
- (c) Consider strengthening global Chemicals in Products approaches by strengthening capacities to estimate releases from products (e.g., through PRTRs);
- (d) In some countries, PRTRs provide reliable data on chemical releases. However, there is no common list of chemicals, thresholds for reporting, or units by which the data can be aggregated or made available to the public. There is a significant opportunity to create a global PRTR, or an internationally harmonized network of national PRTRs.<sup>21</sup>

The number of countries with Pollutant Release and Transfer Registers (PRTRs) is part of the current IOMC indicator list and among the screened indicators in this report. PRTRs facilitate the measurement of progress towards pollutant related goals and targets. The Protocol on Pollutant Release and Transfer Registers to the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters<sup>22</sup> and the OECD recommendations and guidelines for implementing PRTRs<sup>23</sup> set the related international standards meant to facilitate implementing harmonized data collection and dissemination standards for pollutants. PRTR data is collected across economic sectors and for different stakeholders. The scope of PRTR portals includes disseminating data linked to the different steps along the value chain or life cycle of chemicals. PRTR portals facilitate taking a life cycle approach in the responsible management of chemicals and pollutants. Therefore, available PRTR guidance materials cover the related data collection, that is

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<sup>19</sup> UNEP, An Assessment Report on Issues of Concern: Chemicals and Waste Issues Posing Risks to Human Health and the Environment (n.p., 2020).

<sup>20</sup> UNEP, Global Chemicals Outlook II – From Legacies to Innovative Solutions: Implementing the 2030 Agenda for Sustainable Development (2019).

<sup>21</sup> Ibid., pp. 94, 118–119, 266 and 306–307.

<sup>22</sup> See <https://unece.org/env/pp/protocol-on-prtrs-introduction>.

<sup>23</sup> See for example the OECD Recommendation of the Council on Establishing and Implementing Pollutant Release and Transfer Registers (PRTRs) at <https://legalinstruments.oecd.org/en/instruments/631>, and [Global Inventory of Pollutant Releases - OECD](#).



reporting by industrial facilities producing chemicals, releases of pollutants during the use of products, and the transfer of waste for disposal and recovery operations.<sup>24</sup>

Countries that implement the Protocol on PRTRs may contribute to the prevention and reduction of pollution through the establishment of coherent and integrated PRTR systems (art. 1 of the Protocol on PRTRs).<sup>25</sup> They may use the PRTR data to establish national/regional impact indicators. Also, the OECD Global Inventory of Pollutant Releases presents a tool to explore trends in global releases.<sup>26</sup> Establishing integrated and coherent PRTR portals is a key enabling factor also on the way towards an effective measurability framework for the Beyond 2020 framework. Progress in PRTR implementation drives progress in availability of impact-oriented indicators and impact-oriented decision making,<sup>27</sup> that is, improving global coverage of PRTR portals will unlock global availability of relevant impact indicators.

### *The Sustainable Development Goals (SDGs)*

Fifteen SDG indicators in the screened list capture the implications of chemicals and waste for air and water pollution, climate change, health and labor among others. These indicators are as follows:

- SDG 3.9.1 - Mortality rate attributed to household and ambient air pollution
- SDG 3.9.2 - Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)
- SDG 3.9.3 - Mortality rate attributed to unintentional poisoning (i.e. pollution and chemicals)
- SDG 6.3.1 - Proportion of domestic and industrial wastewater flows safely treated
- SDG 6.3.2 - Proportion of bodies of water with good ambient water quality
- SDG 7.1.2 - Proportion of population with primary reliance on clean fuels and technology
- SDG 8.8.1 - Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status
- SDG 11.6.1 - Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities
- SDG 11.6.2 - Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)
- SDG 12.2.2 and SDG 8.4.2 - Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP
- SDG 12.3.1 - (b) Food waste index

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<sup>24</sup> See <https://www.oecd.org/chemicalsafety/pollutant-release-transfer-register/publications-series-on-pollutant-release-and-transfer-registers.htm> and <https://unece.org/info/Environment-Policy/Public-participation/pub/2253>.

<sup>25</sup> See for example, UNEP, Measuring Progress: Towards Achieving the Environmental Dimension of the SDGs (2019, p. 10).

<sup>26</sup> See <https://www.oecd.org/chemicalsafety/pollutant-release-transfer-register/>.

<sup>27</sup> See OECD Recommendation of the Council on Establishing and Implementing Pollutant Release and Transfer Registers (PRTRs) and See for example <https://unece.org/environment/documents/2022/10/working-documents/item-5-b-note-possible-linkages-between-pollutant> and <https://unece.org/environment/documents/2022/10/item-5-b-note-guide-discussion-development-protocol-pollutant-release>.



- SDG 12.4.1 - Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement
- SDG 12.4.2 - (a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment
- SDG 12.5.1 - National recycling rate, tons of material recycled (i.e. reduce waste)
- SDG 12.6.1 - Number of companies publishing sustainability reports
- SDG 12.a.1 - Installed renewable energy-generating capacity in developing countries (in watts per capita)
- SDG 12.c.1 - Amount of fossil-fuel subsidies (production and consumption) per unit of GDP
- SDG 14.1.1 - (a) Index of coastal eutrophication; and (b) plastic debris density
- SDG 17.7.1 - Total amount of funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies

### *Private sector and Industry*

Indicators that measure the progress of the private sector or the industry specifically are limited to that of the SDG 12.6.1 “Number of companies publishing sustainability reports”. Furthermore, objective 2.3 of the Basel Convention highlights the role of industry through the following indicator, “*Number of programmes, projects or activities carried out by parties, jointly with other parties or together with other stakeholders (regional and international organizations, conventions, industry bodies, etc.), aimed at the environmentally sound management of priority waste streams that have been monitored and assessed to achieve this goal.*”

As indicated in the IOMC INF document<sup>28</sup> “*Strengthening integrated chemicals and waste management: An IOMC contribution to the intersessional process on the Strategic Approach and sound management of chemicals and waste beyond 2020*”, industry involvement is marked as one of the important elements in increasing the level of success of the new instrument. Thus, multiple beyond 2020 priority targets, as selected during the IP4 meeting in Bucharest, Romania (29 August-2 September 2022) explicitly call on the industry involvement including through Targets A3, D1, D3, and D7 (numbering of targets is provided in section d. to this report *Mapping the screened indicators to the beyond 2020 targets*). The long list of indicators in Annex I includes some other indicators focusing on activities of the chemical industry (for instance, the International Council of Chemical Associations), specifically indicators under the Responsible Care programme. Yet, no publicly available data source could be established for these indicators and thus they did not meet the screening criteria in the step 3.

### **b. Process, impact indicators**

The outcome or impact indicators are those that measure a change in the status. The process indicators are those that measure actions taken. The screened indicators include 34 impact indicators versus 30 process indicators.<sup>29</sup> The scope of this report does not include an analysis of their respective interrelation. The indicators that are in use by sectors such as biodiversity,

<sup>28</sup> [SAICM\\_IP4\\_INF\\_18\\_IOMC Integrated chemicals and waste management .pdf](#)

<sup>29</sup> Please refer to the metadata file for the impact vs process indicators.

and climate, are more frequently impact or outcome oriented. An example of impact indicators in use by chemicals and waste MEAs are those of the Stockholm Convention which measure the changes in the concentration of POPs in the air, humans and environmental media. The metadata file contains information on impact and process indicators. The list of impact and process indicators from the screened list can be found in Tables 1 and 2, respectively.

**Table 1 – The list of process indicators that meet the stepwise screening approach.**

#	Process indicators, titles
1	Number of countries with National Profiles
2	Number of countries with a PRTR
3	Number of countries with poisons centres
4	Countries with controls for lead in decorative paint
5	Countries which have implemented pesticide legislation based on the FAO/WHO International Code of Conduct
6	Number of countries that have achieved core capacities for chemicals under the International Health Regulations
7	Number of parties to the Basel Convention
8	Number of parties to the Rotterdam Convention
9	Number of parties to the Stockholm Convention
10	Number of parties to the Minamata Convention
11	GHS Implementation (full and partial)
12	Number of countries with legislation in place to manage industrial and consumer chemicals
13	Number of member States with national Occupational Safety and Health (OSH) profiles
14	Number of member States with national recording and notification systems that allow regular reporting against SDG indicator 8.8.1 (frequency rates of fatal and non-fatal occupational injuries)
15	Number of ratifications of up-to-date ILO Conventions related to chemical risks
16	Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or target into national policies.
17	The number of agreed technical guidelines that assist Parties in reaching a common understanding on definitions, interpretations and terminologies covered by the Basel Convention.
18	Parties to the Basel Convention have reached an adequate level of administrative and technical capacity (in the form of Customs, police, environmental enforcement and port authorities, among others) to prevent and combat illegal traffic and judicial capacity to deal with cases of illegal traffic.
19	Percentage of parties that have notified national definitions of hazardous wastes to the Secretariat in accordance with Article 3 of the Basel Convention.

20	Percentage of parties reporting information to the Secretariat under Article 13 to the Basel Convention.
21	Number of parties to the Basel Convention with national hazardous waste management strategies or plans in place.
22	Number of parties to the Basel Convention that have developed and implemented national strategies, plans or programmes for reducing the generation and hazard potential of hazardous and other wastes.
23	Number of parties to the Basel Convention that have developed and implemented national strategies, plans or programmes for hazardous waste minimization.
24	Number of programmes, projects or activities carried out by parties to the Basel Convention, jointly with other parties or together with other stakeholders (regional and international organizations, conventions, industry bodies, etc.), aimed at the environmentally sound management of priority waste streams that have been monitored and assessed to achieve this goal.
25	Percentage of parties to the Basel Convention that collect information on the generation, management and disposal of hazardous and other wastes.
26	Number of parties to the Basel Convention reporting, through the Secretariat, to the Conference of Parties on the integration of waste and hazardous waste issues into their national development plans or strategies.
27	Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement
28	Number of companies publishing sustainability reports
29	Amount of fossil-fuel subsidies (production and consumption) per unit of GDP
30	The number of parties with regulatory and assessment schemes for new pesticides and/or new industrial chemicals
31	Number of Parties to the Aarhus Convention

**Table 2 – The list of impact indicators that meet the stepwise screening approach**

#	Impact indicators, titles
1	Red List Index (impacts of pollution) (Trends in extinction risk and populations driven by pollution)
2	Water Quality Index for Biodiversity (Trends in ecosystems affected by pollution)
3	Trends in nitrogen deposition
4	Trends in loss of reactive nitrogen to the environment
5	Changes in levels of each of the listed persistent organic pollutants in air
6	Changes in levels of the listed persistent organic pollutants in humans
7	Changes in levels of the listed persistent organic pollutants in other environmental media, as available
8	Total emissions of indirect greenhouse gases (the sum of emissions of sulphur oxides (SO <sub>2</sub> ), nitrogen oxides (NO <sub>x</sub> ), nonmethane volatile organic compounds (NM-VOCs) and carbon monoxide (CO))

9	Use of nitrogen from chemical fertilizers per hectare of total agricultural area (cropland and pastures)
10	Mortality rate attributed to household and ambient air pollution
11	Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)
12	Mortality rate attributed to unintentional poisoning (i.e. pollution and chemicals)
13	Proportion of domestic and industrial wastewater flows safely treated
14	Proportion of bodies of water with good ambient water quality
15	Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status
16	Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities
17	Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)
18	Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP
19	(a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment
20	National recycling rate, tons of material recycled (i.e. reduce waste)
21	(a) Index of coastal eutrophication; and (b) plastic debris density
22	Consumption of ozone-depleting substances
23	Greenhouse gas emissions
24	Polluted (non-treated) wastewaters
25	Fertilizer consumption (Also UNSD land and agriculture Ind.)
26	Pesticide consumption
27	Total ewaste generated and collected
28	BOD and concentration of ammonium in rivers
29	Proportion of agricultural area under productive and sustainable agriculture
30	Release of pollutants into the environment
31	Proportion of population with primary reliance on clean fuels and technology
32	Installed renewable energy-generating capacity in developing countries (in watts per capita)
33	Food waste index
34	Total amount of funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies.

### c. The linkages with other sectors

The third dimension proposed by the IOMC as part of an integrated approach to chemicals and waste management<sup>30</sup> underlines importance to “Integrate chemicals management with broader sustainable development issues (e.g., decent work, health and well-being, innovation, climate change) and promote sustainable procurement as well as green and sustainable chemistry innovation and solutions”. It underscores the importance of benefiting from building on synergies with the rest of the sustainable development agendas, in particular the sustainable development goals (SDGs), as well as with other international instruments including the Chemical and Waste conventions and agreements (BRS, Minamata, Montreal), the ILO Conventions and the International Health Regulations (2005), the Kyiv Protocol on PRTRs, the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, the Escazú Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, and with other agendas such as the post-2020 biodiversity framework currently under development.

As previously discussed, fifteen of the screened indicators are in use as SDG indicators. Moreover, in analyzing the screened indicators, special attention was given to identification of the indicators that are multi-sectoral or are in use by other sectors such as biodiversity, climate change, air pollution, waste, electric and electronics, labor, health and food and agriculture. In this section the indicators with linkages to other sectors are explored and highlighted.

Biodiversity: The indicators relevant to biodiversity are as follows:

- Biodiversity Post 2020 Ind.1 T14.2 - Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or target into national policies.<sup>31</sup>
- Aichi CBD<sup>32</sup> Ind. 10 T8 - Red List Index (impacts of pollution) (Trends in extinction risk and populations driven by pollution)
- Aichi CBD Ind. 11 T8 - Water Quality Index for Biodiversity (Trends in ecosystems affected by pollution)
- Aichi CBD Ind. 12 T8 - Trends in nitrogen deposition
- Aichi CBD Ind. 13 T8 - Trends in loss of reactive nitrogen to the environment

Labour: The indicators include linkages with the labor sector through two ILO /IOMC indicators as follows:

- IOMC Ind. 10 - Number of member States with national Occupational Safety and Health (OSH) profiles
- IOMC Ind. 11 - Number of member States with national recording and notification systems that allow regular reporting against SDG indicator 8.8.1 (frequency rates of fatal and non-fatal occupational injuries)

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<sup>30</sup> [SAICM/IP.4/INF/18](#)

<sup>31</sup> [INDICATORS FOR THE POST-2020 GLOBAL BIODIVERSITY FRAMEWORK](#)

<sup>32</sup> [CBD/COP/DEC/XIII/28](#)

Climate: Certain indicators that are in use for climate change and air pollution were identified to have relevance to the chemical and waste as following:

- Climate change - Total emissions of indirect greenhouse gases (the sum of emissions of sulphur oxides (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), nonmethane volatile organic compounds (NM-VOCs) and carbon monoxide (CO))
- Climate change - Air quality monitoring systems (PM concentrations)
- UNECE Ind. A3 - Consumption of ozone-depleting substances
- UNECE Ind. B3 - Greenhouse gas emissions

Food and Agriculture: In the food and agriculture sector, a few indicators were identified including:

- UNECE Ind. F2 - Fertilizer consumption (Also UNSD land and agriculture Ind.)
- UNECE Ind. F4 - Pesticide consumption
- FAO - The use of nitrogen from chemical fertilizers per hectare of total agricultural area (cropland and pastures)
- SDG 2.4.1 - Proportion of agricultural area under productive and sustainable agriculture
- SDG 12.3.1 – (b) Food waste index

Health: The health sector is represented with following indicators:

- IOMC Ind. 6 - Number of countries that have achieved core capacities for chemicals under the International Health Regulations
- IOMC Ind. 3 - Number of countries with poisons centres
- IOMC Ind. 4 - Countries with controls for lead in decorative paint
- SDG 3.9.1 - Mortality rate attributed to household and ambient air pollution
- SDG 3.9.2 - Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)
- SDG 3.9.3 - Mortality rate attributed to unintentional poisoning (i.e. pollution and chemicals)
- SDG 6.3.1 - Proportion of domestic and industrial wastewater flows safely treated
- SDG 11.6.2 - Annual mean levels of fine particulate matter (e.g. PM<sub>2.5</sub> and PM<sub>10</sub>) in cities (population weighted)

Waste: The electric and electronics sector is monitored via an indicator by UN Statistics Division measuring the electronic waste generated and collected as, “Total ewaste generated and collected”.

There is a good collection of screened indicators covering municipal, electronic and hazardous waste, including several indicators of the Basel Convention, the SDGs 11.6.1, 12.4.2, 12.5.2, and the UNSD waste indicator.

#### d. Mapping the screened indicators to the beyond 2020 targets

The linkages between screened indicators and the proposed target for the beyond 2020 are explored. The proposed targets are taken from the 'IP Co-Chairs Single Consolidated Document', available in the annex to IP4.1 Meeting report<sup>33</sup>. Several of the noted linkages with the screened indicators are marked for each proposed beyond 2020 target in this section. A mapping is developed that highlights the linkages (See Annex III)<sup>34</sup>.

It is important to note that in only a couple of cases, existing indicators seem to fully capture all elements of a target. For majority of targets, the linkage to the indicators is often partial and not comprehensive of the entire essence of the respective target. These targets are marked with an Asterix (\*). For a number of proposed targets [six], no link with any of the indicators in the screened list could be found.

#### **Target A1\* - By 2030, governments have adopted, implemented, and enforce legal frameworks and established appropriate institutional capacities to prevent or where not feasible, minimize adverse effects from chemicals and waste**

- IOMC Ind. 7<sup>35</sup> - Number of parties to the Basel, Rotterdam, Stockholm, and Minamata Conventions
- SDG 12.4.2 - (a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment
- SDG 12.5.1 - National recycling rate, tons of material recycled (i.e. reduce waste)
- IOMC Ind. 2 - Number of countries with a PRTR
- IOMC Ind. 4 - Countries with controls for lead in decorative paint
- IOMC Ind. 5 - Countries which have implemented pesticide legislation based on the FAO/WHO International Code of Conduct
- IOMC Ind. 6 - Number of countries that have achieved core capacities for chemicals under the International Health Regulations
- IOMC Ind. 8 - GHS Implementation (full and partial)
- IOMC Ind. 9 - Number of countries with legislation in place to manage industrial and consumer chemicals
- IOMC Ind. 10 - Number of member States with national Occupational Safety and Health (OSH) profiles
- IOMC Ind. 11 - Number of member States with national recording and notification systems that allow regular reporting against SDG indicator 8.8.1 (frequency rates of fatal and non-fatal occupational injuries)
- Stockholm Art.3 Process Ind.4 - The number of parties with regulatory and assessment schemes for new pesticides and/or new industrial chemicals

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<sup>33</sup> [SAICM/IP.4/9](#)

<sup>34</sup> However, this mapping is not exhaustive and there may be more linkages than identified.

<sup>35</sup> Also similarly, SDG 12.4.1 - Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement

**Target A2 – A Code of Conduct on chemicals and waste management incorporating, the elements of the Overall Orientation Guidance (OOG), is developed and countries have incorporated its provision in their national legislation.**

- IOMC Ind. 5 - Countries which have implemented pesticide legislation based on the FAO/WHO International Code of Conduct

**Target A3\* – By [xx], measures identified to prevent or, minimize harm from chemicals throughout their life cycle [and waste], are implemented by companies.**

- SDG 12.6.1 - Number of companies publishing sustainability reports
- IOMC Ind. 2 - Number of countries with a PRTR

**Target A4 – By 20xx, illegal international trade and traffic of toxic, hazardous, banned and severely restricted chemicals and of waste is effectively prevented.**

- Basel Ind.1 Obj1.2 - Parties have reached an adequate level of administrative and technical capacity (in the form of Customs, police, environmental enforcement and port authorities, among others) to prevent and combat illegal traffic and judicial capacity to deal with cases of illegal traffic

**Target A5 – By 2030, all countries have prohibited the export of substances that they have prohibited nationally.**

None found.

**Target A6\* – By 2030 all countries have poison information centres that adequately respond to poisonings and if possible, networks as well as access to training on chemical risk prevention and clinical toxicology and at least one clinical toxicology service.**

- IOMC Ind. 3 - Number of countries with poisons centres
- SDG 3.9.3 - Mortality rate attributed to unintentional poisoning (i.e. pollution and chemicals)

**Target A7\* – By 2030, the use of Highly Hazardous Pesticides is eliminated from agriculture.**

No indicator in the screened list makes a specific reference to the 'highly hazardous pesticides'. A few of indicators in the long list (Annex I) measure the progress towards the management of the 'highly hazardous pesticides'. Nevertheless, the screened list includes three indicators that are on pesticides in general.

- IOMC Ind. 5 - Countries which have implemented pesticide legislation based on the FAO/WHO International Code of Conduct
- Stockholm Art.3 Ind.4 - The number of parties with regulatory and assessment schemes for new pesticides and/or new industrial chemicals"
- UNECE Ind. F4 - Pesticide consumption
- IOMC Ind. 2 - Number of countries with a PRTR



**Target B1 – By 20xx, comprehensive data and information on chemicals, throughout their lifecycle, are generated, made available and accessible.**

- IOMC Ind. 8 - GHS Implementation (full and partial)
- IOMC Ind. 2 - Number of countries with a PRTR
- IOMC Ind. 11 - Number of member States with national recording and notification systems that allow regular reporting against SDG indicator 8.8.1 (frequency rates of fatal and non-fatal occupational injuries)
- Stockholm Art.1 Ind. 1 - Changes in levels of each of the listed persistent organic pollutants in air
- Stockholm Art.1 Ind. 2 - Changes in levels of the listed persistent organic pollutants in humans
- Stockholm Art.1 Outcome Ind. 3 - Changes in levels of the listed persistent organic pollutants in other environmental media, as available
- Basel Ind.1 Obj2.5 - Percentage of parties that collect information on the generation, management and disposal of hazardous and other wastes.
- FAO Ind. 1 - Use of nitrogen from chemical fertilizers per hectare of total agricultural area (cropland and pastures)
- UNECE Ind. A3 - Consumption of ozone-depleting substances
- UNECE Ind. F2 - Fertilizer consumption (Also UNSD land and agriculture Ind.)
- UNECE Ind. F4 - Pesticide consumption
- UNSD waste Ind. 3 - Total ewaste generated and collected
- Number of countries ratified Aarhus Convention

**Target B2\* – By 20XX, stakeholders in the value chain ensure that reliable information on chemicals in [materials and] articles is available throughout their life cycle [including at the waste stage], to enable informed decisions and safe management of chemicals in a clean circular economy.**

- IOMC Ind. 3 - Number of countries with poisons centres
- IOMC Ind. 8 - GHS Implementation (full and partial)
- IOMC Ind. 1 - Number of countries with National Profiles
- IOMC Ind. 2 - Number of countries with a PRTR
- IOMC Ind. 10 - Number of member States with national Occupational Safety and Health (OSH) profiles
- IOMC Ind. 11 - Number of member States with national recording and notification systems that allow regular reporting against SDG indicator 8.8.1 (frequency rates of fatal and non-fatal occupational injuries)

**Target B3\* – Robust data on production of chemicals, releases and emissions of chemicals and waste to the environment, and concentrations of chemicals in humans, biota, and environmental media is generated and made available at regional and global level and harmonized research protocols are developed and used to ensure coherence and comparability of this data.**

- Aichi CBD Ind. 12 T8 - Trends in nitrogen deposition
- Aichi CBD Ind. 13 T8 - Trends in loss of reactive nitrogen to the environment

- Stockholm Art.1 Ind. 1 - Changes in levels of each of the listed persistent organic pollutants in air
- Stockholm Art1. Ind. 2 - Changes in levels of the listed persistent organic pollutants in humans
- Stockholm Art.1 Ind. 3 - Changes in levels of the listed persistent organic pollutants in other environmental media, as available
- IOMC Ind. 3 - Number of countries with poisons centres
- IOMC Ind. 2 - Number of countries with a PRTR
- Climate change Ind.1 - Total emissions of indirect greenhouse gases (the sum of emissions of sulphur oxides (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), nonmethane volatile organic compounds (NM-VOCs) and carbon monoxide (CO))
- FAO Ind. 1 - Use of nitrogen from chemical fertilizers per hectare of total agricultural area (cropland and pastures)
- UNECE Ind. A3 - Consumption of ozone-depleting substances
- UNECE Ind. F2 - Fertilizer consumption (Also UNSD land and agriculture Ind.)
- UNECE Ind. F4 - Pesticide consumption
- UNSD waste Ind. 3 - Total ewaste generated and collected
- UNECE Ind. B3 - Greenhouse gas emissions
- UNECE Ind. C10 - BOD and concentration of ammonium in rivers
- UNECE Ind. C16 - Polluted (non-treated) wastewaters
- SDG 6.3.1 - Proportion of domestic and industrial wastewater flows safely treated
- SDG 6.3.2 - Proportion of bodies of water with good ambient water quality
- SDG 8.8.1 - Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status
- SDG 11.6.1 - Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities
- SDG 11.6.2 - Annual mean levels of fine particulate matter (e.g. PM<sub>2.5</sub> and PM<sub>10</sub>) in cities (population weighted)
- SDG 12.4.2 - (a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment
- OECD Ind. 1 - Pollutants released to the environment

**Target B4\* – By 20xx all stakeholders have and are using appropriate and standardized tools, guidelines and best available practices for assessments and sound management, as well as for the prevention of harm, risk reduction, monitoring and enforcement.**

- IOMC Ind. 2 - Number of countries with a PRTR
- IOMC Ind. 6 - Number of countries that have achieved core capacities for chemicals under the International Health Regulations
- Basel Ind.1 Obj1.1 - The number of agreed technical guidelines that assist Parties in reaching a common understanding on definitions, interpretations and terminologies covered by the Basel Convention
- IOMC Ind. 11 - Number of member States with national recording and notification systems that allow regular reporting against SDG indicator 8.8.1 (frequency rates of fatal and non-fatal occupational injuries)

**Target B5 – By 20XX educational, training, and public awareness programmes on chemical safety, sustainability, safer alternatives and benefit of chemicals have been developed and implemented.**

None found.

**Target B6 – By 20XX, all governments have legally implemented and enforce the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS) in all relevant sectors.**

- IOMC Ind. 8 - GHS Implementation (full and partial)

**Target C1 – Processes and programs of work including timelines are established, adopted and implemented for identified issues of concern to reduce and eliminate harm.**

None found.

**Target D1\* – Companies consistently invest in and achieve innovations toward advancing green and sustainable chemistry, cleaner production, and the deployment of life cycle management approaches for chemicals.**

- SDG 12.6.1 - Number of companies publishing sustainability reports

**Target D2\* – [Countries][governments] implement policies that encourage production using sustainable and safe(r) alternatives including cleaner production technologies and facilitate re-use and recycling of products (circular economy).**

- SDG 6.3.1 - Proportion of domestic and industrial wastewater flows safely treated
- SDG 7.1.2 - Proportion of population with primary reliance on clean fuels and technology
- SDG 12.2.2 - Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP
- SDG 12.4.2 (a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment
- SDG 12.5.1 - National recycling rate, tons of material recycled (i.e. reduce waste)
- SAICM P2020 Ind. B1.1 - Number of Parties to the Aarhus Convention
- SDG 12.a.1 - Installed renewable energy-generating capacity in developing countries (in watts per capita)
- SDG 17.7.1 - Total amount of funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies

**Target D3\* – By 20xx, companies, including from the investment sector, incorporate strategies and policies to implement the sound management of chemicals [and waste]**

**in their investment approaches and business models and apply internationally-recognized reporting standards.**

- SDG 12.6.1 - Number of companies publishing sustainability reports

**Target D4 – In research and innovation programs priority is given to sustainable solutions and safer alternatives to harmful substances in products and mixtures, including in consumer products.**

None found.

**Target D5 – By 2030, Governments implement policies and programmes to increase support to non-chemical alternatives including agroecology to replace the chemicals or groups of chemicals of global and regional concern including highly hazardous pesticides.**

- SDG 2.4.1 - Proportion of agricultural area under productive and sustainable agriculture
- SDG 12.3.1 – (b) Food waste index

**Target D6\* – By 20xx, sustainable chemical and waste management strategies have been developed and implemented for xy major economic sectors with intense chemical use, which identify priority chemicals of concern, standards and measures to reduce chemical input and footprint along the value chains (e.g. textile, electronic, building, agriculture etc.)**

- OECD Ind. 1 - Pollutants released to the environment

**Target D7\* – As for 20XX Governments and companies ensure effective occupational health and safety practices as well as environmental protection measures in the chemicals sectors and throughout the supply chain.**

- SDG 3.9.3 Mortality rate attributed to unintentional poisoning (i.e. pollution and chemicals)
- SDG 8.8.1 - Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status
- IOMC Ind. 6 - Number of countries that have achieved core capacities for chemicals under the International Health Regulations
- IOMC Ind. 10 - Number of member States with national Occupational Safety and Health (OSH) profiles
- IOMC Ind. 11 - Number of member States with national recording and notification systems that allow regular reporting against SDG indicator 8.8.1 (frequency rates of fatal and non-fatal occupational injuries)

**Target D8 – By xx minimum requirements for third-party/private/non-governmental standards, labels and certification schemes are defined and reviewed on an ongoing**

**basis, potential for harmonization is explored and adherence increased and applied by private sector and monitored by governments and other stakeholders.**

- IOMC Ind. 8 - GHS Implementation (full and partial)

**Target E1\* – Policies for sound management of chemicals [and waste] are integrated into local, national, regional development strategies.**

- IOMC Ind. 12 - Number of ratifications of up-to-date ILO Conventions related to chemical risks
- Biodiversity P2020 Ind.1 T14.2 (also SDG 12.1.1) - Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or target into national policies.
- Basel Ind. 1 Obj2.1 - Number of parties with national hazardous waste management strategies or plans in place.
- Basel Ind. 1 Obj 2.2 - Number of parties that have developed and implemented national strategies, plans or programmes for reducing the generation and hazard potential of hazardous and other wastes.
- Basel Ind.1 Obj2.3 - Number of parties that have developed and implemented national strategies, plans or programmes for hazardous waste minimization.
- Basel Ind.1 Obj2.4 - Number of programmes, projects or activities carried out by parties, jointly with other parties or together with other stakeholders (regional and international organizations, conventions, industry bodies, etc.), aimed at the environmentally sound management of priority waste streams that have been monitored and assessed to achieve this goal.
- Basel Ind.1 Obj 3.1 - Number of parties reporting, through the Secretariat, to the Conference of Parties on the integration of waste and hazardous waste issues into their national development plans or strategies.

**Target E2\* – Partnerships and networks amongst sectors and stakeholders are strengthened to achieve the sound management of chemicals [and waste].**

- Basel Ind.1 Obj 2.4 - Number of programmes, projects or activities carried out by parties, jointly with other parties or together with other stakeholders (regional and international organizations, conventions, industry bodies, etc.), aimed at the environmentally sound management of priority waste streams that have been monitored and assessed to achieve this goal.
- IOMC Ind 2 - Number of countries that implement international standards for Pollutant Release and Transfer Registers, including parties to the Kyiv Protocol on PRTRs, countries that implement OECD standards for PRTRs, or equivalent.

**Target E3\* – Financial and non-financial resources needed to achieve [support] the sound management of chemicals [and waste] are identified and mobilized in all sectors by and for all stakeholders.]**

- SDG 17.7.1 - Total amount of funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies

**Target E4 – Gaps between developed and developing countries the implementation of sound management of chemicals [and waste] are identified and narrowed.**

None found.

**Target E5 – Regarding internalization of costs/cost recovery mechanism.**

None found.

**Target E6\* – All stakeholders identify and strengthen synergies and linkages between chemicals [and] [waste] and other environmental, health and societal priorities, such as climate change, biodiversity, human rights, universal health coverage and primary health care.**

- IOMC Ind. 3 - Number of countries with poisons centres
- IOMC Ind. 6 - Number of countries that have achieved core capacities for chemicals under the International Health Regulations

**e. Mapping the screened indicators to the emerging policy issues and Other Issues of Concern (EPIs)**

One of the functions of the International Conference on Chemicals Management (ICCM) as identified in the SAICM Overarching Policy Strategy<sup>36</sup> (paragraph 24.j) is to call for appropriate action on emerging policy issues as they arise and to forge consensus on priorities for cooperative action. So far resolutions have been adopted on the following eight emerging policy issues and other issues of concern at ICCM2, ICCM3 and / or ICCM4:

- Lead in paint
- Chemicals in products
- Hazardous substance within the life cycle of electrical and electronic products
- Nanotechnology and manufactured nanomaterials
- Endocrine-disrupting chemicals
- Environmentally persistent pharmaceutical pollutants
- Perfluorinated chemicals and the transition to safer alternatives
- Highly hazardous pesticides

A few of the issues can be linked to the screened indicators in this study.

Even though the screened indicators do not specifically track the progress on endocrine-disruption chemicals, perfluorinated chemicals and the highly hazardous pesticides per se,

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<sup>36</sup> SAICM/ICCM.3/INF/5

there are several screened indicators that look at the status of persistent organic pollutants. Some POPs listed in the Stockholm Convention can also be considered as endocrine disruptors<sup>37,38</sup>. Moreover, perfluorinated chemicals are an emerging group of POPs<sup>39</sup>. Several of highly hazardous pesticides are identified by UNEP as also being POPs, and that include pesticides in the initial list of Stockholm Convention known as “the dirty dozen”: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene<sup>18</sup>. Several screened indicators cover pesticides and POPs in general including;

- IOMC Ind. 5 - Countries which have implemented pesticide legislation based on the FAO/WHO International Code of Conduct
- Stockholm Art.3 Ind.4 - The number of parties with regulatory and assessment schemes for new pesticides and/or new industrial chemicals
- Stockholm Art.1 Ind. 1 - Changes in levels of each of the listed persistent organic pollutants in air
- Stockholm Art.1 Ind. 2 - Changes in levels of the listed persistent organic pollutants in humans
- Stockholm Art.1 Ind. 3 - Changes in levels of the listed persistent organic pollutants in other environmental media, as available
- UNECE Ind. F4 - Pesticide consumption

Lead in paint is measured in one of the IOMC indicators on “Countries with controls for lead in decorative paint”.

The indirect linkage to the hazardous substance within the life cycle of electrical and electronic products could perhaps be the UNSD indicator on “Total ewaste generated and collected”. This indicator even though is rather a high-level indicator that does not mention the hazardous substance, it may act as a helpful reference on the electric and electronics waste. The linkages of the screened indicators to the EPIs and other issues of concern are not strong given that a few of the EPIs, i.e. chemicals in products, Nanotechnology and manufactured nanomaterials are not explicitly or directly captured by any of the screened indicators. Nevertheless, an indirect or partial linkage to IOMC indicator on “*Number of countries with legislation in place to manage industrial and consumer chemicals*” or Stockholm Convention Art.3 indicator on “*The number of parties with regulatory and assessment schemes for new pesticides and/or new industrial chemicals*” can be considered.

#### **f. Analysis of the screened indicators**

*Measurability:*

- Many of the screened indicators are specific and are defined in simple yet clear language while being realistic.
- The screened indicators are measurable and for all of them data at various levels exist to establish a baseline. There are 28 impact indicators and 30 process indicators in the screened list of indicators.

*High level indicators:*

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<sup>37</sup> [10.1111/bcpt.12263](http://dx.doi.org/10.1111/bcpt.12263)

<sup>38</sup> <http://chm.pops.int/TheConvention/ThePOPs/tabid/673/Default.aspx>

<sup>39</sup> [10.1016/j.toxlet.2014.01.038](http://dx.doi.org/10.1016/j.toxlet.2014.01.038)

- The intersessional process considering the Strategic Approach and sound management of chemicals and waste beyond 2020 have taken into consideration the high-level indicators in the discussions on targets, indicators and milestones<sup>40</sup>. In particular, the Technical Working Group agreed to include in its report, the following two health and environment indicators proposed by IOMC members, indicating it required further discussion : 1. Burden of disease attributable to chemicals ; 2. Burden of chemical and waste pollution on the environment”.
- In moving forward, it could be helpful to consider a few high-level indicators. High-level indicators could help characterize the vision of the beyond 2020 framework and could facilitate communicating the importance of chemical and waste management to the public and policy makers and its implications for human health and the environment.

#### *Linkages and mainstreaming within other international processes:*

- Mainstreaming chemicals and waste within other international processes including the sustainable development goals, biodiversity, health and labor through shared indicators or targets is of great value. The sectors that have linkages to and are impacted by the unsound management of chemicals and waste are well represented among the screened indicators that are in use within other international processes including climate, food and agriculture, biodiversity, labor, health, water, and electronics.

#### *Relevance to the IP4.1 28 targets:*

- A majority of the screened indicators have clear linkages to some of the 28 proposed targets for chemicals and waste beyond 2020 even though the indicator may not fully capture the target in its entirety. Some of these indicators may represent a starting point for measuring progress. Certain indicators could be justified to have linkages to more than one target.
- Whereas some indicators have been found relevant to some of the targets, in most of the cases, they do not reflect the full picture or intention of the target. Certain proposed targets for beyond 2020, including A1, B1, B2 and B3 have good linkages with multiple screened indicators. In addition, several targets were not linked to any of the indicators in the screened list.

#### *Importance of impact indicators*

- Furthermore, the mapping exercise to the 28 targets revealed several impact indicators that could not be associated to any target. These impact indicators could be helpful in demonstrating the pressure from chemicals on ecosystem as well as the implications for human health, and used in a measurability framework for the beyond 2020
  - Aichi Biodiversity Target 8 - Red List Index (impacts of pollution) (Trends in extinction risk and populations driven by pollution)
  - Aichi Biodiversity Target 8 - Water Quality Index for Biodiversity (Trends in ecosystems affected by pollution)
  - SDG 3.9.1 - Mortality rate attributed to household and ambient air pollution

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<sup>40</sup> [https://www.saicm.org/Portals/12/documents/meetings/IP4/old/\(old\)SAICM\\_IP4\\_3\\_Proposed-targets-TWG-SAICM-smcw-beyond-2020.pdf](https://www.saicm.org/Portals/12/documents/meetings/IP4/old/(old)SAICM_IP4_3_Proposed-targets-TWG-SAICM-smcw-beyond-2020.pdf)



- SDG 3.9.2 - Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)
- SDG 12.c.1 - Amount of fossil-fuel subsidies (production and consumption) per unit of GDP
- SDG 2.4.1 - Proportion of agricultural area under productive and sustainable agriculture
- There are multiple impact indicators that measure the level of some groups of chemicals, or substances in various environmental media as below. Although these indicators are not comprehensive, they can be helpful to contribute to a collection of indicators which track the level of substances or group of chemicals in the environment.
  - Three Stockholm Convention indicators on levels of POPs in humans, air and other environmental media,
  - Two Aichi Biodiversity indicators, on trends in nitrogen loss and disposition,
  - The climate change indicator on emissions of sulphur oxides (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), nonmethane volatile organic compounds (NM-VOCs) and carbon monoxide (CO),
  - FAO indicator on use of nitrogen from chemical fertilizers on agricultural land,
  - SDG indicator on plastic debris density,
  - UNECE indicator on BOD and concentration of ammonium in rivers.

#### *Linkages with EPIs:*

- The linkages of the screened indicators to the EPIs and other issues of concern are not strong given that a few of the EPIs, i.e. chemicals in products, Nanotechnology and manufactured nanomaterials are not explicitly or directly captured by any of the screened indicators. Nevertheless, an indirect or partial linkage to IOMC indicator on “*Number of countries with legislation in place to manage industrial and consumer chemicals*” or Stockholm Convention Art.3 indicator on “*The number of parties with regulatory and assessment schemes for new pesticides and/or new industrial chemicals*” can be considered.
- Other EPIs such as the endocrine-disrupting chemicals, environmentally persistent pharmaceutical pollutants and Perfluorinated chemicals are only partially and indirectly covered by indicators that are on POPs.
- There is a good collection of screened indicators covering municipal, electronic and hazardous waste, including several indicators of the Basel Convention, the SDGs 11.6.1, 12.4.2, 12.5.2, and the UNSD waste indicator.

#### *SDGs:*

- Multiple screened indicators are in use by the SDGs targets including SDG 2.4.1, SDG 3.9.1, SDG 3.9.2, SDG 3.9.3, SDG 6.3.1, SDG 6.3.2, SDG 7.1.2, SDG 11.6.1, SDG 11.6.2, SDG 12.2.2, SDG 12.3.1 b, SDG 12.4.1, SDG 12.4.2, SDG 12.5.1, SDG 12.6.1, SDG 12.a.1, SDG 12.c.1, SDG 14.1.1., SDG 17.7.1

### Coverage of air, water and soil as environmental medium

- Several screened indicators address the linkages of chemical and waste management with environmental medium (i.e. water air and soil). Global Chemicals Outlook II noted wastewater as one of the largest sources of releases of hazardous chemicals while highlighting a lack of global monitoring system to track its release into the environment<sup>41</sup>. Discharge of untreated domestic and industrial wastewater into the environment is partially covered in the screened indicators : Multiple screened indicators measure the progress towards clean water and treatment of wastewater, for instance SDG 6.3.1 “proportion of domestic and industrial wastewater flows safely treated (Total wastewater generated AND wastewater treated)”.
- According to the Global Chemicals Outlook II underlines the air pollution as a transboundary issue and reiterates that particulate matter and sulphur emitted by diesel motors, is a significant health and environmental concern (UNEP 2017).A few of the indicators in the screened list look at the air pollution including Stockholm Convention “*changes in levels of each of the listed persistent organic pollutants in air*” and SDG 3.9.1 “*mortality rate attributed to household and ambient air pollution the climate change*”.
- The impact on chemicals and waste on the wellbeing of soil and land is addressed through sustainable agriculture in screened indicators such as SDG 2.4.1 on “*proportion of agricultural area under productive and sustainable agriculture*” and hazardous waste management SDG 12.4.2 on “*(a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment*”.

### Link to Climate change and Biodiversity (of particular importance to Objective E)

- Indicators on climate change include “*greenhouse gas emissions*” and “*total emissions of indirect greenhouse gases (the sum of emissions of sulphur oxides (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), nonmethane volatile organic compounds (NM-VOCs) and carbon monoxide (CO))*”. The Global Chemicals Outlook II notes several linkages of chemicals with the climate change including, the chemical industry being a significant source of pollution and contributor to GHG emissions. In addition, the global warming also leads to the remobilization of pollutants such as POPs due to melting glaciers and thawing permafrost and it may affect pesticide use (i.e. in the form of higher amounts, doses and frequencies, and different varieties or types of products applied).
- While indicators from Aichi targets are referred to in the document, it will be important to follow closely developments under the Kunming-Montreal Global Biodiversity Framework (GBF) agreed at the 15th meeting of the Conference of Parties (COP) to the UN Convention on Biological Diversity (CBD) in December 2022. The GBF includes 4 goals and 23 targets. Target 7 is of particular relevance to chemicals and waste management calling for the reduction of pollution risks and the negative impact of pollution from all sources. The target also calls for reducing excess nutrients lost to the environment by at least half and reducing the overall risk from pesticides and highly hazardous chemicals by at least half and also preventing, reducing, and working

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<sup>41</sup> [Global Chemicals Outlook II: From Legacies to Innovative Solutions](#)

towards eliminating plastic pollution<sup>42</sup>. The COP decided to establish an ad hoc technical expert group, with a time-bound mandate until the sixteenth meeting of the Conference of the Parties, to advise on the further operationalization of the monitoring framework for the Kunming-Montreal global biodiversity framework. The monitoring framework for the GBF is composed of 4 types of proposed indicators, (a) Headline indicators (high-level indicators), (b) Global level indicators, (c) Component indicators and (d) Complementary indicators, and it can be supplemented by additional national and subnational indicators.<sup>43</sup>

#### *Private sector:*

- There are three targets that directly mention private sector or industry, Target D1 “Companies consistently invest in and achieve innovations toward advancing green and sustainable chemistry, cleaner production, and the deployment of life cycle management approaches for chemicals” Target D3 “by 20xx, companies, including from the investment sector, incorporate strategies and policies to implement the sound management of chemicals [and waste] in their investment approaches and business models and apply internationally- recognized reporting standards” and Target A3, “By [xx], measures identified to prevent or, minimize harm from chemicals throughout their life cycle [and waste], are implemented by companies”. However, there exists only one screened indicator that captures the activities of industry or private sector, SDG indicator 12.6.1 - Number of companies publishing sustainability reports. This indicator does not fully capture all elements in the targets that are relevant to the private sector. Moreover, it could be envisioned that only a disaggregation of the information contained in sustainability reports would allow for accounting the relevance to the chemicals and waste agenda.

## **IV. Conclusions**

The search for existing indicators on chemicals and waste has shed light on areas where most data is collected on national, regional, and global level, and has identified the gaps.

The screened list of indicators in this study met several criteria in three steps consisting of;

- Step 1 – their relevance and meaningfulness to the chemical and waste agenda
- Step 2 – existing indicators, that are already in use / selected to be used in international processes, or widely spread / used at other levels

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<sup>42</sup> **TARGET 7** : Reduce pollution risks and the negative impact of pollution from all sources, by 2030, to levels that are not harmful to biodiversity and ecosystem functions and services, considering cumulative effects, including: reducing excess nutrients lost to the environment by at least half including through more efficient nutrient cycling and use; reducing the overall risk from pesticides and highly hazardous chemicals by at least half including through integrated pest management, based on science, taking into account food security and livelihoods; and also preventing, reducing, and working towards eliminating plastic pollution.”

<sup>43</sup> Draft decision on Kunming-Montreal Global biodiversity framework (includes targets): <https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf>  
Draft decision on monitoring framework: <https://www.cbd.int/doc/c/179e/aecb/592f67904bf07dca7d0971da/cop-15-l-26-en.pdf>

- Step 3 – the existence of a custodian organization, data, and a standard methodology.

The indicators that met the screening criteria are observed to be measurable, have a concise and clear description, and have custodian organization which have been already collecting various levels of data at regular intervals. The advantage of these screened indicators includes, (a) can be monitored effectively through their custodian organizations, (b) provide a reliable starting point upon which progress can be built and tracked.

Nevertheless, it is important to highlight that the screened list of indicators is not comprehensive in their linkages to the 28 targets. The mapping exercise to the 28 proposed targets for the SAICM beyond 2020 framework, indicates that there are several targets to which neither of the indicators could be associated. When a link could be made, it resulted, in most cases, in a partial view on the target.

The analysis of existing indicators has helped to highlight the existing indicators in other international processes which have close linkages to chemicals and waste and has succeeded to showcase the areas of strengths in biodiversity, waste, water, health, agriculture, labor and climate.

In moving forward, developing new indicators, or selecting a few from the list of screened indicators that track the levels of hazardous chemicals of high priority could prove effective. An instance of such indicators in the screened list includes those of Stockholm convention on the listed persistent organic pollutants in humans, air, and environmental medium. In line with this recommendation, is the proposed target B3 of the SAICM beyond 2020, *“Robust data on production of chemicals, releases and emissions of chemicals and waste to the environment, and concentrations of chemicals in humans, biota, and environmental media is generated and made available at regional and global level and harmonized research protocols are developed and used to ensure coherence and comparability of this data”*.

The SAICM progress report for the period 2014-2016 conducted an analysis of the Strategic Approach 20 indicators of progress which were agreed in 2009 (at ICCM2) as a means of monitoring the performance of stakeholders in making progress towards the objectives in the Overarching Policy Strategy<sup>44</sup>. The analysis underscored certain shortcomings of the existing 20 indicators of the Strategic Approach including the following:

- The activity-based indicators are subjective by nature and are therefore prone to interpretation by the respondents, which may result in under- or over-reporting of progress.
- The lengthy nature of each indicator and its underlying sub-activities makes it burdensome for many stakeholders to complete.
- The indicators of progress in their current state do not fully capture new or emerging policy issues.
- Activity-based indicators were mostly process versus impact or outcome oriented. As a result, they did not quantify, such as the effect of chemicals on humans and the environment and encourages to supplement the data with objectively verifiable result-based indicators.

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<sup>44</sup> SAICM/ICCM.2/15, annex III

It is helpful to reflect on the findings of the previous work on indicators to inform the future work on indicators on chemicals and waste, and more broadly on the measurability framework of the beyond 2020.

The SAICM progress report for the period 2014-2016 emphasized to reflect upon the lessons learnt in other areas in particular the indicators of the Strategic Plan for Biodiversity<sup>45</sup>. The Biodiversity Indicator Development Framework promotes an iterative process of defining targets and identifying indicators; with the identification of potential indicators helping to refine the measurability of targets.

*“While it is important to build on what already exists, the lack of a known existing indicator should not limit target setting. Indicators should be used together to support one another, and to produce integrated storylines. The collection and collation of data, maintenance of databases and production of indicators is a resource-intensive process, requiring continual funding. Experience has shown that global targets are often translated into very different targets at the national level due to differing contexts and priorities, requiring different indicators. Thus, the uptake of global indicators at the national scale is limited.”*

The findings of this work on existing indicators may inform discussions during the intersessional processes of the beyond 2020 for sound management of chemicals and waste and be a building block for reflections and considerations on an effective measurability framework for the Beyond 2020 instrument.

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<sup>45</sup> CBD/COP/14/INF/40

## Annex I The long list of indicators on chemicals and waste<sup>46</sup>

	No <sup>47</sup>	Indicator	Custodian org.
1	IOMC Ind. 1	<b>Number of countries with National Profiles</b>	UNITAR
2	IOMC Ind. 2	<b>Number of countries with a PRTR</b>	UNITAR, UNECE, OECD
3	IOMC Ind. 3	<b>Number of countries with poisons centres</b>	WHO
4	IOMC Ind. 4	<b>Countries with controls for lead in decorative paint</b>	WHO / UNEP / IPEN
5	IOMC Ind. 5	<b>Countries which have implemented pesticide legislation based on the FAO/WHO International Code of Conduct</b>	FAO
6	IOMC Ind. 6	<b>Number of countries that have achieved core capacities for chemicals under the International Health Regulations</b>	WHO
7	IOMC Ind. 7	<b>Number of parties to the Basel, Rotterdam, Stockholm and Minamata Conventions</b>	BRS / Minamata
8	IOMC Ind. 8	<b>GHS Implementation (full and partial)</b>	UNITAR/ILO/UNECE
9	IOMC Ind. 9	<b>Number of countries with legislation in place to manage industrial and consumer chemicals</b>	OECD
10	IOMC Ind. 10	<b>Number of member States with national Occupational Safety and Health (OSH) profiles</b>	ILO
11	IOMC Ind. 11	<b>Number of member States with national recording and notification systems that allow regular reporting against SDG indicator 8.8.1 (frequency rates of fatal and non-fatal occupational injuries)</b>	ILO
12	IOMC Ind. 12	<b>Number of ratifications of up-to-date ILO Conventions related to chemical risks</b>	ILO
13	SAICM Ind. 1	<b>Mechanisms to address key categories of chemicals</b>	SAICM Secretariat

<sup>46</sup> For steps one to three of evaluation criteria please refer to the spread sheet that is developed for this purpose. This table contains all the indicators that were collected for the purpose of this analysis and may contain duplicated indicators used by more than one framework simultaneously. This table does not distinguish whether the indicators have a custodian organisation, they are formally adopted or are in use, or have data and methodology associated with them. The sole purpose of this table is to display all indicators that are screened later in three steps.

<sup>47</sup> Please note this numbering has not been formally chosen. It is only chosen for the sake of keeping count of indicators that fall within a similar framework, such as those that are under discussion for the SAICM beyond 2020.

	<b>No<sup>47</sup></b>	<b>Indicator</b>	<b>Custodian org.</b>
14	SAICM Ind. 2	<b>Hazardous waste management arrangements</b>	SAICM Secretariat
15	SAICM Ind. 3	<b>Mechanisms for setting priorities for risk reduction</b>	SAICM Secretariat
16	SAICM Ind. 4	<b>Use of chemicals management tools</b>	SAICM Secretariat
17	SAICM Ind. 5	<b>Monitoring activities for selected environmental and health priorities</b>	SAICM Secretariat
18	SAICM Ind. 6	<b>Provision of information in accordance with internationally harmonized standards</b>	SAICM Secretariat
19	SAICM Ind. 7	<b>Communication of risks to vulnerable groups</b>	SAICM Secretariat
20	SAICM Ind. 8	<b>The number of countries (and organizations) with research programmes</b>	SAICM Secretariat
21	SAICM Ind. 9	<b>Websites providing information to stakeholders</b>	SAICM Secretariat
22	SAICM Ind. 10	<b>Commitments to implementation of the Strategic Approach</b>	SAICM Secretariat
23	SAICM Ind. 11	<b>Multi-stakeholder coordination</b>	SAICM Secretariat
24	SAICM Ind. 12	<b>Implementation of key international chemicals agreements</b>	SAICM Secretariat
25	SAICM Ind. 13	<b>Financial and in-kind resources to assist capacity-building and technical cooperation</b>	SAICM Secretariat
26	SAICM Ind. 14	<b>Identification and prioritization of capacity-building needs</b>	SAICM Secretariat
27	SAICM Ind. 15	<b>Development assistance programmes that include sound chemicals management</b>	SAICM Secretariat
28	SAICM Ind. 16	<b>Other sources of funding for capacity-building</b>	SAICM Secretariat
29	SAICM Ind. 17	<b>Number of countries (and organizations) with projects supported by the Strategic Approach's Quick Start Programme Trust Fund (QSP trust fund)</b>	SAICM Secretariat
30	SAICM Ind. 18	<b>Regional cooperation on sound chemicals management</b>	SAICM Secretariat

	No <sup>47</sup>	Indicator	Custodian org.
31	SAICM Ind. 19	<b>Illegal traffic in toxic, hazardous and severely restricted chemicals</b>	SAICM Secretariat
32	SAICM Ind. 20	<b>Illegal international traffic of hazardous waste</b>	SAICM Secretariat
33	Biodiv. P2020 Ind. 7.0.1	<b>Index of coastal eutrophication potential (excess nitrogen and phosphate loading, exported from national boundaries) [by waterbody] [by basin] (SDG 14.1.1a)</b>	-
34	Biodiv. P2020 Ind. 7.0.2	<b>Floating plastic debris density [by micro and macro plastics] (SDG 14.1.1b)</b>	-
35	Biodiv. P2020 Ind. 7.0.3	<b>[Most hazardous] Pesticide [use] [load] [per area of cropland]</b>	-
36	Biodiv. P2020 NEW	<b>Amount of pesticide use per hectare</b>	-
37	Biodiv. P2020 NEW	<b>Red List Index (impacts of pollution) (Headline indicator A.0.3. SDG Indicator 15.5.1)</b>	-
38	Biodiv. P2020 NEW	<b>Trends in the amount of litter in the water column including microplastics and on the seafloor Index of coastal eutrophication; (b) plastic debris density</b>	-
39	Biodiv. P2020 NEW	<b>Trends in Nitrogen Deposition</b>	-
40	Biodiv. P2020 Ind. 1 T6.1.	<b>Nitrogen balances (trends in levels of pollution from nitrogen)</b>	OECD
41	Biodiv. P2020 Ind. 2 T6.1.	<b>Phosphorus balances (Trends in levels of pollution from phosphorus)</b>	OECD
42	Biodiv. P2020 Ind.1 T14.2	<b>Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or target into national policies.</b>	UNEP
43	Aichi CBD Ind. 1 T8	<b>Trends in emissions, NOX</b>	International Nitrogen Initiative (Founded by Scientific Committee)



	No <sup>47</sup>	Indicator	Custodian org.
			on Problems of the Environment (SCOPE) and the International Geosphere-Biosphere Program (IGBP))
44	Aichi CBD Ind. 2 T8	<b>Trends in emissions, SOX</b>	International Nitrogen Initiative
45	Aichi CBD Ind. 3 T8	<b>Trends in emissions, POPs</b>	Stockholm secretariat
46	Aichi CBD Ind. 4 T8	<b>Trends in mercury emissions</b>	Minamata secretariat
47	Aichi CBD Ind. 5 T8	<b>Trends in pesticide use</b>	FAO
48	Aichi CBD Ind. 6 T8	<b>Index of Coastal Eutrophication (ICEP) and Floating Plastic debris Density (indicator for SDG target 14.1)</b>	-
49	Aichi CBD Ind. 7 T8	<b>Mortality rate attributed to household and ambient air pollution (indicator for SDG target 3.9)</b>	-
50	Aichi CBD Ind. 9 T8	<b>Mortality rate attributed to unintentional poisoning (indicator for SDG target 3.9)</b>	-
51	Aichi CBD Ind. 10 T8	<b>Red List Index (impacts of pollution) (Trends in extinction risk and populations driven by pollution)</b>	IUCN, BirdLife International and other Red List Partners
52	Aichi CBD Ind. 11 T8	<b>Water Quality Index for Biodiversity (Trends in ecosystems affected by pollution)</b>	UNEP GEMSWater
53	Aichi CBD Ind. 12 T8	<b>Trends in nitrogen deposition</b>	International Nitrogen Initiative
54	Aichi CBD Ind. 13 T8	<b>Trends in loss of reactive nitrogen to the environment</b>	International Nitrogen Initiative
55	Aichi CBD Ind. 14 T8	<b>Trends in global surplus of nitrogen</b>	The Netherlands Environmental Assessment Agency (PBL)
56	Aichi CBD Ind. 15 T8	<b>Proportion of bodies of water with good ambient water quality(indicator for SDG target 6.3)</b>	UN

	No <sup>47</sup>	Indicator	Custodian org.
57	Aichi CBD Ind. 16 T8	<b>Percentage of wastewater safely treated (indicator for SDG target6.3)</b>	UN
58	Basel Ind.1 Obj1.1	<b>The number of agreed technical guidelines that assist Parties in reaching a common understanding on definitions, interpretations and terminologies covered by the Basel Convention.</b>	Basel secretariat
59	Basel Ind.1 Obj1.2	<b>Parties have reached an adequate level of administrative and technical capacity (in the form of Customs, police, environmental enforcement and port authorities, among others) to prevent and combat illegal traffic and judicial capacity to deal with cases of illegal traffic.</b>	Basel secretariat
60	Basel Ind.1 Obj1.3	<b>Percentage of parties that have notified national definitions of hazardous wastes to the Secretariat in accordance with Article 3 of the Basel Convention.</b>	Basel secretariat
61	Basel Ind.1 Obj1.4	<b>Percentage of parties reporting information to the Secretariat under Article 13.</b>	Basel secretariat
62	Basel Ind.1 Obj2.1	<b>Number of parties with national hazardous waste management strategies or plans in place.</b>	Basel secretariat
63	Basel Ind.1 Obj2.2	<b>Number of parties that have developed and implemented national strategies, plans or programmes for reducing the generation and hazard potential of hazardous and other wastes.</b>	Basel secretariat
64	Basel Ind.1 Obj2.3	<b>Number of parties that have developed and implemented national strategies, plans or programmes for hazardous waste minimization.</b>	Basel secretariat
65	Basel Ind.1 Obj2.4	<b>Number of programmes, projects or activities carried out by parties, jointly with other parties or together with other stakeholders (regional and international organizations, conventions, industry bodies, etc.), aimed at the environmentally sound management of priority waste streams that have been monitored and assessed to achieve this goal.</b>	Basel secretariat
66	Basel Ind.1 Obj2.5	<b>Percentage of parties that collect information on the generation, management and disposal of hazardous and other wastes.</b>	Basel secretariat

	No <sup>47</sup>	Indicator	Custodian org.
67	Basel Ind.1 Obj3.1	<b>Number of parties reporting, through the Secretariat, to the Conference of Parties on the integration of waste and hazardous waste issues into their national development plans or strategies.</b>	Basel secretariat
68	Stockholm Art.1 Outcome Ind. 1	<b>Changes in levels of each of the listed persistent organic pollutants in air</b>	Stockholm secretariat
69	Stockholm Art1. Outcome Ind. 2	<b>Changes in levels of the listed persistent organic pollutants in humans</b>	Stockholm secretariat
70	Stockholm Art.1 Outcome Ind. 3	<b>Changes in levels of the listed persistent organic pollutants in other environmental media, as available</b>	Stockholm secretariat
71	Stockholm Art.3 Process Ind.1	<b>The date on which each party has implemented measures, including legal and administrative measures, to control the production, import, export and use of persistent organic pollutants listed in Annexes A and B that meet or exceed the Convention's requirements</b>	Stockholm secretariat
72	Stockholm Art.3 Outcome Ind.2	<b>For each chemical listed in Annexes A and B, changes in quantities produced, used, imported and exported for use</b>	Stockholm secretariat
73	Stockholm Art.3 Outcome Ind.3	<b>For each chemical listed in Annexes A and B, changes in quantities imported or exported for environmentally sound waste disposal</b>	Stockholm secretariat
74	Stockholm Art.3 Process Ind.4	<b>The number of parties with regulatory and assessment schemes for new pesticides and/or new industrial chemicals</b>	Stockholm secretariat
75	Stockholm Art.5 Process Ind.1	<b>Number of parties with action plans under Article 5</b>	Stockholm secretariat

	<b>No<sup>47</sup></b>	<b>Indicator</b>	<b>Custodian org.</b>
76	Stockholm Art.5 Process Ind.2	<b>Number of parties that have subsequently implemented their action plans as part of implementation plans</b>	Stockholm secretariat
77	Stockholm Art.5 Process Ind.3	<b>Number of these parties that have undertaken five-year reviews of the strategies to meet the obligations in Article 5</b>	Stockholm secretariat
78	Stockholm Art.5 Process Ind.4	<b>Number of parties that have promoted the adoption of best available techniques and best environmental practices for priority source categories</b>	Stockholm secretariat
79	Stockholm Art.5 Process Ind.5	<b>Number of parties that have adopted measures that require best available techniques for priority source categories</b>	Stockholm secretariat
80	Stockholm Art.5 Process Ind.6	<b>Number of parties that have evaluated the efficacy of the laws and policies relating to the management of releases.</b>	Stockholm secretariat
81	Stockholm Art.5 Outcome Ind.7	<b>Percentage change in the quantity of Annex C persistent organic pollutants produced unintentionally and released into the environment by each party</b>	Stockholm secretariat
82	Stockholm Art.6 Process Ind.1	<b>Number of parties that have developed and used appropriate strategies to identify stockpiles</b>	Stockholm secretariat
83	Stockholm Art.6 Process Ind.2	<b>Number of parties with measures in place to manage stockpiles in a safe, efficient and environmentally sound manner</b>	Stockholm secretariat
84	Stockholm Art.6 Outcome Ind.3	<b>Changes in the quantity of stockpiles being managed in an environmentally sound manner</b>	Stockholm secretariat
85	Stockholm Art.6 Process Ind.4	<b>Number of parties with measures in place to manage wastes in an environmentally sound manner</b>	Stockholm secretariat
86	Stockholm Art.6 Process Ind.5	<b>Number of parties that have developed and used appropriate strategies to identify products and</b>	Stockholm secretariat

	No <sup>47</sup>	Indicator	Custodian org.
		articles in use and wastes containing persistent organic pollutants	
87	Stockholm Art.6 Process Ind.6	Quantity of wastes identified and destroyed over time (includes wastes of products and articles consisting of or contaminated with persistent organic pollutants)	Stockholm secretariat
88	Stockholm Art.6 Process Ind.7	Number of parties that have developed and used appropriate strategies to identify contaminated sites	Stockholm secretariat
89	Stockholm Art.6 Process Ind.8	Number of parties that have identified contaminated sites	Stockholm secretariat
90	Stockholm Art.6 Process Ind.9	Number of parties that have voluntarily undertaken remediation activities	Stockholm secretariat
91	Stockholm Art.11 Process Ind.1	Number of parties that report undertaking research and development initiatives to implement Article 11	Stockholm secretariat
92	Stockholm Art.11 Process Ind.3	Number of parties that report monitoring of persistent organic pollutants in humans and the environment	Stockholm secretariat
93	Stockholm Art.12-14 Process Ind.1	Total monetary value of financial resources, including technical assistance, provided	Stockholm secretariat
94	Stockholm Art.12-14 Process Ind.2	Total monetary value of financial resources, including technical assistance received	Stockholm secretariat
95	Stockholm Art.12-14 Process Ind.3	Number of parties providing technical assistance and financial resources	Stockholm secretariat
96	Stockholm Art.12-14 Process Ind.4	Number of parties requesting technical assistance and financial resources	Stockholm secretariat
97	Stockholm Art.12-14 Process Ind.5	Number of parties receiving technical assistance and financial resources	Stockholm secretariat

	No <sup>47</sup>	Indicator	Custodian org.
98	Stockholm Art.12-14 Process Ind.6	<b>Total monetary value of technology transfer provided</b>	Stockholm secretariat
99	Stockholm Art.12-14 Process Ind.7	<b>Total monetary value of technology transfer received</b>	Stockholm secretariat
100	Stockholm Art.12-14 Process Ind.8	<b>Number of parties providing technology transfer</b>	Stockholm secretariat
101	Stockholm Art.12-14 Process Ind.9	<b>Number of parties requesting technology transfer</b>	Stockholm secretariat
102	Stockholm Art.12-14 Process Ind.10	<b>Number of parties receiving technology transfer</b>	Stockholm secretariat
103	Stockholm Art.12-14 Process Ind.11	<b>Number of initiatives regional centres have undertaken</b>	Stockholm secretariat
104	Stockholm Art.12-14 Process Ind.12	<b>Total monetary value of technical assistance provided by regional centres</b>	Stockholm secretariat
105	Stockholm Art.12-14 Process Ind.13	<b>Number of parties that mobilized national resources for implementing the Convention</b>	Stockholm secretariat
106	Stockholm Art.12-14 Process Ind.14	<b>Total monetary value of national financial support and incentives for implementing the Convention</b>	Stockholm secretariat
107	Rotterdam Art.3 Ind.1	<b>Number or share of parties that have ensured that 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 than the chemicals listed in Annex III. (Rotterdam Convention)</b>	Rotterdam secretariat

	<b>No<sup>47</sup></b>	<b>Indicator</b>	<b>Custodian org.</b>
108	Rotterdam Ind.	<b>Changes in levels of each of the listed persistent organic pollutants in air</b>	Rotterdam secretariat
109	Climate change Ind.1	<b>Total emissions of indirect greenhouse gases (the sum of emissions of sulphur oxides (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), nonmethane volatile organic compounds (NM-VOCs) and carbon monoxide (CO)</b>	United Nations Statistics Division (UNSD)
110	FAO Ind. 1	<b>Use of nitrogen from chemical fertilizers per hectare of total agricultural area (cropland and pastures)</b>	FAO
111	Climate change Ind.2	<b>Air quality monitoring systems (PM concentrations)</b>	No
112	UNSD waste Ind. I	<b>Municipal waste collected per capita (Total amount of municipal waste collected)</b>	United Nations Statistics Division (UNSD)
113	UNSD waste Ind. 2	<b>Proportion of municipal waste treated (Total amount of municipal waste collected AND Municipal waste managed in the country)</b>	United Nations Statistics Division (UNSD)
114	UNSD inland water resources Ind. 1	<b>Proportion of domestic and industrial wastewater flows safely treated (Total wastewater generated AND wastewater treated)</b>	United Nations Statistics Division (UNSD)
115	Responsible Care Ind.1	<b>Share of companies belonging to National Associations (having implemented RC) in the global turnover of the chemical industry or in the number of employees in the chemical industry worldwide</b>	ICCA
116	Responsible Care Ind.2	<b>Share of the world's largest chemical companies having signed on to 2014 RC Global Charter</b>	ICCA
117	IPEN Ind.A.2-5	<b>Number of countries which have adopted and enforced legally binding regulations aiming at disclosing chemicals of concern in consumer products (indicator A.2-5)</b>	IPEN
118	IPEN Ind.A.1-5	<b>Number of countries that phased out the manufacture, import, sale and use of HHP</b>	IPEN
119	IPEN Ind.A.1-3	<b>Number of legallybinding regulatory controls on lead decorative paints and lead paints for other applications most likely to contribute to children's lead exposure</b>	IPEN

	No <sup>47</sup>	Indicator	Custodian org.
120	IPEN Ind.A.1-4	<b>Number of legallybinding regulatory controls prohibiting the use of lead in paint, varnishes, stains, enamels, glazes, primers or other coatings</b>	IPEN
121	IPEN Ind.A.2-1	<b>Number of developing and transition countries with publicly available analytical data on lead in paint</b>	IPEN
122	SDG 3.9.1	<b>Mortality rate attributed to household and ambient air pollution</b>	WHO
123	SDG 3.9.2	<b>Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)</b>	WHO
124	SDG 3.9.3	<b>Mortality rate attributed to unintentional poisoning (i.e. pollution and chemicals)</b>	WHO
125	SDG 6.3.1	<b>Proportion of domestic and industrial wastewater flows safely treated</b>	WHO, UN-Habitat, UNSD
126	SDG 6.3.2	<b>Proportion of bodies of water with good ambient water quality</b>	UNEP
127	SDG 4.7.1	<b>Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in: (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment</b>	UNESCO-UIS
128	SDG 8.4.1	<b>Material footprint, material footprint per capita, and material footprint per GDP</b>	UNEP
129	SDG 8.4.2	<b>Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP</b>	UNEP
130	SDG 11.6.1	<b>Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities</b>	UN-Habitat, UNSD



	No <sup>47</sup>	Indicator	Custodian org.
131	SDG 11.6.2	Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)	WHO
132	SDG 12.2.2	Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP	UNEP
133	SDG 12.4.1	Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement	UNEP, BRS secretariat, Rotterdam secretariat
134	SDG 12.4.2	(a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment	UNSD, UNEP
135	SDG 12.5.1	National recycling rate, tons of material recycled (i.e. reduce waste)	UNSD, UNEP
136	SDG 12.6.1	Number of companies publishing sustainability reports	UNEP, UNCTAD
137	SDG 12.c.1	Amount of fossil-fuel subsidies (production and consumption) per unit of GDP	UNEP
138	SDG 14.1.1	(a) Index of coastal eutrophication; and (b) plastic debris density	UNEP
139	Ramsar Ind. C	Trends in water quality (i) Trends in dissolved nitrate (or nitrogen) concentration (ii) Trends in Biological Oxygen Demand (BOD)	UNEP GEMS Water Programme, European Environment Agency and other regional programmes, National water authorities
140	UNECE Ind. A1	Emissions of pollutants into the atmospheric air	-
141	UNECE Ind. A3	Consumption of ozone-depleting substances	UNEP Ozone secretariat
142	UNECE Ind. B3	Greenhouse gas emissions	UNFCCC

	<b>No<sup>47</sup></b>	<b>Indicator</b>	<b>Custodian org.</b>
143	UNECE Ind. C10	<b>BOD and concentration of ammonium in rivers</b>	-
144	UNECE Ind. C13	<b>Concentrations of pollutants in coastal seawater and sediments (except nutrients)</b>	-
145	UNECE Ind. C15	<b>Wastewater treatment facilities</b>	-
146	UNECE Ind. C16	<b>Polluted (non-treated) wastewaters</b>	ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes
147	UNECE Ind. F2	<b>Fertilizer consumption</b>	The Food and Agriculture Organization of the United Nations (FAO), the Organization for Economic Co-operation and Development (OECD) and the European Union Statistical Office (Eurostat)
148	UNECE Ind. F3	<b>Gross nitrogen balance</b>	-
149	UNECE Ind. F4	<b>Pesticide consumption</b>	FAO
150	UNECE Ind. I1	<b>Waste generation</b>	Basel Secretariat
151	UNECE Ind. I2	<b>Management of hazardous waste</b>	Basel Secretariat
152	UNECE Ind. I3	<b>Waste reuse and recycling</b>	-
153	UNECE Ind. I4	<b>Final waste disposal</b>	-
154	SAICM P2020 Ind. A1.1	<b>Roadmap of measures to be implemented at the national level to achieve SMCW are identified.</b>	-

	No <sup>47</sup>	Indicator	Custodian org.
155	SAICM P2020 Ind. A1.2	<b>Roadmap of measures to be implemented by non-governmental stakeholders to achieve SMCW are identified.</b>	-
156	SAICM P2020 Ind. A1.3	<b>[xx] “facilitation toolkits” for implementing measures identified are elaborated.</b>	-
157	SAICM P2020 Ind. A2.1	<b>Chemicals to be assessed are “identified” and “prioritized”, a work plan is agreed upon and updated every [xx] years.</b>	-
158	SAICM P2020 Ind. A2.2	<b>Percentage of chemicals “prioritized” that have been assessed to identify measures to prevent or minimize harm throughout their life cycle and measures for its prevention / minimization have been identified</b>	-
159	SAICM P2020 Ind. A3.1	<b>Percentage of countries with measures implemented (related to target Alt.A1 and A2)</b>	-
160	SAICM P2020 Ind. A3.2	<b>Number of countries that have legislation in place to manage industrial and consumer chemicals</b>	-
161	SAICM P2020 Ind. A3.3	<b>Grade of accomplishment of roadmaps for implementation of SMCW for governments (related to target Alt.A1 and A2)</b>	-
162	SAICM P2020 Ind. A3.4	<b>Number of chemicals and waste related inspections undertaken/inspectors per: • the number of relevant industries • the volume of chemicals imported and produced • population expressed as a % of GDP</b>	-
163	SAICM P2020 Ind. A3.5	<b>Number of personnel in relevant roles related to chemicals and waste within Government per population &amp; per employees</b>	-
164	SAICM P2020 Ind. A3.6	<b>Amount of hazardous and non-hazardous waste generated nationally</b>	-
165	SAICM P2020 Ind. A3.7	<b>Percentage of hazardous and non-hazardous waste treated as a proportion of total non-hazardous waste generated nationally: % recovered, % recycled, %landfilled/incinerated</b>	-
166	SAICM P2020 Ind. A3.8	<b>Number of countries with a formal inter-ministerial co-ordinating body</b>	-
167	SAICM P2020 Ind. A3.9	<b>Number of countries with a formal multi-stakeholder co-ordinating body</b>	-

	No <sup>47</sup>	Indicator	Custodian org.
168	SAICM P2020 Ind. A4.1	<b>Number of chemical associations reporting RC KPIs</b>	-
169	SAICM P2020 Ind. A4.2	<b>Number of employee fatalities • Lost time injury rates for employees • Process Safety Event Rate • Rate of Transport Incidents Number of workplaces that have been audited on health and safety</b>	-
170	SAICM P2020 Ind. A4.3	<b>Number of chemical associations participating in Responsible Care</b>	-
171	SAICM P2020 Ind. A5.1	<b>Number or % of countries signed key MEAs / agreements</b>	-
172	SAICM P2020 Ind. A5.2	<b>% of Parties complying with their obligations under the MEAs / agreements</b>	-
173	SAICM P2020 Ind. A5.3	<b>% countries reporting as a proportion of total country signatories</b>	-
174	SAICM P2020 Ind. A5.4	<b>Number or % of countries signed key MEAs / agreements</b>	-
175	SAICM P2020 Ind. B1.1	<b>Number of countries ratified Aarhus Convention on Access to Information</b>	-
176	SAICM P2020 Ind. B2.1	<b>Number of tools, guidelines and best practices available (international, regional, national)</b>	-
177	SAICM P2020 Ind. B2.2	<b>Number of tools used</b>	-
178	SAICM P2020 Ind. B2.3	<b>Number of trainings organized to promote use of tools</b>	-
179	SAICM P2020 Ind. B3.1	<b>Number of globally agreed standards for collecting data on: – Mortality – Morbidity – Environmental pollution – Economic costs</b>	-
180	SAICM P2020 Ind. B3.2	<b>Mortality rate from diseases attributed to occupational risk factors, by disease, risk factor, sex, and age group.</b>	-
181	SAICM P2020 Ind. B3.3	<b>Number of governments implementing standardized data collection methods.</b>	-
182	SAICM P2020 Ind. B4.1	<b>No. of governments with strategy for chemical safety programmes.</b>	-

	No <sup>47</sup>	Indicator	Custodian org.
183	SAICM P2020 Ind. B4.2	<b>Number of countries who provide occupational safety and health training on chemical safety.</b>	-
184	SAICM P2020 Ind. B4.3	<b>Number of educational, training and public awareness programmes addressing chemical safety and chemical sustainability</b>	-
185	SAICM P2020 Ind. B4.4	<b>Number of countries, universities, etc [other organizations] that have introduced educational programmes on green chemistry.</b>	-
186	SAICM P2020 Ind. B4.5	<b>Number of countries that have gone through [accredited] programmes that promote the concepts of environmentally sound safer alternatives.</b>	-
187	SAICM P2020 Ind. B4.6	<b>Number of Member States with national recording and notification systems that allow the regular reporting against SDG indicator 8.8.1 (occupational injuries).</b>	-
188	SAICM P2020 Ind. C1.1	<b>Number of issues of concern nominated.</b>	-
189	SAICM P2020 Ind. C1.2	<b>Number of adopted issues of concern with specific goals, as proportion of the total number of issues of concern</b>	-
190	SAICM P2020 Ind. C2.1	<b>Number and percentage of adopted issues of concern with progress reported to ICCM.</b>	-
191	SAICM P2020 Ind. C2.2	<b>Number of adopted issues of concern with processes in place to manage issues of concern</b>	-
192	SAICM P2020 Ind. C2.3	<b>Number of issues of concern for which goals in programmes of work were achieved, as proportion of issues of concern</b>	-
193	SAICM P2020 Ind. D1.1	<b>% of companies implement sustainable chemistry principles, use natural products or non-chemicals as a source for their products.</b>	-
194	SAICM P2020 Ind. D1.2	<b>% of companies that have developed and implemented an overall environmental or sustainability plan.</b>	-
195	SAICM P2020 Ind. D1.3	<b>% of start-up companies investing on innovative and sustainable chemical solutions, and cleaner production technology.</b>	-

	No <sup>47</sup>	Indicator	Custodian org.
196	SAICM P2020 Ind. D1.4	<b>% company turnover investment on research and development on safe alternatives, innovative and sustainable chemical solutions, and cleaner production technology.</b>	-
197	SAICM P2020 Ind. D1.5	<b>% associations, companies acknowledge; encourage; and reward through economic incentives the production and use of natural products or non-chemicals as input in production processes.</b>	-
198	SAICM P2020 Ind. D1.6	<b>% companies report reduced exposure of workers and nearby communities to highly toxic, unsustainable, and unsafe chemicals.</b>	-
199	SAICM P2020 Ind. D1.7	<b>% companies report reduced associated disease burden, improved human health of workers, nearby communities and associated work environment.</b>	-
200	SAICM P2020 Ind. D1.8	<b>% Companies declare the banned hazardous chemicals produced, imported, and exported on a yearly basis.</b>	-
201	SAICM P2020 Ind. D1.9	<b>% Companies report on the percent reduction of PRT in the total components of their chemicals, materials and products.</b>	-
202	SAICM P2020 Ind. D1.10	<b>% Companies report on the % of recyclability of the total components of their chemicals, materials and products.</b>	-
203	SAICM P2020 Ind. D1.11	<b>% Increased job creation, and country GDP contribution from the chemicals and product production sector due to increased recycling rates</b>	-
204	SAICM P2020 Ind. D1.12	<b>Companies report on the % of non-chemical solutions, emissions from energy consumption and reduction in occupational chemical exposures.</b>	-
205	SAICM P2020 Ind. D1.13	<b>% Safer product choice by consumers.</b>	-
206	SAICM P2020 Ind. D1.14	<b>% decrease in associated hazardous waste produced.</b>	-
207	SAICM P2020 Ind. D1.15	<b>% Improved company's environment's footprint.</b>	-

	<b>No<sup>47</sup></b>	<b>Indicator</b>	<b>Custodian org.</b>
208	SAICM P2020 Ind. D1.16	<b>% Improved company's social responsibility (human health and communities).</b>	-
209	SAICM P2020 Ind. D1.17	<b>Industry conducts capacity building workshops and reports annually, including collection of KPIs to report outcomes and progress.</b>	-
210	SAICM P2020 Ind. D1.18	<b>% of companies that have adopted resource efficiency and sustainability in their policies</b>	-
211	SAICM P2020 Ind. D1.19	<b>% Reduced production and use of toxic, unsustainable, and unsafe chemicals, and installation of non-cleaner technologies.</b>	-
212	SAICM P2020 Ind. D1.20	<b>% of companies implement sustainable chemistry principles, use natural products or non-chemicals as a source for their products.</b>	-
213	SAICM P2020 Ind. D2.1	<b>% of countries promoting and adopting circular economy and green procurement.</b>	-
214	SAICM P2020 Ind. D2.2	<b>% of countries using sustainable chemistry principles.</b>	-
215	SAICM P2020 Ind. D2.3	<b>% of countries using natural products or non-chemicals in their production processes.</b>	-
216	SAICM P2020 Ind. D2.4	<b>% of governments direct their companies to use natural products or non-chemicals as input in production processes.</b>	-
217	SAICM P2020 Ind. D2.5	<b>% of governments ended the production, use, import and export of banned, highly toxic, unsustainable, and unsafe chemicals.</b>	-
218	SAICM P2020 Ind. D3.1	<b>% of companies/ turnover/ investments that incorporate business models/approaches for the sound management of chemicals and waste throughout the life cycle, and value chain, including</b>	-
219	SAICM P2020 Ind. D3.2	<b>% of companies with extended producer responsibility (EPR).</b>	-
220	SAICM P2020 Ind. D3.3	<b>% of investment in capacity building that address sound management of chemicals and waste throughout the life cycle, and value chain.</b>	-

	<b>No<sup>47</sup></b>	<b>Indicator</b>	<b>Custodian org.</b>
221	SAICM P2020 Ind. D3.4	<b>% of patents issued on new sustainable and safe alternatives produced from natural products or non-chemicals.</b>	-
222	SAICM P2020 Ind. D3.5	<b>% of patents issued on new cleaner production technologies.</b>	-
223	SAICM P2020 Ind. D3.6	<b>% of companies certified for EMS/HSE (e.g. ISO).</b>	-
224	SAICM P2020 Ind. D3.7	<b>% Improved company's environment's footprint.</b>	-
225	SAICM P2020 Ind. D3.8	<b>% Improved company's social responsibility (human health and communities).</b>	-
226	SAICM P2020 Ind. D3.9	<b>% Improved company's product stewardship throughout the life cycle, and the value chain.</b>	-
227	SAICM P2020 Ind. D3.10	<b>% Company's strategy, annual workplan for the implementation of tangible sound management of chemicals and waste capacity building initiatives developed, monitored and evaluated.</b>	-
228	SAICM P2020 Ind. D3.11	<b>% Company's reports developed in line with internationally recognized standards.</b>	-
229	SAICM P2020 Ind. D3.12	<b>% Companies submit independently audited international SHEQ reports.</b>	-
230	SAICM P2020 Ind. D4.1	<b>% of member associations or companies that implement sustainable chemistry.</b>	-
231	SAICM P2020 Ind. D4.2	<b>% technical publications/ detailed resources issued to members</b>	-
232	SAICM P2020 Ind. D4.3	<b>% annual turnover (investment) in capacity building.</b>	-
233	SAICM P2020 Ind. D4.4	<b>% of member companies providing capacity building workshops</b>	-
234	SAICM P2020 Ind. D4.5	<b>% of SMEs implementing sound management of chemicals and waste policies, strategies</b>	-
235	SAICM P2020 Ind. D4.6	<b>% technical publications/ detailed resources issued to members</b>	-



	No <sup>47</sup>	Indicator	Custodian org.
236	SAICM P2020 Ind. D4.7	<b>Positive change in stochastic risk (disease burden, excess mortality etc.)</b>	-
237	SAICM P2020 Ind. D4.8	<b>Ratio between indicator association member: new member (in these statistical measures)</b>	-
238	SAICM P2020 Ind. D4.9	<b>% declaration of hazardous substances in consumer products.</b>	-
239	SAICM P2020 Ind. D4.10	<b>% Improved company's environment's footprint.</b>	-
240	SAICM P2020 Ind. E1.1	<b>The number of high levels of stakeholder organizations who delivered speeches and messages that refer to the importance of and commit to action on the sound management of chemicals and waste and its relevance to sustainable development.</b>	-
241	SAICM P2020 Ind. E1.2	<b>The number of newspaper advertisement, TV commercial, posters, government's social media (website, facebook, twitter, etc.) that giving reference to the importance of and commitment to actions on the sound management of chemicals and waste and its relevance to sustainable development.</b>	-
242	SAICM P2020 Ind. E1.3	<b>Proportion of the number of organizations that clearly state their recognition of the importance of sound management of chemicals and waste in their written/recorded official statements, documents and/or messages, within the total number of organizations in each stakeholder sector</b>	-
243	SAICM P2020 Ind. E1.4	<b>Summary of the proportions throughout all stakeholder sectors in regional or global level.</b>	-
244	SAICM P2020 Ind. E2.1	<b>The number of countries that have developed a national development strategy having a section of management of chemicals and waste with responsible agencies identified.</b>	-
245	SAICM P2020 Ind. E2.2	<b>The number of regional development strategy having a section of management of chemicals and waste with responsible agencies identified.</b>	-
246	SAICM P2020 Ind. E2.3	<b># of regional actions, regulations, policies that are reflected in national policies.</b>	-

	No <sup>47</sup>	Indicator	Custodian org.
247	SAICM P2020 Ind. E2.4	<b>The extent of coordination among national, regional, (and global) levels. It will be measured by the proportion of organization/agencies inter-coordinated against all possible combination among relating national-regional combination.</b>	-
248	SAICM P2020 Ind. E3.1	<b>Number of establishment of inter- and intra-sectoral partnerships, networks and collaborative mechanisms within the region.</b>	-
249	SAICM P2020 Ind. E3.2	<b>Number of establishment of inter- and intra-sectoral partnerships, networks and collaborative mechanisms at international level.</b>	-
250	SAICM P2020 Ind. E3.3	<b>Number of mobilized resources, shared information/experiences/lessons learned, and coordinated actions at the regional and international levels through partnerships/networks/collaborative mechanisms.</b>	-
251	SAICM P2020 Ind. E3.4	<b># of companies with XX% of market share and/or \$XX of sales of chemical related product and service that are members of recognized major partnership with ambitious SMCW goals in line with SAICM.</b>	-
252	SAICM P2020 Ind. E3.5	<b>Sales of chemical products and services with disclosed risk information such as hazardous items etc.</b>	-
253	SAICM P2020 Ind. E3.6	<b>% of inter-sectoral donor projects for SMCW combined with other category such as labour, health, agriculture etc. (\$).</b>	-
254	SAICM P2020 Ind. E3.7	<b># of national/regional governments that impose systematic registration and restriction of chemicals.</b>	-
255	SAICM P2020 Ind. E3.8	<b># of stakeholders requested tech assistance</b>	-
256	SAICM P2020 Ind. E3.9	<b># of stakeholders received technical assistance</b>	-
257	SAICM P2020 Ind. E3.10	<b># of stakeholders cooperated technical assistance</b>	-
258	SAICM P2020 Ind. E3.11	<b># of stakeholders promoted technical transfer</b>	-

	<b>No<sup>47</sup></b>	<b>Indicator</b>	<b>Custodian org.</b>
259	SAICM P2020 Ind. E4.1	<b>Mobilized national resources to international organizations for implementing SMCW</b>	-
260	SAICM P2020 Ind. E4.2	<b>Mobilized national resources to credible research institution for implementing SMCW</b>	-
261	SAICM P2020 Ind. E4.3	<b>Mobilized national resources for operating expense of a credible research institute(s) identified by each government (impact to be determined by human resources expense and numbers of articles published in quality peer-reviewed SMCW related journals)</b>	-
262	SAICM P2020 Ind. E4.4	<b>% of companies handling chemical products and related service that are members of recognized major partnership with ambitious SMCW goals in line with SAICM</b>	-
263	SAICM P2020 Ind. E4.5	<b># of companies with ambitious SMCW goals in line with SAICM as one of companies core strategy</b>	-
264	SAICM P2020 Ind. E5.1	<b>Difference of indicators from E1 to E4, and maybe A to E, between developed and developing countries.</b>	-
265	SAICM P2020 Ind. E5.2	<b>Amount of foreign direct investment by companies that handle chemical product and related service from developed countries to developing countries.</b>	-
266	Minamata Ind. A1	<b>Levels of mercury in the environment and in humans due to anthropogenic emissions and releases</b>	Minamata secretariat
267	Minamata Ind. B13	<b>Number of parties that have measures in place to manage mercury waste in an environmentally sound manner</b>	Minamata secretariat
268	Minamata Ind. C2	<b>Global use of mercury in the manufacturing of products or processes, in tonnes per application</b>	Minamata secretariat
269	Minamata Ind. C3	<b>Number of parties having appropriate measures to prevent the manufacture, export or import of mercury-added products listed in part I of annex A</b>	Minamata secretariat
270	Minamata Ind. C10	<b>Total amount of mercury used in ASGM globally, in tonnes per year</b>	Minamata secretariat
271	Minamata Ind. D2	<b>Total amount of mercury emitted and released</b>	Minamata secretariat

	<b>No<sup>47</sup></b>	<b>Indicator</b>	<b>Custodian org.</b>
272	UNSD waste Ind. 3	<b>Total ewaste generated and collected</b>	UNSD
273	SDG 8.8.1	<b>Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status</b>	ILO
274	SDG 2.4.1	<b>Proportion of agricultural area under productive and sustainable agriculture</b>	FAO
275	SDG 7.1.2	<b>Proportion of population with primary reliance on clean fuels and technology</b>	WHO
276	SDG 12.3.1 b	<b>Food waste index</b>	UNEP
277	SDG 12.a.1	<b>Installed renewable energy-generating capacity in developing countries (in watts per capita).</b>	IRENA
278	SDG 17.7.1	<b>Total amount of funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies.</b>	UNEP-CTCN
279	OECD Ind. 1	<b>Pollutants released to the environment</b>	OECD

## Annex II Metadata template

Metadata updated:	No.	Indicator title	Reference framework (i.e. goal, objective, target if exist)	Custodian org.	Definition and/or concepts	Unit of measurement	Data source/location	Is a standard methodology being used? Reference, if exist	When was data last updated?	Type of indicator (i.e. process, impact)	High-level indicator	Use in other sectors (e.g. biodiversity)	Additional docs / links

**Annex III Mapping the screened indicators against the 28 targets prioritized at IP4 meeting in Bucharest in the Intersessional Process Co-Chairs single consolidated document<sup>48</sup>**

#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
			1	IOMC Ind. 1	Number of countries with National Profiles																									
2	IOMC Ind. 2	Number of countries with a PRTR																												
3	IOMC Ind. 3	Number of countries with poisons centres																												
4	IOMC Ind. 4	Countries with controls for lead in decorative paint																												

<sup>48</sup> The number of screened indicators is 56 here whereas it is 59 in the metadata file. The difference is the BRS and Minamata that are combined into one indicator in the table here whereas in the metadata file each is individually presented.

#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
			5	IOMC Ind. 5	Countries which have implemented pesticide legislation based on the FAO/WHO International Code of Conduct																									
6	IOMC Ind. 6	Number of countries that have achieved core capacities for chemicals under the International Health Regulations																												
7	IOMC Ind. 7	Number of parties to the Basel, Rotterdam, Stockholm and Minamata Conventions																												
8	IOMC Ind. 8	GHS Implementation (full and partial)																												
9	IOMC Ind. 9	Number of countries with legislation in place to manage industrial and consumer chemicals																												

#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
			10	IOMC Ind. 10	Number of member States with national Occupational Safety and Health (OSH) profiles																									
11	IOMC Ind. 11	Number of member States with national recording and notification systems that allow regular reporting against SDG indicator 8.8.1 (frequency rates of fatal and non-fatal occupational injuries)																												
12	IOMC Ind. 12	Number of ratifications of up-to-date ILO Conventions related to chemical risks																												



#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
			13	Biodiv. P2020 Ind.1 T14.2	Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or target into national policies.																									
14	Aichi CBD Ind. 10 T8	Red List Index (impacts of pollution) (Trends in extinction risk and populations driven by pollution)																												
15	Aichi CBD Ind. 11 T8	Water Quality Index for Biodiversity (Trends in ecosystems affected by pollution)																												
16	Aichi CBD Ind. 12 T8	Trends in nitrogen deposition																												

#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
			17	Aichi CBD Ind. 13.T8	Trends in loss of reactive nitrogen to the environment																									
18	Basel Ind.1 Obj1.1	The number of agreed technical guidelines that assist Parties in reaching a common understanding on definitions, interpretations and terminologies covered by the Basel Convention.																												
19	Basel Ind.1 Obj1.2	Parties have reached an adequate level of administrative and technical capacity (in the form of Customs, police, environmental enforcement and port authorities, among others) to prevent and combat illegal traffic and judicial capacity to deal with cases of illegal traffic.																												

#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
20	Basel Ind.1 Obj1.3	Percentage of parties that have notified national definitions of hazardous wastes to the Secretariat in accordance with Article 3 of the Basel Convention.																												
21	Basel Ind.1 Obj1.4	Percentage of parties reporting information to the Secretariat under Article 13.																												
22	Basel Ind.1 Obj2.1	Number of parties with national hazardous waste management strategies or plans in place.																												
23	Basel Ind.1 Obj2.2	Number of parties that have developed and implemented national strategies, plans or programmes for reducing the generation and hazard potential of hazardous and other wastes.																												

#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
			24	Basel Ind.1 Obj2.3	Number of parties that have developed and implemented national strategies, plans or programmes for hazardous waste minimization.																									
25	Basel Ind.1 Obj2.4	Number of programmes, projects or activities carried out by parties, jointly with other parties or together with other stakeholders (regional and international organizations, conventions, industry bodies, etc.), aimed at the environmentally sound management of priority waste streams that have been monitored and assessed to achieve this goal.																												

#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
26	Basel Ind.1 Obj2.5	Percentage of parties that collect information on the generation, management and disposal of hazardous and other wastes.																												
27	Basel Ind.1 Obj3.1	Number of parties reporting, through the Secretariat, to the Conference of Parties on the integration of waste and hazardous waste issues into their national development plans or strategies.																												
28	Stockholm Art.1 Ind.1	Changes in levels of each of the listed persistent organic pollutants in air																												
29	Stockholm Art1. Ind. 2	Changes in levels of the listed persistent organic pollutants in humans																												

#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
30	Stockholm Art.1 Outcome Ind.3	Changes in levels of the listed persistent organic pollutants in other environmental media, as available																												
31	Stockholm Art.3 Process Ind.4	The number of parties with regulatory and assessment schemes for new pesticides and/or new industrial chemicals																												
32	Climate change Ind.1	Total emissions of indirect greenhouse gases (the sum of emissions of sulphur oxides (SO2), nitrogen oxides (NOx), nonmethane volatile organic compounds (NM-VOCs) and carbon monoxide (CO))																												
33	FAO Ind. 1	Use of nitrogen from chemical fertilizers per hectare of total agricultural area (cropland and pastures)																												

#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
			34	SDG 2.4.1	Proportion of agricultural area under productive and sustainable agriculture																									
35	SDG 3.9.1	Mortality rate attributed to household and ambient air pollution																												
36	SDG 3.9.2	Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)																												
37	SDG 3.9.3	Mortality rate attributed to unintentional poisoning (i.e. pollution and chemicals)																												
38	SDG 6.3.1	Proportion of domestic and industrial wastewater flows safely treated																												

#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
			39	SDG 6.3.2	Proportion of bodies of water with good ambient water quality																									
40	SDG 8.8.1	Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status																												
41	SDG 11.6.1	Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities																												
42	SDG 11.6.2	Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)																												



#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
			43	SDG 12.2.2	Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP																									
44	SDG 12.4.1	Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement																												
45	SDG 12.4.2	(a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment																												

#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
			46	SDG 12.5.1	National recycling rate, tons of material recycled (i.e. reduce waste)																									
47	SDG 12.6.1	Number of companies publishing sustainability reports																												
48	SDG 12.c.1	Amount of fossil-fuel subsidies (production and consumption) per unit of GDP																												
49	UNECE Ind. A3	Consumption of ozone-depleting substances																												
50	UNECE Ind. B3	Greenhouse gas emissions																												
51	UNECE Ind. C10	BOD and concentration of ammonium in rivers																												

#	No	Indicators	SAICM targets																															
			Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6				
52	UNECE Ind. C16	Polluted (non-treated) wastewaters																																
53	UNECE Ind. F2	Fertilizer consumption (Also UNSD land and agriculture Ind.)																																
54	UNECE Ind. F4	Pesticide consumption																																
55	UNSD waste Ind. 3	Total ewaste generated and collected																																
56	SDG 8.8.1	Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status																																
57	SAICM P2020 Ind. B1.1	Number of Parties to the Aarhus Convention																																

#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
			58	SDG 7.1.2	Proportion of population with primary reliance on clean fuels and technology																									
59	SDG 12.3.1 b	Food waste index																												
60	SDG 12.a.1	Installed renewable energy-generating capacity in developing countries (in watts per capita).																												
61	SDG 17.7.1	Total amount of funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies.																												

#	No	SAICM targets Indicators	Target A1	Target A2	Target A3	Target A4	Target A5	Target A6	Target A7	Target B1	Target B2	Target B3	Target B4	Target B5	Target B6	Target C1	Target D1	Target D2	Target D3	Target D4	Target D5	Target D6	Target D7	Target D8	Target E1	Target E2	Target E3	Target E4	Target E5	Target E6
			62	OECD Ind. 1	Pollutants released to the environment																									

**Annex IV – 28 targets prioritized at IP4 meeting in Bucharest in August 2022, taken from the Intersessional Process co-chairs single consolidated document**

[Target A1 - By 2030, governments have adopted, implemented and enforce legal frameworks and established appropriate institutional capacities to prevent or where not feasible, minimize adverse effects from chemicals and waste.

Target A2 - A Code of Conduct on chemicals and waste management incorporating, the elements of the OOG, is developed and countries have incorporated its provision in their national legislation.

Target A3 - By [xx], measures identified to prevent or, minimize harm from chemicals throughout their life cycle [and waste], are implemented by companies.

Target A4 - By 20xx, illegal international trade and traffic of toxic, hazardous, banned and severely restricted chemicals and of waste is effectively prevented.

Target A5 - By 2030, all countries have prohibited the export of substances that they have prohibited nationally.

Target A6 - By 2030 all countries have poison information centres that adequately respond to poisonings and if possible networks as well as access to training on chemical risk prevention and clinical toxicology and at least one clinical toxicology service.

Target A7 - By 2030, the use of Highly Hazardous Pesticides is eliminated from agriculture.]

[Target B1 - By 20xx, comprehensive data and information on chemicals , throughout their lifecycle, are generated , made available and accessible.

Target B2- By 20XX, stakeholders in the value chain ensure that reliable information on chemicals in [materials and] articles is available throughout their life cycle [including at the waste stage], to enable informed decisions and safe management of chemicals in a clean circular economy.

Target B3 - Robust data on production of chemicals, releases and emissions of chemicals and waste to the environment, and concentrations of chemicals in humans, biota, and environmental media is generated and made available at regional and global level and harmonized research protocols are developed and used to ensure coherence and comparability of this data.

Target B4- By 20xx all stakeholders have and are using appropriate and standardized tools, guidelines and best available practices for assessments and sound management, as well as for the prevention of harm, risk reduction, monitoring and enforcement.

Target B5- By 20XX educational, training and public awareness programmes on chemical safety, sustainability, safer alternatives and benefit of chemicals have been developed and implemented.

Target B6- By 20XX, all governments have legally implemented and enforce the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS) in all relevant sectors.]

[Target C1 - Processes and programs of work including timelines are established, adopted and implemented for identified issues of concern to reduce and eliminate harm.]

[Target D1 - Companies consistently invest in and achieve innovations toward advancing green and sustainable chemistry, cleaner production, and the deployment of life cycle management approaches for chemicals.

Target D2 -[Countries][governments] implement policies that encourage production using sustainable and safe(r) alternatives including cleaner production technologies and facilitate re-use and recycling of products (circular economy).

Target D3 - By 20xx, companies, including from the investment sector, incorporate strategies and policies to implement the sound management of chemicals [and waste] in their investment approaches and business models and apply internationally- recognized reporting standards.

Target D4 - In research and innovation programs priority is given to sustainable solutions and safer alternatives to harmful substances in products and mixtures, including in consumer products.

Target D5 – By 2030, Governments implement policies and programmes to increase support to non-chemical alternatives including agroecology to replace the chemicals or groups of chemicals of global and regional concern including highly hazardous pesticides.

Target D6 - By 20xx, sustainable chemical and waste management strategies have been developed and implemented for xy major economic sectors with intense chemical use, which identify priority chemicals of concern, standards and measures to reduce chemical input and footprint along the value chains (e.g. textile, electronic, building, agriculture etc.)

Target D7 - As for 20XX Governments and companies ensure effective occupational health and safety practices as well as environmental protection measures in the chemicals sectors and throughout the supply chain.

Target D8 - By xx minimum requirements for third-party/private/non-governmental standards, labels and certification schemes are defined and reviewed on an ongoing basis, potential for harmonization is explored and adherence increased and applied by private sector and monitored by governments and other stakeholders.]

[Target E1 - Policies for sound management of chemicals [and waste] are integrated into local, national, regional development strategies.

Target E2 - Partnerships and networks amongst sectors and stakeholders are strengthened to achieve the sound management of chemicals [and waste].

[Target E3- Financial and non-financial resources needed to achieve [support] the sound management of chemicals [and waste] are identified and mobilized in all sectors by and for all stakeholders.]

[Target E4- Gaps between developed and developing countries the implementation of sound management of chemicals [and waste] are identified and narrowed.]

Target E5 - regarding internalization of costs/cost recovery mechanism

Target E6 - All stakeholders identify and strengthen synergies and linkages between chemicals [and] [waste] and other environmental, health and societal priorities, such as climate change, biodiversity, human rights, universal health coverage and primary health care.]