REPORT

on mapping linkages between all 17 sustainable development goals (SDGs) and sound management of chemicals and wastes in terms of goals, targets and indicators, through the international chemicals and wastes multilateral environmental agreements (MEAs)

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Prepared within the framework of the UNDA project entitled “1617AJ - Chemicals and Waste in the 2030 Agenda – Building capacity in SDG follow-up and review in developing countries”

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Abbreviations

BC	Basel Convention
RC	Rotterdam Convention
SC	Stockholm Convention
MC	Minamata Convention
MP	Montreal Protocol
SAICM	Strategic Approach to International Chemicals Management
MEAs	Multilateral environmental agreements
SDGs	Sustainable Development Goals
ASGM	Artisanal and small-scale gold mining

1. INTRODUCTION

1.1 Background information

Nowadays, chemicals are inextricably linked to our lives. They are used in a wide variety of products and processes in almost every sector and produced in an equally wide number of sectors. They contribute significantly to the well-being of society and are essential for sustainable development and for meeting the challenges of the future. Governments across the globe recognize that chemicals are essential in areas from medicine and agriculture to consumer goods, clean technologies and overcoming poverty. However, chemicals and the potential pollution linked with their manufacture, use, and disposal come at a cost. All chemicals have the potential to pose a threat to human health, the environment and sustainable development if not managed in a sound manner throughout their lifecycle, including at the waste stage. In order to empower decision makers and stakeholders to take action and support policy making aimed at sound management to minimize risks associated with chemicals and waste, better information is needed (UNDA, 2017).

The adoption of the "Transforming our World: The 2030 Agenda for Sustainable Development", including its 17 Sustainable Development Goals (SDGs), was a landmark achievement, providing for a shared global vision towards sustainable development for all. The scale, ambition and approach of the Agenda are unprecedented. Previously, other initiatives and convention were adopted by the global community, regarding environmentally issues mentioned some of them in the table 1 below.

Table 1. Timeline with the MEAs and other initiatives

LEGALLY BINDING	1987 MONTREAL PROTOCOL 1989 BASEL CONVENTION	1998 ROTTERDAM COVENTION	2004 STOCKHOLM CONVENTION	2015 PARIS AGREEMENT ON CLIMATE CHANGE 2017 MINAMATA CONVENTION	
DECADA	**1980-1990**	**1990-2000**	**2000-2010**	**2010-2020**	**2020-2030**
INITIATIVES		1992 Agenda 21	2000 Millennium Development Goals (MDGs) 2006 Strategic Approach to International Chemicals Management (SAICM)	2011 Together for Sustainability 2012 (RIO+20)"The Future We Want" 2015 + **Transforming our world: 2030 Agenda for SD (17 SDGs)** + Sendai F. (Disaster Risk Reduction) + Addis Ababa Action (Financ. for Develop.)	"Accelerated action and transformative pathways: realizing the **decade of action** and delivery for sustainable development (SD)"

One key feature is that the SDGs are global in nature and universally applicable, taking into account national realities, capacities and levels of development and specific challenges. All countries have a shared responsibility to achieve the SDGs, and all have a meaningful role to play. All Member States thus need to compile, disseminate and use national statistics for monitoring and review of the SDGs (Voluntary National Reviews), national development plans and sectorial plans. This represents an opportunity and also a challenge, particularly availability and quality of data, and their collection, analysis and management, which is crucial to measure progress (UNDA, 2017).

During 2017 to 2020 United Nations Environment Programme (UNEP) has executed the project entitled "1617AJ - Chemicals and Waste in the 2030 Agenda – Building capacity in SDG follow-up and review in developing countries", financed by United Nations Development Account (UNDA).

This project aims to strengthen the knowledge base of chemicals and waste and enhance the capacity of selected countries to track progress towards the SDGs related to chemicals and waste across sectors in order to strengthen the evidence base for policy making and stakeholder action. By strengthening the evidence base as well as the science policy interface, the project responds to the need for better information to empower decision makers and stakeholders to take action and support policy making aimed at sound management to minimize risks associated with chemicals and waste (UNDA, 2017).

The project responds to the need for increased countries capacity to collect and analyze chemicals and waste data while improving their coordination mechanisms. By enhancing reporting capacity, the countries will be better equipped to implement the 2030 Agenda. In addition, it also responds to the increasing call for intergovernmental organisations to support countries in collecting and analysing data (UNDA, 2017).

During the project implementation it was learned that countries, Parties to chemicals and waste related MEAs do not have good understanding on how the implementation of these Conventions contributes to achieving of SDGs, thus further efforts should be undertaken to advance understanding of the linkages between sound management of chemicals and wastes and the 2030 Agenda among policymakers at national and international level.

1.2 Objective of the report

Sound management of chemicals and waste is implicit in many SDGs. There are several goals where clear connections can be made and where measurable indicators and targets could be developed. Even if countries report to Multilateral Environmental Agreements and other international initiatives of relevance, more in-country coordination and capacity is needed, particularly in developing countries and countries with economies in transition (UNDA, 2017).

Thus, the current report aims to mapping the linkages between all 17 SDGs and sound management of chemicals and wastes in terms of goals, targets and indicators, through the international chemicals and wastes MEAs.

This report contributes to advancing the understanding of policymakers and other relevant stakeholders on how the implementation of the chemicals and wastes MEAs impacts achieving the 2030 agenda.

1.3 Methodology

In preparing this report a non-exhaustive list of existing studies, assessments, scientific research, tools and case studies was reviewed. Relevant information was selected, compiled and referenced in the current report. Further, the report was reviewed by UNEP.

1.4 Limitations

The main limitation in the present report is represented by the short time allocated for its preparation, therefore a non-exhaustive list of studies, assessments, scientific research, tools and case studies was reviewed. It is likely that further information is available but was not possible to be reflected in this report.

2. BRIEF OVERVIEW OF THE 17 SDGS, THEIR TARGETS AND INDICATORS

The 2030 Agenda for Sustainable Development was launched in 2015 to end poverty and set the world on a path of peace, prosperity and opportunity for all on a healthy planet. The 17 Sustainable Development Goals (SDGs) demand nothing short of a transformation of the financial, economic and political systems that govern our societies today to guarantee the human rights of all (UN, 2020).

All stakeholders should contribute to eliminate deprivations and build resilience across multiple dimensions through universal provision of, and access to quality basic services (health, education, water, sanitation, energy, disaster risk management, information and communications technology, adequate housing and social protection), that are universally accessible with targeted attention where poverty and vulnerability are concentrated and with special attention to individuals who are most likely to be left behind – women and girls, persons with disabilities, indigenous peoples and others (Global Sustainable Development Report 2019).

The 17 Sustainable Development Goals are further defined in a list of 169 SDG Targets. Progress towards these Targets is tracked by 244 Indicators, 93 of which are environment related.

The Sustainable Development Goals and targets are integrated and indivisible, global in nature and universally applicable, considering different national realities, capacities and levels of development and respecting national policies and priorities. Targets are defined as aspirational and global, with each Government setting its own national targets guided by the global level of ambition but taking into account national circumstances (UNGA, 2015).

These Goals and targets are setting out a supremely ambitious and transformational vision. By achieving these goals, it is envisaged a world free of poverty, hunger and disease. Their achievement envisages a world free of fear and violence, a world with universal literacy, a world with equitable and universal access to quality education at all levels, to health care and social protection, where physical, mental and social well-being are assured, a world where the commitments regarding the human right to safe drinking water and sanitation are reaffirmed. Achieving these goals aim for sufficient, safe, affordable and nutritious food, a world where human habitats are safe, resilient and sustainable and where there is universal access to affordable, reliable and sustainable energy. It is envisaged a world in which every country enjoys sustained, inclusive and sustainable economic growth and decent work for all. A world in which

consumption and production patterns and use of all-natural resources – from air to land, from rivers, lakes and aquifers to oceans and seas – are sustainable (UNGA, 2015).

The Table 2 below provides an overview of the 17 Sustainable Development Goals, their aims and the number of targets and indicators per each SDG. Detailed description of the SDGs, their targets and indicators could be found within the United Nations General Assembly Resolution A/RES/70/1 - Transforming our world: the 2030 Agenda for Sustainable Development (UNGA, 2015). Moreover, a platform of the Global SDG Indicators Database was developed. This platform provides access to data compiled through the UN System in preparation for the Secretary-General's annual report on "Progress towards the Sustainable Development Goals".

Table 2. Short description of the 17 Sustainable Development Goals and an overview of the number of targets and indicators per each SDG

SDG Goal (short description)	SDG Goal (long description	Aim	Number of Targets[1]	Number of Indicators[2]
Goal 1. No poverty	Goal 1. End poverty in all its forms everywhere	Eradicating extreme poverty by 2030	7	14
Goal 2. Zero hunger	Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Ending hunger, including ending malnutrition, protecting small farmers, and changing farming itself so that agriculture and ecosystems can co-exist	8	13
Goal 3. Good heal and well-being	Goal 3. Ensure healthy lives and promote well-being for all at all ages	Achieving “universal health coverage”, reducing illness and death caused by pollution, and increasing the global health workforce, especially in the world’s poorer countries	13	28
Goal 4. Quality education	Goal 4. Ensure inclusive and equitable quality education and	Ensuring access to university-level education, vocational training, and	10	11

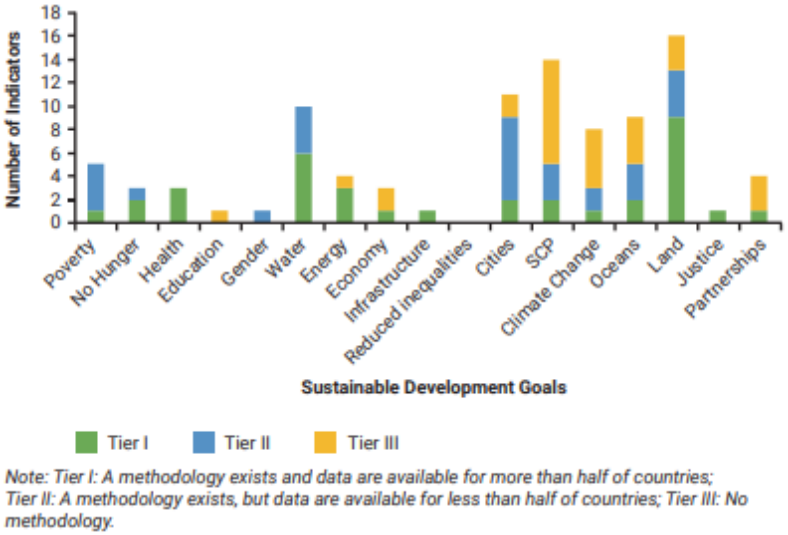
[1] Targets specify the goals
[2] Indicators represent the metrics by which the world aims to track whether the Targets are achieved

	promote lifelong learning opportunities for all	entrepreneurship skills, promotion of education for sustainable development		
Goal 5. Gender equality	Goal 5. Achieve gender equality and empower all women and girls	Providing women and girls with equal access to education, health care, decent work, and representation in political and economic decision-making processes	9	14
Goal 6. Clean water and sanitation	Goal 6. Ensure availability and sustainable management of water and sanitation for all	Providing access to improved water and sanitation	8	11
Goal 7. Affordable and clean energy	Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all	Transitioning the global economy towards clean and sustainable sources of energy	5	6
Goal 8. Decent job and economic growth	Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Rethinking and retooling economic and social policies aimed at eradicating poverty	12	17
Goal 9. Industry, innovation and infrastructure	Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Investing in infrastructure, fostering an innovative and environmentally sound approach to industrial development	8	12
Goal 10. Reduced inequalities	Goal 10. Reduce inequality within and among countries	Reducing inequalities and disparities to ensure access to health and education services and other assets	10	11

Goal 11. Sustainable cities and communities	Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable	Making cities of opportunities for all, with access to basic services, energy, housing, transportation and more	10	15
Goal 12. Responsible consumption and production	Goal 12. Ensure sustainable consumption and production patterns	Promoting resource and energy efficiency, sustainable infrastructure, and providing access to basic services, green and decent jobs and a better quality of life for all, reduce future economic, environmental and social costs, strengthen economic competitiveness and reduce poverty	11	13
Goal 13. Climate action	Goal 13. Take urgent action to combat climate change and its impacts	Enabling countries to make the transition to cleaner, more resilient economies	5	8
Goal 14. Life below water	Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	Ensuring careful management of this essential global resources (oceans, seas and marine resources)	10	10
Goal 15. Life on land	Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Sustainably managing forests, combating desertification, halting and reversing land degradation, halting biodiversity loss	12	14

Goal 16. Peace, justice and strong institutions	Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	Promoting of peaceful and inclusive societies for sustainable development, providing of access to justice for all, and building effective, accountable institutions at all levels	12	23
Goal 17. Partnerships for the goals	Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development	Building partnerships between governments, the private sector and civil society for a successful sustainable development agenda	19	25

Another hand, a progress summary for SDG targets with a 2020 deadline are published at SDGs Report website (UN, statistics division website, 2020). The Figure 1 below provides an overview of the 17 Sustainable Development Goals and their number of indicators per each SDG, also describe the Tier classification.



Note: Tier I: A methodology exists and data are available for more than half of countries; Tier II: A methodology exists, but data are available for less than half of countries; Tier III: No methodology.

Figure 1. Graphic representation of SDGs and their number of indicators per each SDG.

(Source: Measuring Progress Towards monitoring the environmental dimension of the SDGs Report, 2019)

In April 2020, the United Nations released a framework for the immediate socio-economic response to COVID-19, as a roadmap to support countries' path to social and economic recovery. All the Goal have different evaluation and proposed, there are the infographic and actual information on the SDGs website (UN, Sustainable development website, 2020)

SDG website have a lot information for different kind of people, for example: The **Be the Change Initiative** provides an opportunity for all of us to better "walk the talk" when it comes to the SDGs. This Initiative guides and encourages us to live more sustainable at work and at home by changing our consumption patterns, for example using active transport such as cycling, and buying local foods.

3. BRIEF OVERVIEW OF THE CHEMICALS AND WASTES RELATED MEAS CONSIDERED IN THIS REPORT

3.1 Basel Convention

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was adopted on 22 March 1989 by the Conference of Plenipotentiaries in Basel, Switzerland, in response to a public outcry following the discovery, in the 1980s, in Africa and other parts of the developing world of deposits of toxic wastes imported from abroad (Basel Convention website, 2020).

The overarching objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous wastes. Its scope of application covers a wide range of wastes defined as "hazardous wastes" based on their origin and/or composition and their characteristics, as well as two types of wastes defined as "other wastes" - household waste and incinerator ash. The provisions of the Convention center around the following principal aims (Basel Convention website, 2020):

- the reduction of hazardous waste generation and the promotion of environmentally sound management of hazardous wastes, wherever the place of disposal;
- the restriction of transboundary movements of hazardous wastes except where it is perceived to be in accordance with the principles of environmentally sound management; and
- a regulatory system applying to cases where transboundary movements are permissible.

The first aim is addressed through a number of general provisions requiring States to observe the fundamental principles of environmentally sound waste management (article 4). A number of prohibitions are designed to attain the second aim: hazardous wastes may not be exported to Antarctica, to a State not party to the Basel Convention, or to a party having banned the import of hazardous wastes (article 4). Parties may, however, enter into bilateral or multilateral agreements on hazardous waste management with other parties or with non-parties, provided that such agreements are "no less environmentally sound" than the Basel Convention (article 11). In all cases where transboundary movement is not, in principle, prohibited, it may take place only if it represents an environmentally sound solution, if the

principles of environmentally sound management and non-discrimination are observed and if it is carried out in accordance with the Convention's regulatory system (Basel Convention website, 2020).

The regulatory system is the cornerstone of the Basel Convention as originally adopted. Based on the concept of prior informed consent, it requires that, before an export may take place, the authorities of the State of export notify the authorities of the prospective States of import and transit, providing them with detailed information on the intended movement. The movement may only proceed if and when all States concerned have given their written consent (articles 6 and 7). The Basel Convention also provides for cooperation between parties, ranging from exchange of information on issues relevant to the implementation of the Convention to technical assistance, particularly to developing countries (articles 10 and 13). The Secretariat is required to facilitate and support this cooperation, acting as a clearing-house (article 16). In the event of a transboundary movement of hazardous wastes having been carried out illegally, i.e. in contravention of the provisions of articles 6 and 7, or cannot be completed as foreseen, the Convention attributes responsibility to one or more of the States involved, and imposes the duty to ensure safe disposal, either by re-import into the State of generation or otherwise (articles 8 and 9) (Basel Convention website, 2020).

The Convention also provides for the establishment of regional or sub-regional centres for training and technology transfers regarding the management of hazardous wastes and other wastes and the minimization of their generation to cater to the specific needs of different regions and subregions (article 14). Fourteen such centres have been established. They carry out training and capacity building activities in the regions (Basel Convention website, 2020).

3.2 Rotterdam Convention

The text of the Rotterdam Convention was adopted by the Conference of the Plenipotentiaries (Rotterdam, 10 September 1998). The text was subsequently amended by the Conference of the Parties at its first meeting (Geneva, 20 - 24 September 2004), fourth meeting (Rome, 27 – 31 October 2008), fifth meeting (Geneva, 20 - 24 June 2011), sixth meeting (Geneva, 28 April – 10 May 2013), seventh meeting (Geneva, 4 – 15 May 2015), at its eighth meeting (Geneva, 24 April - 5 May 2017) and at its ninth meeting (Geneva, 29 April – 10 May). The objectives of the Convention are (Rotterdam Convention website, 2020):

- to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm;
- to contribute to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.

The Convention creates legally binding obligations for the implementation of the Prior Informed Consent (PIC) procedure. It built on the voluntary PIC procedure, initiated by UNEP and FAO in 1989 and ceased on 24 February 2006 (Rotterdam Convention website, 2020).

The Convention covers pesticides and industrial chemicals that have been banned or severely restricted for health or environmental reasons by Parties and which have been notified by Parties for inclusion in the PIC procedure. One notification from each of two specified regions triggers consideration of addition

of a chemical to Annex III of the Convention. Severely hazardous pesticide formulations that present a risk under conditions of use in developing countries or countries with economies in transition may also be proposed for inclusion in Annex III (Rotterdam Convention website, 2020).

Once a chemical is included in Annex III, a "decision guidance document" (DGD) containing information concerning the chemical and the regulatory decisions to ban or severely restrict the chemical for health or environmental reasons, is circulated to all Parties. Parties have nine months to prepare a response concerning the future import of the chemical. The response can consist of either a final decision (to allow import of the chemical, not to allow import, or to allow import subject to specified conditions) or an interim response. Decisions by an importing country must be trade neutral (that is, decisions must apply equally to domestic production for domestic use as well as to imports from any source) (Rotterdam Convention website, 2020).

The import decisions are circulated and exporting country Parties are obligated under the Convention to take appropriate measure to ensure that exporters within its jurisdiction comply with the decisions. The Convention promotes the exchange of information on a very broad range of chemicals. It does so through (Rotterdam Convention website, 2020):

- the requirement for a Party to inform other Parties of each national ban or severe restriction of a chemical;
- the possibility for Party which is a developing country or a country in transition to inform other Parties that it is experiencing problems caused by a severely hazardous pesticide formulation under conditions of use in its territory;
- the requirement for a Party that plans to export a chemical that is banned or severely restricted for use within its territory, to inform the importing Party that such export will take place, before the first shipment and annually thereafter;
- the requirement for an exporting Party, when exporting chemicals that are to be used for occupational purposes, to ensure that an up-to-date safety data sheet is sent to the importer; and
- labeling requirements for exports of chemicals included in the PIC procedure, as well as for other chemicals that are banned or severely restricted in the exporting country.

3.3 Stockholm Convention

The Stockholm Convention on Persistent Organic Pollutants was adopted by the Conference of Plenipotentiaries on 22 May 2001 in Stockholm, Sweden. The Convention entered into force on 17 May 2004. The Stockholm Convention on Persistent Organic Pollutants is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment (Stockholm Convention website, 2020).

Exposure to Persistent Organic Pollutants (POPs) can lead to serious health effects including certain cancers, birth defects, dysfunctional immune and reproductive systems, greater susceptibility to disease and damages to the central and peripheral nervous systems. Given their long-range transport, no one government acting alone can protect its citizens or its environment from POPs. In response to this global problem, the Stockholm Convention, which was adopted in 2001 and entered into force in 2004, requires

its parties to take measures to eliminate or reduce the release of POPs into the environment (Stockholm Convention website, 2020).

As set out in Article 1, the objective of the Stockholm Convention is to protect human health and the environment from persistent organic pollutants. Among others, the provisions of the Convention require each party to (Stockholm Convention website, 2020):

- Prohibit and/or eliminate the production and use, as well as the import and export, of the intentionally produced POPs that are listed in Annex A to the Convention (Article 3)
- Annex A allows for the registration of specific exemptions for the production or use of listed POPs, in accordance with that Annex and Article 4, bearing in mind that special rules apply to PCBs. The import and export of chemicals listed in Annex A can take place under specific restrictive conditions, as set out in paragraph 2 of Article 3.
- Restrict the production and use, as well as the import and export, of the intentionally produced POPs that are listed in Annex B to the Convention (Article 3)
- Annex B allows for the registration of acceptable purposes for the production and use of the listed POPs, in accordance with that Annex, and for the registration of specific exemptions for the production and use of the listed POPs, in accordance with that Annex and Article 4. The import and export of chemicals listed in Annex B can take place under specific restrictive conditions, as set out in paragraph 2 of Article 3.
- Reduce or eliminate releases from unintentionally produced POPs that are listed in Annex C to the Convention (Article 5)
- The Convention promotes the use of best available techniques and best environmental practices for preventing releases of POPs into the environment.
- Ensure that stockpiles and wastes consisting of, containing or contaminated with POPs are managed safely and in an environmentally sound manner (Article 6)
- The Convention requires that such stockpiles and wastes be identified and managed to reduce or eliminate POPs releases from these sources. The Convention also requires that wastes containing POPs are transported across international boundaries taking into account relevant international rules, standards and guidelines.
- To target additional POPs (Article 8)
- The Convention provides for detailed procedures for the listing of new POPs in Annexes A, B and/or C. A Committee composed of experts in chemical assessment or management - the Persistent Organic Pollutants review Committee, is established to examine proposals for the listing of chemicals, in accordance with the process set out in Article 8 and the information requirements specified in Annexes D, E and F of the Convention.
- Other provisions of the Convention relate to the development of implementation plans (Article 7), information exchange (Article 9), public information, awareness and education (Article 10), research, development and monitoring (Article 11), technical assistance (Article 12), financial resources and mechanisms (Article 13), reporting (Article 15), effectiveness evaluation (Article 16) and non-compliance (Article 17).

3.4 Minamata Convention

The Minamata Convention on Mercury is a global treaty to protect human health and the environment from the adverse effects of mercury. It was agreed at the fifth session of the Intergovernmental Negotiating Committee on mercury in Geneva, Switzerland at 7 a.m. on the morning of Saturday, 19

January 2013 and adopted later that year on 10 October 2013 at a Diplomatic Conference (Conference of Plenipotentiaries), held in Kumamoto, Japan. The Minamata Convention entered into force on 16 August 2017, on the 90th day after the date of deposit of the 50th instrument of ratification, acceptance, approval or accession (Minamata Convention website, 2020).

The Convention draws attention to a global and ubiquitous metal that, while naturally occurring, has broad uses in everyday objects and is released to the atmosphere, soil and water from a variety of sources. Controlling the anthropogenic releases of mercury throughout its lifecycle has been a key factor in shaping the obligations under the Convention (Minamata Convention website, 2020).

Major highlights of the Minamata Convention include a ban on new mercury mines, the phase-out of existing ones, the phase out and phase down of mercury use in a number of products and processes, control measures on emissions to air and on releases to land and water, and the regulation of the informal sector of artisanal and small-scale gold mining (ASGM). The Convention also addresses interim storage of mercury and its disposal once it becomes waste, sites contaminated by mercury as well as health issues (Minamata Convention website, 2020).

3.5 Montreal Protocol

The Montreal Protocol on Substances that Deplete the Ozone Layer is the landmark multilateral environmental agreement that regulates the production and consumption of nearly 100 man-made chemicals referred to as ozone depleting substances (ODS). When released to the atmosphere, those chemicals damage the stratospheric ozone layer, Earth's protective shield that protects humans and the environment from harmful levels of ultraviolet radiation from the sun. Adopted on 15 September 1987, the Protocol is to date the only UN treaty ever that has been ratified every country on Earth - all 198 UN Member States (Montreal Protocol website, 2020).

The Montreal Protocol phases down the consumption and production of the different ODS in a step-wise manner, with different timetables for developed and developing countries (referred to as "Article 5 countries"). Under this treaty, all parties have specific responsibilities related to the phase out of the different groups of ODS, control of ODS trade, annual reporting of data, national licensing systems to control ODS imports and exports, and other matters. Developing and developed countries have equal but differentiated responsibilities, but most importantly, both groups of countries have binding, time-targeted and measurable commitments (Montreal Protocol website, 2020).

The Protocol includes provisions related to Control Measures (Article 2), Calculation of control levels (Article 3), Control of trade with non-Parties (Article 4), Special situation of developing countries (Article 5), Reporting of data (Article 7), Non-compliance (Article 8), Technical assistance (Article 10), as well as other topics. The substances controlled by the treaty are listed in Annexes A (CFCs, halons), B (other fully halogenated CFCs, carbon tetrachloride, methyl chloroform), C (HCFCs), E (methyl bromide) and F (HFCs) (Montreal Protocol website, 2020).

The treaty evolves over time in light of new scientific, technical and economic developments, and it continues to be amended and adjusted (Montreal Protocol website, 2020).

Hydrochlorofluorocarbons (HCFCs) are gases used worldwide in refrigeration, air-conditioning and foam applications, but they are being phased out under the Montreal Protocol since deplete the ozone layer. HCFCs are both ODS and powerful greenhouse gases: the most commonly used HCFC is nearly 2,000 times more potent than carbon dioxide in terms of its global warming potential (GWP). Recognizing the potential benefits to the Earth's climate, in September 2007 the Parties decided to accelerate their schedule to phase out HCFCs. Developed countries have been reducing their consumption of HCFCs and will completely phase them out by 2020. Developing countries agreed to start their phase out process in 2013 and are now following a stepwise reduction until the complete phase-out of HCFCs by 2030 (Montreal Protocol website, 2020).

In Article 5 countries, this HCFC phase out is in full swing, with support from the Multilateral Fund for the implementation of multi-stage HCFC Phase out Management Plans (HPMPs), investment projects and capacity building activities. Throughout this process, the Parties are encouraging all countries to promote the selection of alternatives to HCFCs that minimize environmental impacts, in particular impacts on climate, as well as meeting other health, safety and economic considerations. For the climate consideration, this means taking global-warming potential, energy use and other relevant factors into account. For refrigeration and air conditioning, this means optimizing refrigerants, equipment, servicing practices, recovery, recycling and disposal at end of life (Montreal Protocol website, 2020).

Another group of substances, hydrofluorocarbons (HFCs), were introduced as non-ozone depleting alternatives to support the timely phase out of CFCs and HCFCs. HFCs are now widespread in air conditioners, refrigerators, aerosols, foams and other products. While these chemicals do not deplete the stratospheric ozone layer, some of them have high GWPs ranging from 12 to 14,000. Overall HFC emissions are growing at a rate of 8% per year and annual emissions are projected to rise to 7-19% of global CO2 emissions by 2050. Uncontrolled growth in HFC emissions therefore challenges efforts to keep global temperature rise at or below 2°C this century. Urgent action on HFCs is needed to protect the climate system (Montreal Protocol website, 2020).

The Parties to the Montreal Protocol reached agreement at their 28th Meeting of the Parties on 15 October 2016 in Kigali, Rwanda to phase-down HFCs. Countries agreed to add HFCs to the list of controlled substances and approved a timeline for their gradual reduction by 80-85 per cent by the late 2040s. The first reductions by developed countries are expected in 2019. Developing countries will follow with a freeze of HFCs consumption levels in 2024 and in 2028 for some nations (Montreal Protocol website, 2020).

3.6 Other: SAICM

Adopted by the First International Conference on Chemicals Management (ICCM1) on 6 February 2006 in Dubai, the Strategic Approach to International Chemicals Management (SAICM) is a policy framework to promote chemical safety around the world. SAICM was developed by a multi-stakeholder and multi-sectoral Preparatory Committee and supports the achievement of the 2020 goal agreed at the 2002 Johannesburg World Summit on Sustainable Development. SAICM's overall objective is the achievement of the sound management of chemicals throughout their life cycle so that by the year 2020, chemicals are produced and used in ways that minimize significant adverse impacts on the environment and human health (SAICM website, 2020).

The consumption of chemicals by all industries and modern society's reliance on chemicals for virtually all manufacturing processes make chemicals production one of the major and most globalized sectors of the world economy. Acknowledgement of the essential economic role of chemicals and their contribution to improved living standards needs to be balanced with recognition of potential costs. These include the chemical industry's heavy use of water and energy and the potential adverse impacts of chemicals on the environment and human health. The diversity and potential severity of such impacts makes sound chemicals management a key cross-cutting issue for sustainable development (SAICM website, 2020).

SAICM is distinguished by its comprehensive scope; ambitious "2020 goal" for sound chemicals management; multi-stakeholder and multi-sectoral character; endorsement at the highest political levels; emphasis on chemical safety as a sustainable issue; provision for resource mobilization; and formal endorsement or recognition by the governing bodies of key intergovernmental organizations (SAICM website, 2020).

SAICM comprises the Dubai Declaration on International Chemicals Management, expressing high-level political commitment to SAICM, and an Overarching Policy Strategy which sets out its scope, needs, objectives, financial considerations underlying principles and approaches, and implementation and review arrangements. Objectives are grouped under five themes (SAICM website, 2020):

1. Risk reduction
2. Knowledge and Information
3. Governance
4. Capacity-building and technical cooperation; and
5. Illegal international traffic.

The Declaration and Strategy are accompanied by a Global Plan of Action that serves as a working tool and guidance document to support implementation of SAICM and other relevant international instruments and initiatives. Activities in the plan are to be implemented, as appropriate, by stakeholders, according to their applicability.

4. ASSESSMENT AND DESCRIPTION OF THE LINKAGES BETWEEN ALL 17 SDGS AND SOUND MANAGEMENT OF CHEMICALS AND WASTES IN TERMS OF GOALS, TARGETS AND INDICATORS, THROUGH THE INTERNATIONAL CHEMICALS AND WASTES MEAS

4.1 Introduction

In adopting the 17 Goals of the 2030 Agenda for Sustainable Development, world leaders outlined a transformational course of action for the people, planet, and prosperity. Chemicals and waste[3] management are related to achieving every aspect of this Agenda (IOMC 2018).

Chemicals and waste management play an important and increasingly significant role in every economic and social sector. Sound management of chemicals throughout their lifecycle is essential to avoiding complex risks to human health and ecosystems, and substantial costs to national economies. Similarly, sound management of chemicals and waste is necessary to maximize the potential benefits of their contribution to human well-being. Either as an input to or consequence of activities, sound management of chemicals and waste can provide practical solutions to achieve sustainable development (IOMC 2018).

Chemicals and waste management are reflected explicitly in a number of goals and targets, including those addressing health, water, cities and human settlements, and responsible consumption and production. Moreover, they relate implicitly to the goals on poverty, agriculture, oceans, decent work, climate change, and while less pronounced, their contribution is also important in areas such as education and gender equality (IOMC 2018).

[3] Considered as: hazardous waste in the lifecycle of chemicals

Figure 2. Graphic representation of chemicals and wastes management in the context of 2030 Agenda

(Source: IOMC 2018)

The 17 SDGs and their 169 targets are interconnected, multidimensional and indivisible, implying giving relevance to all the objectives and all the goals equally.

MEAs are part of a set of international agreements, both in the field of environmental protection and human health, whose **legally binding nature** for the States that have signed them, constitutes a key tool to overcome the voluntary nature of the 2030 Agenda (17 SDGs).

Each of the chemicals and waste related MEAs aim at protecting human health and the environment against the adverse effects of a range of chemicals and wastes. The chemicals and wastes related to MEAs implementation has important contribution in achieving SDGs, in particular but not limited to Goal 2 “sustainable agriculture”, Goal 3 “Good health and well-being”, Goal 6 “Clean water and sanitation”, Goal 11 “Sustainable cities and communities”, Goal 12 “Responsible production and consumption” and Goal 14 “Life below water”.

When exploring the information available on the links between chemicals and wastes related MEAs and SDGs it was found that the Basel, Rotterdam, and Stockholm Conventions share a SDGs section[4] on the Conventions webpage (under the Synergies section). The information is very limited, only mentioning the name of some SDGs targets/indicators. The Montreal Protocol website[5] explains briefly how it contributes to SDGs targets. On the Minamata Convention website there is no mention about the links to SDGs. When it comes to the SAICM website, there is a SDG dedicated section[6] on the website but the information presented is very limited.

There is available a UNEP Live SDG Synergies portal[7] which provides an effective way to show relationships between SDGs and MEA-related data, through dynamic visualizations for easy accessibility. This kind of information could be highly valuable to decision makers and can support efforts to increase data and knowledge literacy (UN SDGs Partnerships Platform website 2020). Still, when showing the relationship between SDGs and MEAs the information is not too detailed as to allow better understanding of decision makers on the linkages and contribution of MEAs in achieving 2030 Agenda (see Fig. 2 below).

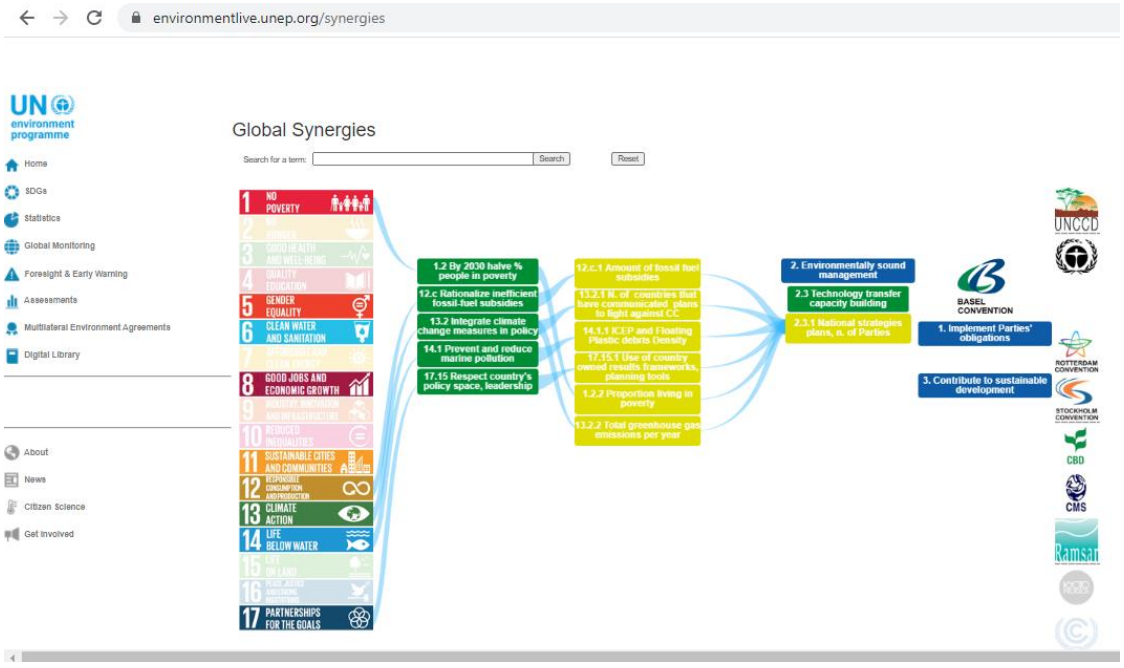


Figure 3. Screenshot of UNEP Live SDG Synergies portal

To date an overview of the current state of the environmental dimensions of sustainable development based on the SDG indicators terms of assessing progress towards the environmental dimension of the

[4] http://www.brsmeas.org/Implementation/SustainableDevelopmentGoals/Overview/tabid/8490/language/en-US/Default.aspx
[5] https://ozone.unep.org/sdg
[6] https://www.saicm.org/SDG/tabid/7654/language/en-US/Default.aspx
[7] https://uneplive.unep.org/portal#sdgs

SDGs was reflected in the 2019 UNEP report[8] "Measuring Progress Towards monitoring the environmental dimension of the SDGs". The progress of chemicals and wastes related MEAs is captured under the SDG indicator 12.4.1. According to this report, between approximately 60 and 80 per cent of the Parties to the Basel, Rotterdam, and Stockholm conventions and to the Montreal Protocol appear to have at least minimum institutional capacity to implement these MEAs. This indicator is based on the rate of transmission information for the five main MEAs in the chemicals and waste cluster. There are nuances between the rate of transmission of information under the different MEAs; for example, under the Montreal Protocol, the rate of transmission of information is much higher than under the Basel, Rotterdam, and Stockholm Conventions (UNEP 2019).

To foster further understanding of SDGs and chemicals and wastes interlinks, a non-exhaustive but detailed description of the Basel, Rotterdam, Stockholm and Minamata Conventions, Montreal Protocol (MEAs) and SAICM contribution in achieving the SDGs is presented in the next sections of this report.

Within the analysis of the linkages between the SDGs and chemicals and wastes related MEAs was based on the following Convention provisions to:

- Prohibiting and/or eliminating the production and use of some chemicals (POPs (SC), mercury (MC), ODS (MP), pesticides and industrial chemicals (RC);
- Promoting the use of best available techniques and best environmental practices for preventing releases of chemicals and waste into the environment (SC and MC);
- Ensuring that stockpiles and wastes consisting of, containing or contaminated with POPs (SC) or mercury (MC) are managed safely and in an environmentally sound manner;
- Considering relevant international rules, standards and guidelines when wastes containing POPs (SC), mercury (MC), ODS (MP) are transported across international boundaries;
- Developing of implementation plans (NIP (SC), MIA, NIP and NAP (MC));
- Establishing information exchange, public information, awareness and education, research, development and monitoring, technical assistance, financial resources and mechanisms, reporting, effectiveness evaluation.

4.2 Description of linkages

GOAL 1: NO POVERTY

In 2010, the International Labour Organization (ILO) estimated that approximately 70% of all children laborers from 5 to 17 years old work in agriculture. The FAO statistics from 2010 indicate that approximately 43% of all women in the work market work in agriculture. There is also an established link between poverty and the increased risk of exposure to toxic and hazardous chemicals. Exposure of poor people to toxic chemicals is often strongly correlated to geography, where low-income populations typically reside in places considered undesirable, such as areas in the proximity to a factory, landfills, site incinerators and/or hazardous waste dumps (UNDP, 2011).

[8] https://www.unenvironment.org/resources/report/measuring-progress-towards-achieving-environmental-dimension-sdgs

The examples provided below show that chemicals and wastes related MEAs contribute to ending poverty, although not immediately evident and not in all cases being a direct contribution.

If we take the case of subsistence farmers, they are working towards producing a surplus that they can sell, using the income to buy additional food for their families, but also send their children to school and pay for health care. For producing a surplus, the subsistence farmers use various pesticides, some of them highly hazardous, thus they may fail to comply with quality standards, trade policies and food safety. In this case the implementation of the Stockholm and Rotterdam Convention brings us closer to achieving this goal. When it comes to Stockholm Convention, it is prohibiting and/or restricting some of the highly hazardous pesticides. At the same time, is providing the necessary knowledge and instruments like national implementation plans for promoting simultaneously switching to alternatives to the highly hazardous pesticides and organic agriculture.

In the same line, Rotterdam Convention is promoting shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm. It also, contributes to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.

Recognizing that highly hazardous pesticides (HHPs) cause adverse human health and environmental effects in many countries, particularly in low-income and middle-income countries, the 4th meeting of International Conference on Chemicals Management (ICCM4) supported concerted action to address HHPs. The Inter-Organization Programme for the Sound Management of Chemicals has agreed to facilitate collaboration, cooperation and contributions of stakeholders in the implementation of the HHP Strategy. SAICM stakeholders are encouraged to undertake concerted efforts to implement the HHP Strategy at the local, national, regional and international levels, with emphasis on promoting agroecologically based alternatives and strengthening national regulatory capacity to conduct risk assessment and risk management, including the availability of necessary information, mindful of the responsibility of national and multinational enterprises (SAICM website, 2020).

There are a known fact that poor and vulnerable populations are struggling to earn a living acting in informal working environments like e-waste and waste management and artisanal small gold mining. Evidence has clearly linked malnutrition to increased uptake of heavy metals and other toxic hazard substances present at the waste disposal site, deeming the children exposed to be particularly vulnerable to this type of co-morbidity (ILO, 2012).

In this context, implementation of the Basel, Stockholm and Minamata Conventions play crucial role in protecting the health of this category of population. On one hand the MEAs are regulating different chemicals and wastes present in these sectors and on the other hand are contributing to the process of formalizing these work sectors, contributing to implementing nationally appropriate social protection systems and measures for all. Particularly, the Minamata Convention aims to formalize the Artisanal and Small-Scale Gold Mining (ASGM) sector by helping miners to access markets for responsible gold and move to mercury-free mining processing.

Also, SAICM has implications in addressing this, ICCM3 endorsed the addition to the Global Plan of Action of new activities related to hazardous substances within the life cycle of electrical and electronic products, including the work areas of e-products green design, environmentally sound manufacturing of e-products and awareness-raising for e-products. In addition, ICCM3 agreed to continue to work to identify, compile and create an international set of best practice resources on topics in this area, drawing on existing initiatives and opportunities for collaboration within the Strategic Approach and with other international forums (SAICM website, 2020).

The Montreal Protocol is supporting small, medium and large-scale industrial enterprises and their technicians to successfully transition to new technologies that do not deplete the ozone layer.

Chemicals and wastes related MEAs implementation are also contributing to reducing exposure and vulnerability of poor population to climate-related extreme events and other economic, social and environmental shocks and disasters. For example, while regulating certain hazardous chemicals and chemicals depleting the ozone layer, the Stockholm and Minamata Conventions and Montreal Protocol contribute to the reduction of CO2 emissions and thus, the reduction of the risk for climate-related extreme events and disasters. In the case of Stockholm and Minamata Conventions, application of best available techniques (BAT) and best environmental practices (BEP) is being promoted.

In a more practical way, both Stockholm and Minamata Conventions provide guidelines to develop National Implementation Plans (NIP) and National Action Plan (NAP), which involves government sectors and stakeholders to reduce the exposure to the related chemicals and wastes.

With regard to the SDG indicator 1.5.4 “Proportion of local governments that adopt and implement local disaster risk reduction”, in case of Minamata Convention local governments have a role to play in conducting assessment of risks to population due to the contaminated sites and contribute to any strategies for their management and to the work on health-related aspects of guidance (Minamata Convention website, 2020).

Regarding disaster risk reduction, the Basel Convention can assist the Parties during an emergency, for example a Party to the Basel Convention can request emergency assistance from the Secretariat of the Basel Convention in case of an incident occurring during a transboundary movement of hazardous wastes and other wastes covered by the Basel Convention (BC-Decision V/32[9])

The financial mechanisms covering the chemicals and wastes related MEAs e.g. Global Environment Facility, Multilateral Fund for the Implementation of the Montreal Protocol, Special Programme, Specific International Programme under Minamata Convention, are promoting within the projects they are financing the end of poverty in all its dimensions.

Each of the chemicals and wastes related MEAs advocates for consideration and integration of pro-poor, vulnerable and gender-sensitive dimensions in the MEAs transposition into national policy and regulatory frameworks.

[9] http://www.basel.int/Procedures/RequestEmergencyAssistance/tabid/4767/Default.aspx

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 1:

- Target 1.2: By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions;
- Target 1.3: Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable;
- Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters;
- Target 1.a: Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions;
- Target 1.b: Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions.

GOAL 2: ZERO HUNGER

The global food system includes not only food production but also all food-related activities and how those activities interact with the Earth's natural resources and processes. Because of its climate and environmental impacts and shortcomings in healthy, safe nutrition for all, today's global food system is unsustainable. Moreover, it does not guarantee healthy food patterns for the world's population. It is estimated that more than 820 million people are still hungry. At the same time, rising obesity and overweight can be seen in almost every region of the world. **Billions of hectares of land have already been degraded**, and an additional 12 million hectares of agricultural land are likely to become unusable for food production every year. Furthermore, **agricultural practices** can lead to eutrophication of the aquatic environment, groundwater contamination, soil acidification, and atmospheric pollution (Global Sustainable Development Report 2019).

Over 1 billion people go hungry every day (FAO, 2009). At the same time, a third of global crop production is lost annually due to insects and plant diseases that can spread to multiple countries and through continents (FAO, 2017). This leads to increased production and use of pesticides, most of the time in an unsustainable manner.

The examples provided below show how chemicals and wastes related MEAs contribute to food production, safety and security.

If we take the case of Rotterdam and Stockholm Conventions, Parties must take measures to eliminate and/or restrict the production and use of the chemicals used for pest control during crop production and storage, thus impacting positively the food production, safely and security. In case of Basel and Stockholm Convention, these are regulating the persistent organic pollutants containing pesticides and their related wastes. Also, open burning of wastes/hazardous wastes/agricultural waste could impact the arable lands,

threatening future food production and safety. Both Stockholm and Minamata Conventions are promoting the implementation of BAT and BEP for reducing with the aim of completely eliminating the releases from such open burning processes.

In case of Stockholm and Minamata Conventions the management of contaminated sites, including those affecting arable areas used for food production, are regulated. In regard to the ESM of contaminated sites, the Stockholm Convention developed a Toolkit for investigating and managing POPs-contaminated sites (Stockholm Convention website, 2020) and Minamata Convention addresses the sites contaminated by mercury as well as interim storage of mercury, and its disposal once it becomes waste, and it provides guidance on the management of contaminated sites (Article 10 and 12). Some of the contaminations could be caused by unsustainable use and storage of pesticides or by waste/hazardous waste disposal into or onto the land in an uncontrolled way. In the framework of the Basel Convention were developed technical guidelines for the environmentally sound management (ESM) of wastes/hazardous wastes (Basel Convention website, 2020) as to avoid generation of such contaminated sites.

Both Rotterdam Convention and SAICM contribute to the awareness in regard to the use of some pesticides and their potential risk and encourage stakeholders to take action for environmental sound management.

The Montreal Protocol has phased out methyl bromide (previously used for pest control during crop production and storage). On the other hand, the Protocol contributes to reducing the UV radiation by the phase-out of ODSs, thus reducing the damage to aquatic ecosystems that are the basis of commercial fisheries, a vital source of food around the world. Moreover, the Kigali Amendment of the Montreal Protocol is encouraging access to high-energy efficient, ozone-safe cooling systems, improving access to affordable refrigeration which reduces food waste and enables access to food in good conditions (Montreal Protocol website, 2020).

Another way to promote more quality food is by reducing its mercury content, the Minamata Convention helps countries decrease the use of mercury and its release into the environment from various sectors, indirectly halting and reducing the build-up of mercury in the food chain. People may be exposed when they eat fish or shellfish contaminated with methylmercury. Methylmercury can pass through the placenta, exposing the developing fetus. Significant amounts of methylmercury eaten over weeks to months have caused damage to the nervous system. Infants born to women who were poisoned with methylmercury had developmental abnormalities (World Health Organization 2017).

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 2:

- Target 2.1: By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.
- Target 2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.

GOAL 3: GOOD HEALTH AND WELL-BEING

The adverse effects of chemicals on different groups of the population vary depending on the level of exposure, behavioral patterns, age, biological effects (e.g., endocrine disruption), geographical location, nutritional status, and co-exposure to other chemicals (Jeyaratnam 1990).

Chemicals (in particular pharmaceuticals) save lives and improve well-being. SMCW has enabled industrial manufacturing in developed economies as well as a growing number of developing economies to safely harness the benefits of chemicals. At the same time, evidence suggests a significant burden of disease from exposure to chemicals (as shown in the WHO's global assessment, updated in May 2016), particularly associated with some developing countries and certain general uses, suggesting high costs of inaction associated with a large number of deaths and illnesses, for example due to occupational exposure. However, information is still incomplete, and it is therefore necessary to gather additional data, including on the costs of inaction and the burden of disease (UNEP 2016).

Pesticide poisoning is a serious health problem that disproportionately affects infants and children. Pesticides are designed to kill, reduce or repel insects, weeds, rodents, fungi, and other organisms that can threaten public health and national economies. However, when improperly used or stored, these chemical agents can also harm humans. Key risks are cancer, birth defects, and damage to the nervous system and the functioning of the endocrine system. People can be exposed to excessive pesticide levels while working; via food, soil, water or air; or by directly ingesting pesticide products. Pesticides are known to cause millions of acute poisoning cases per year, of which at least one million require hospitalization. The number of children involved in such incidents is unknown but, based on the experience of many countries, likely to be large. Between one and three agricultural workers per every 100 worldwide suffer from acute pesticide poisoning, and adolescents are often the victims (Jeyaratnam 1990; Kahn 1976). The contribution of pesticides to chronic diseases, on the other hand, is unknown.

The exposure to persistent organic pollutants can lead to serious health effects including certain cancers, birth defects, dysfunctional immune and reproductive systems, greater susceptibility to disease and damages to the central and peripheral nervous systems. In addition, POPs concentrate in living organisms through another process called bioaccumulation. Though not soluble in water, POPs are readily absorbed in fatty tissue, where concentrations can become magnified by up to 70,000 times the background levels. Fish, predatory birds, mammals, and humans are high up the food chain and so absorb the greatest concentrations. When they travel, the POPs travel with them. As a result of these two processes, POPs can be found in people and animals living in regions such as the Arctic, thousands of kilometers from any major POPs source. Specific effects of POPs can include cancer, allergies and hypersensitivity, damage to the central and peripheral nervous systems, reproductive disorders, and disruption of the immune system. Some POPs are also considered to be endocrine disrupters, which, by altering the hormonal system, can damage the reproductive and immune systems of exposed individuals as well as their offspring; they can also have developmental and carcinogenic effects (Stockholm Convention website 2020).

The MEAs promotes the integration of appropriate policies, strategies, and measures for minimizing harm to human health and the environment by chemicals and wastes.

In its Article 16, the Minamata Convention encourages Parties to promote the development and implementation of strategies and programmes to identify and protect populations at risk, particularly vulnerable populations, and which may include adopting science-based health guidelines relating to the exposure to mercury and mercury compounds, setting targets for mercury exposure reduction, where appropriate, and public education, with the participation of public health and other involved sectors.

Also, the Annex C of the Minamata Convention aims to formalize the Artisanal and Small-Scale Gold Mining (ASGM) sector by helping miners to access markets for responsible gold and move to mercury-free mining processing. Also, the Minamata Convention prohibits the manufacture, import, and export of mercury-added products listed in Annex A, Part I, in particular: mercury-containing thermometers and sphygmomanometers in health care, mercury skin-lightening cosmetics, and mercury-containing topical antiseptics. The Convention also establishes measures to phase down the use of dental amalgam, listed in Annex A, Part II. All of these measures also help reduce harmful mercury emissions and protect the health and well-being of millions of men, women, and children working in the industry (Minamata Convention website, 2020).

In its General Comment No. 9 (2006), the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes asserted: "Hazardous environment toxins also contribute to the causes of many disabilities. Toxins, such as lead, mercury, asbestos, etc., are commonly found in most countries (Basel, Rotterdam and Stockholm Conventions Secretariat 2016).

Countries should establish and implement policies to prevent dumping of hazardous materials and other means of polluting the environment."[10] Parties to BRS Conventions have to manage hazardous chemicals and wastes that may adversely affect the young and future generations, specifically by ensuring their environmentally sound management. This may be achieved by eliminating, restricting, requiring the phase-out, or by exchanging information to enable a more informed decision-making (through the Prior Informed Consent – PIC – Procedure under the Basel or Rotterdam Conventions) as it relates to their production, use, including trade, and disposal. In implementing the BRS Conventions, Parties (States or economic/political regional organizations of States) need to evaluate and address the impacts of these regulated substances on vulnerable population, including children. For instance, under the Rotterdam Convention, the listing of a new chemicals, by amending Annex III, requires the Party to collect various information, including for example a description of incidents relating to chemical and measures taken, or intended to be taken, by the Party in response to such incidents (Annex IV Part 1 (g) and (h)). Since many Parties, especially developing countries and countries with economy in transition have had difficulties in planning monitoring activities, the Secretariat of the BRS Conventions, in cooperation with UNEP and FAO have developed technical assistance tools to help Parties to establish incident reporting systems. For instance, the "Severely Hazardous Pesticide Formulations (SHPF) Kit: Guidance on monitoring and reporting pesticide poisoning incidents related to SHPFs" is intended to help Parties with few resources to identify incidents related to pesticide exposure: "The system may be designed to identify high risk

[10] See also in that sense CRC/C/GC/9 on the rights of children with disabilities (paragraph 54).

groups or to better understand the risks for vulnerable groups, e.g. children, pregnant women, landless agricultural workers."[11] (Basel, Rotterdam and Stockholm Conventions Secretariat 2016)

Under the Stockholm Convention, the Global Monitoring Plan for POPs[12] in accordance with Article 16 on Effectiveness Evaluation was established in 2005, at the second meeting of the Conference of the Parties so as to evaluate the evolution of human body burden of POPs worldwide. Among the indicators used to evaluate human exposure to POPs, breast milk is considered one of the best medium of measurements. The 2013 results of the global survey on concentrations of POPs in human milk by UNEP and the World Health Organization (WHO) underlined that: "The risk-benefit assessment of breastfed infants represents one of the most challenging aspects of human toxicology, as possible adverse health effects associated with exposure to POPs concur with significant health benefits of breastfeeding."[13] Based on information from the Second Global Monitoring Report (2015), the use of human milk as a sampling matrix revealed a relatively high but decreasing level of POPs worldwide, notably PCDD/PCDF, PCB, PFOS and HCHs. In absence of definitive conclusions, both documents however highlight that "the uptake of these chemicals by the infant via human milk is of high toxicological relevance."[14] (Basel, Rotterdam and Stockholm Conventions Secretariat 2016)

Another example is the case of DDT is listed under Stockholm Convention Annex B with an acceptable purpose for disease vector control. DDT continues to be applied against mosquitoes in several countries to control malaria. Its stability, its persistence (as much as 50% can remain in the soil 10-15 years after application), and its widespread use have meant that DDT residues can be found everywhere; residual DDT has even been detected in the Arctic (Stockholm Convention website, 2020).

Dioxins are a group of chemically-related compounds that are persistent organic pollutants. Short-term exposure of humans to high levels of dioxins may result in skin lesions, such as chloracne and patchy darkening of the skin, and altered liver function. Long-term exposure is linked to impairment of the immune system, the developing nervous system, the endocrine system and reproductive functions. The developing fetus is most sensitive to dioxin exposure. Newborn, with rapidly developing organ systems, may also be more vulnerable to certain effects. Some people or groups of people may be exposed to higher levels of dioxins because of their diet (such as high consumers of fish in certain parts of the world) or their occupation (such as workers in the pulp and paper industry, in incineration plants, and at hazardous waste sites). Many countries monitor their food supply for dioxins. This has led to early detection of contamination and has often prevented impact on a larger scale. In many instances dioxin contamination is introduced via contaminated animal feed, e.g. incidences of increased dioxin levels in milk or animal feed were traced back to clay, fat or citrus pulp pellets used in the production of the animal feed. Due to the omnipresence of dioxins, all people have background exposure and a certain level of dioxins in the body, leading to the so-called body burden. Current normal background exposure is not expected to affect human health on average. However, due to the high toxic potential of this class of compounds, efforts need to be undertaken to reduce current background exposure. Prevention or reduction of human exposure is best done via source-directed measures, i.e. strict control of industrial processes to reduce formation of dioxins as much as possible (WHO 2016). One of the major goals of the

[11] Gender Action Plan (BRS-GAP) for 2014-2015, 2 December 2013 (footnote 6).
[12] http://chm.pops.int/Implementation/GlobalMonitoringPlan/Overview/tabid/83/Default.aspx
[13] Childhood Pesticide Poisoning, Information for Advocacy and Action, FAO, UNEP and WHO (pp. 19 to 22).
[14] Second Global Monitoring Report, 2015 (6.2.1 see results in figures 6.2.1 to 6.2.10).

Stockholm Convention is the continuing minimization and, where feasible, ultimate elimination of unintentionally produced POPs listed in Annex C, including dioxins and furans. To reduce the total releases of POPs derived from anthropogenic sources, parties are also required to implement best available techniques (BAT) and best environmental practice (BEP) for the sources listed in Annex C, Parts II and III. In the framework of Stockholm Convention, a toolkit to comparable releases inventories of Annex C chemicals was developed (Stockholm Convention website, 2020).

In relation to this, the Montreal Protocol promotes the phase-out of ODSs, reducing the UV radiation. Exposure to high levels of UV radiation leads to an increased risk of skin cancers and cataracts. Cataracts are a very significant threat to health and well-being as they are responsible for around half of the blindness worldwide. Another hand, exposure to UV radiation can reduce the efficacy of vaccines, including those against bacteria (including tuberculosis) and viruses (including hepatitis B virus poliovirus, measles, and influenza) (Montreal Protocol website, 2020). In addition, the Montreal Protocol promotes research and technical innovations, and the development of solar water disinfection (SODIS), a simple technology for destroying pathogens in drinking water. Access to clean water reduces the exposure to infectious diseases and many other critical dimensions of well-being.

On May 30, 2017, the Seventieth World Health Assembly approved a road map to enhance health sector engagement in SAICM. The road map identifies concrete actions where the health sector has either a lead or important supporting role to play in the sound management of chemicals. These actions are organized into four areas: risk reduction; knowledge and evidence; institutional capacity; and, leadership and coordination (SAICM website, 2020). Also, in the context of SAICM, the ICCM adopted at its 2nd, 3rd and 4th meeting resolutions that recognize the policy imperatives to address identified emerging policy issues (Lead in paint, Chemicals in products, Hazardous substance within the life cycle of electrical and electronic products, Nanotechnology and manufactured nanomaterials, Endocrine-disrupting chemicals and Environmentally persistent pharmaceutical pollutants) and other issues of concern (Perfluorinated chemicals and Highly hazardous pesticides) and agreed on the actions needed and requested specific stakeholders to consider undertaking certain actions as to minimize their impact over the human health and environment.

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 3:

- Target 3.3: By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.
- Target 3.4: By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.
- Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

GOAL 4: QUALITY EDUCATION

Education enables upward socioeconomic mobility and is a key to escaping poverty. Education helps reduce inequalities and reach gender equality and is crucial to fostering tolerance and more peaceful societies. Over the past decade, major progress has been made towards increasing access to education and school enrollment rates at all levels, particularly for girls. Nevertheless, about 258 million children and youth were still out of school in 2018 — nearly one-fifth of the global population in that age group. It is important on all levels the quality education on sustainable development in curricula on natural and social sciences, engineering, law, and many others (UN SDGs website 2020).

All the MEAs contributes to building the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles. It also promotes public awareness, shared responsibility, and cooperative efforts, facilitating information exchanges on the environmental sound management of hazardous chemicals and waste to protect human health and environment.

Article 10 (1) (c) of the Stockholm Convention creates an obligation for the States to promote and facilitate, within its capabilities: "Development and implementation, especially for women, children and the least educated, of educational and public awareness programmes on persistent organic pollutants, as well as on their health and environmental effects and on their alternatives". The Secretariat developed educational materials on POPs for schools "Ridding the world of POPs: A guide to the Stockholm Convention on POPs[15]" to communicate on hazards specifically to children[16] (Basel, Rotterdam and Stockholm Conventions Secretariat 2016).

As highlighted by Mr. Baskut Tuncak[17] in his statement during the 2015 meetings of the Basel, Rotterdam and Stockholm Conventions' COPs: "The Rotterdam Convention (…) is rooted in the recognition of (...) the human right to access information. Information about hazardous substances is not a privilege of countries with the greatest means; but, rather a right to which all people and peoples are entitled, including those in countries without adequate resources to assess and manage hazardous substances[18]" Nevertheless, article 15 (2) of the Convention provides: "Each Party shall ensure, to the extent practicable, 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." (Basel, Rotterdam and Stockholm Conventions Secretariat 2016).

Whereas the Basel and the Rotterdam Conventions implicitly refer to children's right to participation, Article 7 (2) of the Stockholm Convention more specifically provides: "The Parties shall, where appropriate, cooperate directly or through global, regional and subregional organizations, and consult their national stakeholders, including women's groups and groups involved in the health of children, in order to facilitate the development, implementation and updating of their implementation plans." The

[15] Available on the website at: http://chm.pops.int/Convention/Publications/BrochuresandLeaflets/tabid/3013/Default.aspx.
[16] See "Protect Children from Pesticides!, A visual Facilitator's Guide" ILO and FAO, adapted to audience from Africa, Asia and the Pacific, Latin America and the Caribbean as well as Eastern Europe, the Caucasus and Central Asia.
[17] UN Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes.
[18] Statement of Mr. Baskut Tuncak UN Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes.

Basel, Rotterdam and Stockholm Conventions' COPs encourage the Secretariat to further collaborate with NGOs as well as with the private sector, for instance through partnerships (see PACE regarding electronic wastes) (Basel, Rotterdam and Stockholm Conventions Secretariat 2016).

Also, for the tenth anniversary of the adoption of the Stockholm Convention in 2011, the Secretariat called for NGOs and other stakeholders to share success stories on how the Stockholm Convention triggered positive changes in chemical management and/or sustainable development[19]. The stories received were compiled; chapter 3 of the publication focuses on Health Benefits for Children, Women and Workers. Among them, several contests and exhibitions were organized and held in Yerevan, Armenia, such as "Children against POPs", "Children against Hazards", including amateur theatrical performances, drawings, poems, songs and tales. The Secretariat of the Basel, Rotterdam and Stockholm Conventions endeavors to value children's skills. In this respect, it called for a national, drawing, photography and short film contest on the theme "Chemical Challenges, Sustainable Solutions", divided in three categories of age (5 to 10, 11 to 15 and 16 to 20 years old): 160 submissions from 18 countries were received in total, and a selection of the best entries was presented at the Rio +20 Conference on Sustainable Development, at the Palais des Nations in Geneva, and by three of the Basel and Stockholm Conventions regional centres. They are still used, for example, to illustrate Stockholm Convention posters, publications, T-shirts and other awareness-raising products (Basel, Rotterdam and Stockholm Conventions Secretariat 2016).

In the framework of the MEAs, North-South research partnerships and transdisciplinary collaboration is a highly effective way of building transformative capacities and concrete applications across countries. For instance, the Montreal Protocol has a strong network of national ozone officers who take the lead in training and outreach activities in developing countries.

The Secretariat of the Basel, Rotterdam, and Stockholm Conventions (BRS), together with its partners the European Institute for Innovation and Technology's Climate Knowledge and Innovation Community (Climate-KIC), the European Institute for Innovation and Technology's RawMaterials Knowledge and Innovation Community (RawMaterials-KIC), the International Telecommunication Union, KU Leuven and the World Resources Forum, launched in February 2020 an updated Massive Open Online Course[20], or MOOC, on the electronic and electrical waste - or e-waste - challenge, also with contributions from the World Health Organization. The course guides through the problem, to opportunities, and to possible actions at local, national and regional levels, and will introduce you to policy tools, standards and best practices for the collection, recycling, and final disposal of e-waste (Basel Convention website 2020).

The Secretariat of the Rotterdam Convention has developed the Interactive Training on the Operation of the Rotterdam Convention (ITORC)[21] with the goal of providing technical training to Designated National Authorities (DNA) and other interested stakeholders for the implementation of the Convention. For each of the four key operational elements of the Rotterdam Convention a training course has been designed including an overview of the obligations and operational procedure of the Convention, an introduction to the standard forms to be completed and submitted by the DNA, and in-depth discussions on specific

[19] Available at http://chm.pops.int/Convention/Publications/Other/tabid/3072/Default.aspx.
[20] Available at http://www.basel.int/Implementation/TechnicalAssistance/MOOC/tabid/4966/Default.aspx
[21] Available at http://www.pic.int/Implementation/ELearningTool/ITORC/tabid/1153/language/en-US/Default.aspx

issues. Each course contains a case study that aims to provide practical experience in the implementation of the individual operational procedures (Rotterdam Convention website 2020).

The Stockholm Convention facilitates information exchanges, as described in its Article 10: public information, awareness, and education. At its third meeting, the Conference of the Parties to the Stockholm Convention in its Decision SC-3/7 requested the Secretariat, in cooperation with the Secretariat of the Basel Convention, to undertake, within available resources, training and other capacity-building activities to assist developing countries and countries with economies in transition in implementing the Technical guidelines for the Environmentally Sound Management of POPs wastes. In answer to this request, the Secretariat of the Stockholm Convention has developed the interactive Stockholm Convention Training Tool on the Technical Guidelines for the Environmentally Sound Management (ESM) of Persistent Organic Pollutants (POPs) wastes[22]. This electronic Training Tool provides information on the technical guidelines on POPs wastes in a simple and interactive manner. The target audience are persons involved in the management of POPs wastes that already have a basic knowledge on the subject. These include handlers of hazardous chemical waste, treatment and destruction industries, owners of POPs wastes, relevant Government regulators and trainers on hazardous waste management (Stockholm Convention website 2020).

Minamata Convention, through its Article 18: public education, awareness, and information, states that each Party shall use existing mechanisms to inform and educate the public or consider new mechanisms. The Minamata Convention features an online introductory course on the Minamata Convention on Mercury[23]. The course provides information on the environmental challenges posed by mercury pollution, highlights the urgency of effective global action and gives an overview of the Convention's key operational articles. The final section of the course focuses on institutional arrangements and the overall implementation of the Convention. Also, as part of the ongoing efforts for building national capacity, UN Environment Programme and UNITAR collaborate on an online training platform: MercuryLearn (currently in English and Spanish)[24]. The main component of the platform is the UNEP Toolkit for Identification and Quantification of Mercury Releases, which provides interactive modules to assist in the development of mercury inventories. The platform also provides links to awareness-raising materials and other tools (Minamata Convention website 2020).

There is also InforMEA, a project established by the MEA Information and Knowledge Management (IKM) Initiative, which has created an e-learning platform[25] with training courses covering the topics related to Basel, Rotterdam, Stockholm and Minamata Conventions and Montreal Protocol.

More educated households are more likely to have modern electrification and other cleaner energy sources, so women and children are less exposed to indoor air pollution (Global Sustainable Development Report 2019). More educated families uptake Sustainable Lifestyles. In relation to this, SAICM designed a

[22] Available at http://chm.pops.int/Implementation/WasteStockpiles/TrainingTool/TrainingToolEnglish/tabid/387/Default.aspx
[23] Available at http://www.mercuryconvention.org/Resources/ConventionInformation/ELearning/tabid/5315/language/en-US/Default.aspx
[24] Available at http://www.mercuryconvention.org/Resources/ConventionInformation/ELearning/tabid/5315/language/en-US/Default.aspx
[25] Available at https://elearning.informea.org/course/index.php?categoryid=10

lot of infographics and reports which contribute to the sustainable development and linkage with other organizations like "The One Planet network" formed to implement the 10-Year Framework of Programmes on Sustainable Consumption and Production (SCP), which supports the global shift to SCP and the achievement of SDG 12. One of the Programmes is "The Sustainable Lifestyles and Education Programme", which aims to foster the uptake of sustainable lifestyles as the common norm (One Planet Network website 2020).

From the examples above, it can be observed the chemicals and wastes related MEAs contribute to achieving the following targets of SDG 4:

- Target 4.3: By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.
- Target 4.7: By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

GOAL 5: GENDER EQUALITY

About one-third of countries in the developing regions have not achieved gender parity in primary education. These disadvantages in education also translate into lack of access to skills and limited opportunities in the labour market for young women (UN SDGs website, 2020)

All chemicals and wastes MEAs contribute in their area of concern in promoting the gender equality, encouraging effective participation and equal opportunities for leadership at all levels of interventions and ensuring universal access to reproductive health by taking measures to minimize the negative effects of chemicals and wastes.

Gender issues related to the implementation of the conventions have been discussed and taken into account by the Conferences of the Parties to the Basel, Rotterdam, and Stockholm Conventions, particularly the impact of poor management of hazardous chemicals and wastes on vulnerable groups such as women and young children. The BRS Gender Action Plan (BRS-GAP)[26] was concluded in December 2013 and includes a vision, a list of expected short, medium, and long-term goals, and monitoring and reporting plans. The vision of the BRS-GAP aims to ensure that principles of gender equality are firmly embedded in activities undertaken by the BRS Secretariat (BRS Synergies website, 2020). The Gender Action Plan is convention specific, but one of its objectives includes "Promoting the consideration of gender issues in hazardous chemicals and wastes management at the national and regional levels", which is also in line with policies of the SAICM.

Also, the Secretariat developed a publication "Gender Heroes: from grassroots to global action. A collection of stories featuring gender perspectives on the management of hazardous chemicals and

[26] Available at http://www.brsmeas.org/Gender/BRSGenderActionPlan/Overview/tabid/7998/language/en-US/Default.aspx

wastes"[27]. The stories featured in this publication bring forth a picture of grassroots action being taken around the world every day by individuals and communities to protect the most vulnerable segments of our population from the potentially harmful effects of certain chemicals and wastes (BRS Synergies website, 2020).

Moreover, on the occasion of the 2017 Conferences of the Parties (COPs) to the Basel, Rotterdam and Stockholm Conventions, as part of its activities on gender, the Secretariat launched an initiative to promote gender mainstreaming and showcase the leadership of women and men in governments, Basel and Stockholm Conventions regional centres, civil society, academia and the private sector, who are contributing to these important efforts. Awards to celebrate "Gender Pioneers for a Future Detoxified" recognized eleven women and men for their achievements in advancing gender equality and mainstreaming gender issues in the area of chemicals and wastes (BRS Synergies website, 2020).

The Minamata Convention on Mercury preamble notes awareness of, "health concerns, especially in developing countries, resulting from exposure to mercury of vulnerable populations, especially women, children, and through them future generations." Furthermore, National Action Plans to address artisanal and small-scale gold mining are to include, "Strategies to prevent the exposure of vulnerable populations, particularly children and women of childbearing age, especially pregnant women, to mercury used in artisanal and small-scale gold mining" (Minamata Convention on Mercury 2017). In general, women play a much larger role in Artisanal and Small-Scale Gold Mining (ASGM) communities than in large-scale mining and in both sectors, they are critical to community stability and growth. A study completed in 2003 reported that among the more than 20 million ASGM and small-scale active miners, the proportion of women was estimated at 30 percent (Hinton et al., 2003). Their involvement is often invisible as they are usually found in the household; therefore, there may be a significant discrepancy between the estimated and actual numbers of women involved in the ASGM. Because women are involved in processing and waste disposal, they are exposed to harmful chemicals, with severe consequences for family well-being and health, including pregnancy. The risk of exposure during pregnancy, and consequently, exposure of the fetus to mercury is also of significant risk within ASGM communities. The Minamata Convention addresses this issue through the Assessment Toolkit ASGM. (UNEP Global Mercury Partnership website 2020).

Integration of gender dimensions is also promoted within all the chemicals and waste related Global Environment Facility (GEF) projects, e.g. projects related to the development of National Implementation Plans under the Stockholm Convention and National Action Plans under Minamata Convention.

Currently in the Strategic Approach, the inclusion of women is highlighted as an important aspect through direct mention once in the Dubai Declaration, five times in the Overarching Policy Strategy, and twice in the Global Plan of Action. Women are referenced in both their biological roles and social roles as key populations that need equal participation and specific risk prevention measures (SAICM 2017).

All of the emerging policy issues and other issues of concern under SAICM have susceptibility and exposure considerations related to gender (SAICM 2017, SAICM 2018). **Lead**, a widely used toxic metal, contaminates the environment and causes extensive public health problems. Children are particularly

[27] Available at http://www.brsmeas.org/Gender/GenderHeroes/Overview/tabid/4748/language/en-US/Default.aspx

vulnerable, and the exposure of pregnant women to high levels of lead may cause miscarriage, stillbirth, premature birth, and minor malformations. A large number of women in South Asia, East Asia, and sub-Saharan Africa work in agriculture and related tasks such as washing pesticide containers and thinning crops exposed to pesticides. The resulting exposure calls for the regulation of the use of **highly hazardous pesticides**. The **CiP Programme** promotes information transparency in supply chains, and focuses on textiles, toys, electronics and building materials. The manufacture of **electrical and electronic products** relies on the use of over 1,000 chemicals, many of which lack comprehensive health and safety information due to weak regulatory policies. As the electronics industry has grown, women in Latin America and Asia have become the primary source of labour, and are now exposed to high levels of toxins such as lead and chromium. **Endocrine-disrupting chemicals (EDCs)** affect the hormone systems of men, women and children. The International Federation of Gynecology and Obstetrics notes that the global rise in non-communicable diseases, as well as the increase in preterm births, low-birth-weight babies, and the early onset of breast development can be partially attributed to EDCs. The sources of pharmaceutical pollution include drug manufacturing, human excretion, disposal from homes and hospitals, and wastewater from large-scale livestock operations. Gender-specific effects of **Environmentally persistent pharmaceutical pollutants (EPPPs)** remain largely unknown due to the limited methods to measure such a widespread phenomenon. Perfluorinated chemicals (PFCs) have become extensively used in both industrial and consumer products to make them resistant to stains, water, grease, or heat. Studies have shown that high levels of PFCs can be highly toxic, and animal tests have found PFCs to be potentially carcinogenic in the reproductive and fetal development stages, although these effects on humans remain inconclusive (SAICM 2018).

In May 2018, the Multilateral Fund secretariat prepared a report to the Executive Committee on a desk study for the evaluation of gender mainstreaming in the Montreal Protocol projects and policies.[28] The objective of the study was to "take stock of efforts to include gender mainstreaming into the activities and projects related to the implementation of the Montreal Protocol, to explore a more systematic approach to include gender mainstreaming in the relate policies and projects." It looked at how the gender policies of the individual implementing agencies were considered in the Multilateral Fund activities. It also considered gender representation at the country level. At the country level, the report also described responses provided by 32 National Ozone Units (out of a total of 126 who were invited) to a questionnaire related to the desk study, which indicate varying degrees of involvement of women in project development and implementation, including decision-making. Access to capacity building was in most cases regarded as equal for men and women, although in practice participation was more skewed towards men. The report noted that women are more commonly represented "as customs officers, importers and brokers" and in small family-run refrigeration businesses. Women are also frequently decision-makers on purchases of household appliances and the end-users of those appliances (Ozone Secretariat 2019).

Regarding the Gender approach, SAICM has a specific publication (Women, Chemicals and the SDGs. Gender Review Mapping with a Focus on Women and Chemicals[29]) about how sex and gender are highly

[28] Note that only the agreement with UNIDO appears to be available in the public domain, as annex II to ExCom report UNEP/OzL.Pro/ExCom/8/29, but it appears from the meeting report itself that this agreement was aligned with those of the other implementing agencies

[29] https://saicmknowledge.org/sites/default/files/publications/ipen-gender-chemicals-report-v1_5web-en.pdf

influential in an individual's physiological susceptibility to chemicals. The varying roles of men and women in the workplace and at home help determine the respective vulnerabilities to chemical exposure. The report also provides concrete steps that can be taken to safeguard the health of women and empower women in decision-making and in their roles as agents of change (SAICM website, 2020).

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 5:

- Target 5.5: Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic and public life.
- Target 5.6: Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences.

GOAL 6: CLEAN WATER AND SANITATION

Access to water and sanitation represent the basic human rights and are critical for sustainable development. There are competing demands for clean fresh water (agriculture, households, energy generation, industrial use, ecosystems), which are exacerbated by the effects of climate change putting more pressure on water quality and availability. These leads to increasing risk for businesses, governments, communities and the environment.

Persistent organic pollutants and other hazardous chemicals are making their way into water sources, polluting ground and surface water resources and water-related ecosystems. For example, depending on their specific characteristics, pesticides, including POPs pesticides, can accumulate in the soil, sediments, and non-target organisms, including humans, with adverse long-term effects. They might be transported via run-off and air to remote areas and negatively affect biodiversity. By contaminating groundwater, lakes, rivers, and other bodies of water, pesticides pollute drinking supplies, fish, and other resources that are vital for human wellbeing (Stockholm Convention website, 2020).

Environmental sound management of chemicals and waste reduce their introduction into the environment, positively impacting on protecting the water resources and ensuring its quality.

Reduced chemicals' levels in environmental media is achieved through the implementation of several actions promoted by MEAs, like the prohibition of some chemicals' use, the introduction of environmentally sound management (ESM) in industries and other activities as waste management and guidance, application related to best available techniques (BAT) and best environmental practices (BEP). Stockholm Convention encouraged Parties and others to undertake additional research on the development and use of alternatives to industrial chemicals e.g. PFOS, its salts and PFOSF, including monitoring activities related to sulfluramid, PFOS and other relevant degradation products in the different environmental media (e.g., soil, groundwater, surface water) on application sites. Rotterdam Convention contribute to the environmentally sound use of hazardous chemicals (pesticides and industrial chemicals), by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties. Basel

Convention pursue the prevention and minimization of hazardous waste and other waste generation at source, especially through supporting and promoting activities designed to reduce at the national level the generation and hazard potential of hazardous and other wastes.

Also, SAICM promotes knowledge and information sharing with different stakeholders, encouraging them to take individual and collective action for the care of water.

Additionally, the Montreal Protocol promotes research and technical innovations, such as the development of solar water disinfection (SODIS), a simple technology for destroying pathogens in drinking water (Montreal Protocol website 2020).

As to landfills, their operation is the weakest point in the process of solid waste management, spreading contaminants that have a direct impact on water sources, air quality, and even on local populations living in nearby areas. The Basel Convention promotes the prevention and minimization of hazardous waste and other waste generation at the source. In the framework of the Convention, technical guidelines are developed on incineration on land (D10) and on specially engineered landfill (D5).

On another hand, mercury releases to air, water, and land from artisanal and small-scale gold mining (ASGM) are estimated to be over 2000 tons each year. It is the sector demanding the largest quantity of mercury, with virtually all the mercury used released to the environment. The sector produces about 12 to 15% of the world's gold. An estimated 10 to 15 million miners, including 4 to 5 million women and children, are involved in the sector. Miners in the process of extraction of gold use water and release it into the rivers without any treatment. The promotion of better practices and substitution of methods without mercury reduce its levels in the environment. Development of National Action Plans (NAPs) for artisanal and small-scale gold mining (ASGM) is a requirement under the Minamata Convention on Mercury (article 7). These plans include the aims to formalize the ASGM sector, which has global and local benefits, reduces mercury emissions, mercury pollution of water sources, and damage to ecosystems (Global Mercury Partnership website 2020).

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 6:

- Target 6.1: Safe and affordable drinking water.
- Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.
- Target 6.4: Increase water use efficiency and ensure freshwater supplies.
- Target 6.5: By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.

GOAL 7: AFFORDABLE AND CLEAN ENERGY

According to the International Energy Agency, if annual investment in renewables does not at least double, and continues at the current pace, fossil fuels will retain a predominant role in supplying up to 78 per cent of total energy in 2030, and a similar share even in 2050. The direct consequence will be the persistence of the current negative trend of increasing greenhouse gas emissions, which will make it impossible to reach the Paris Agreement objective of holding the increase in the global average temperature to well below 2°C above pre-industrial levels (Global Sustainable Development Report 2019).

The contribution of the MEAs to this goal is related to the use of cleaner energy and technologies with greater energy efficiency.

The Stockholm Convention aims at removing from use of PCBs containing electrical equipment e.g. transformers and capacitors by 2025, by replacing it with PCB-free equipment, and final dispose it by 2028. Moreover, through the BAT/BEP guidance documents Stockholm Convention is promoting the implementation of measures addressing both POPs reduction and enhanced energy-efficient processes.

The Montreal Protocol continues to bring opportunities to enhance energy efficiency. The Kigali Amendment to the Protocol is not only encouraging a shift towards low global warming coolants, it is also stimulating improved energy efficiency in the refrigeration, air-conditioning and heat pump sectors (Montreal Protocol website 2020).

Minamata Convention in the Article 8 concerns controlling and, where feasible, reducing, emissions of mercury and mercury compounds, often expressed as “total mercury”, to the atmosphere through measures to control emissions from the point sources falling within the source categories listed in Annex D (List of point sources of emissions of mercury and mercury compounds to the atmosphere Point source category, for example Coal-fired power plants and Cement clinker production facilities). Through guidance related to best available techniques (BAT) and best environmental practices (BEP), it promotes processes and technologies to reduce mercury releases and increase efficiency and, most importantly, in adopting clean energy solutions (Minamata Convention website 2020).

Concrete is the most produced material in the world at 4.2 billion tons per year, with most of the demand for construction projects in fast-growing and emerging economies. The high volume of production makes the global cement industry one of the largest producers of CO2, accounting for five to ten per cent of global emissions (Global Sustainable Development Report 2019). Regarding the concrete industry the Basel Convention develop technical Guidelines on Environmentally Sound Co-processing of Hazardous Waste in Cement Kilns. Also, the Conference of Parties to the Basel Convention at its 14th meeting agreed that the scope of the technical guidelines on incineration on land (D10) should be extended to also address incineration as covered by the operation “use as a fuel (other than in direct incineration) or other means to generate energy” (R1) (Basel Convention website, 2020).

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 7:

- Target 7.1: By 2030, ensure universal access to affordable, reliable and modern energy services.
- Target 7.3: By 2030, double the global rate of improvement in energy efficiency.

- Target 7.a: By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.
- Target 7.b: By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support

GOAL 8: DECENT JOB AND ECONOMIC GROWTH

Previously, several descriptions were made on the situations of women and children working in the informal sectors like farming, mining, recycling e-waste, and other waste and the impact this aspect has on human health and environment. E-waste collection and recycling are often done informally by self-employed individuals, who do not wear protective equipment and/or are unaware that they are handling hazardous materials. Nowadays, plastics and e-waste are the major concern in terms of solid waste, both can end up in the landfills or recycling processes informal even when produced and consumed in developed countries (Global Sustainable Development Report 2019). Occupational exposures, exposure to lead and acute poisonings resulting from unsound management are estimated to account globally for 1 303 100 million deaths (2.3% of total) and 43 109 000 disability-adjusted life-years (DALYs) (1.6% of total). Health effects considered include poisoning, leukaemia, lung cancer, ischaemic heart disease, stroke, intellectual disability and chronic obstructive pulmonary diseases (WHO Regional Office for Europe website 2020).

The implementation of chemicals and wastes related MEAs is aiming to support the formalization of different economic sectors and promoting green jobs through cleaner production, contributing to sustainable economic growth.

Since 2002 the Basel Convention addresses e-waste issues, promoting environmentally sound management, the prevention of illegal traffic to developing countries, and building capacity around the globe to better management of e-waste, increasing the technical capacity of recyclers, and promoting safe jobs. Specific guidelines have been developed to help formalize the sector by validating the recycling process, certifying the work done, and favoring market credibility. Another contribution to recycling jobs from the Basel Convention is the addressment of the household waste issue, which may contain hazardous waste co-mingled with non-hazardous waste, by providing guidelines and technical assistance. Under the Basel Convention household waste is classified as requiring special consideration (Basel Convention, Annex II, Y46).

As it was previously described, the Minamata Convention through National Action Plan (NAP) contributes to formalizing the Artisanal and Small-Scale Gold Mining (ASGM) sector and develop decent jobs for the mining community. In addition, the Convention bans new primary mercury mining and sets a 15-year period (2017-2032) to end existing primary mercury mining. Also, Minamata Convention (MC) promotes the environmentally sound management (ESM) of mercury from various land-based activities, caring for the workers' health, preventing mercury from entering water sources, and reducing the build-up of mercury in the food chain (Minamata Convention website 2020). Also, MC in the article 5, a deadline

is set for some industrial processes using mercury or mercury compounds so that they become mercury-free technology.

Regarding refrigeration services, the funding provided by the Protocol's Multilateral Fund has facilitated that transition to greener technologies in developing countries, and by supporting training has helped create a safe and secure working environment for all workers (highly trained workforce and improved health and safety). In 2012 almost 80,000 refrigeration service technicians had been trained by MLF-supported projects. New opportunities have often benefitted small and medium-sized enterprises. In other cases, technology transfer supported by the MLF has enabled developing countries to retain their national manufacturing capacity, so saving local jobs (Montreal Protocol website, 2020).

Concerning the jobs in the industry, the agreements promote better safety conditions and the elimination of hazardous chemicals. SAICM promotes the chemicals life-cycle approach in a multi-stakeholder context, disseminating the relevant knowledge among different actors for more responsible use of chemicals.

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 8:

- Target 8.2: Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors.
- Target 8.3: Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.
- Target 8.4: Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead.
- Target 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.
- Target 8.8: Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.

GOAL 9: INDUSTRY, INNOVATION AND INFRASTRUCTURE

Developing technology is not enough; technology must be made available, accessible, and sufficiently attractive to encourage widespread adoption, accompanied by the development of relevant user capacity. Countries need more locally relevant content, local innovation centers, and technology hubs, and support for open data initiatives. The transfer of technology, especially to institutions in developing countries, will be critical to scale up and accelerate the implementation of 2030 Agenda. The private sector and public-private partnerships can promote innovations aimed at sustainable development, appropriately

protecting intellectual property rights while increasing access of developing countries to essential goods and technologies (Global Sustainable Development Report 2019).
Innovation in the sound management of chemicals through eco-design and product lifecycle management can reduce the amount of natural resources used and hazardous materials in products and wastes. This can also support the development of new markets and create job opportunities.

The chemicals and wastes related MEAs are promoting then delivery of technical assistance, technology transfer and financial resources designed to support their successful implementation in developing countries and countries with economies in transition.

In this context, implementation of the Basel Convention has established regional or sub-regional centers for training and technology transfers regarding the management of hazardous wastes and other wastes and the minimization of their generation to cater to the specific needs of different regions and subregions (Article 14). In the same line, the Stockholm Convention has established a network of 16 regional and sub regional centers to provide technical assistance and to promote the transfer of technology to developing country parties and parties with economies in transition relating to the implementation of their obligations under the Convention. Also, Stockholm Convention request Parties, within their capabilities, encourage and/or undertake appropriate research, development, monitoring and cooperation pertaining to persistent organic pollutants and, where relevant, to their alternatives and to candidate persistent organic pollutants at the national and international levels (Article 11).
In order to assist developing country Parties and Parties with economies in transition in meeting their obligations under the Stockholm Convention, the POPs-free programme was initiated in 2010 to facilitate work on the identification of POPs-free products and the exchange of information on alternatives and substitutes to POPs. The programme also seeks to involve industry into the implementation of the Convention and to reduce the use of exemptions. A project[30] initiated in 2010 under the programme sought to engage with companies and test products to verify the absence of POPs in products such as furniture, clothing, computer, electronics and plastics. Of the 50 companies contacted, 20 manufacturers and retailers responded positively to the project. Two entities have agreed on a voluntary basis to test products through a laboratory hosted by the Environment Agency of Austria (Stockholm Convention website 2020).

Montreal Protocol has stimulated the establishment of innovative infrastructure for (Montreal protocol website, 2020):

- the rapid development and deployment of innovative products and technologies across many industrial sectors to be possible the phase-out of ODSs;
- recovering and recycling refrigerants;
- innovation in sun-protection technologies, public health information, and mobile phone apps that allow UV index;
- investment by the pharmaceutical industry in Ozone-safe and clime alternatives have replaced aerosols (this includes medical inhalers used for asthma and other lung diseases);

[30] Available at http://chm.pops.int/Implementation/POPsinarticles/PilotProject/tabid/2440/Default.aspx

- technologies to phase-out the Halons of fire protection systems without compromising the rapid development of infrastructure such as data and server centers required for the global expansion of information and communications technology (Target 9.C).

As it was previously mentioned, the Minamata Convention (Article 5) established the phase-out of the industrial processes which use mercury. For the transition process, there are available for Parties mercury-free alternatives that are technically and economically feasible taking into account the environmental and health risks and benefits.

Best Available Techniques and Best Environmental Practices (BAT&BEP) from Stockholm and Minamata Convention and, Environmentally Sound Management (ESM) Technical Guidelines from Basel Convention supports the industry reducing the release of contaminants and CO_2 into the environment, upgrading the infrastructure and retrofiting industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes,. In addition, promoting the formalization of Artisanal and Small-Scale Gold Mining (ASGM), helps adopting clean and environmentally sound technologies.

Regarding SAICM, it promotes the "Life Cycle Assessment Tools" that cover all stages of the product life cycle. Also, it promotes Eco-innovation and supports the integration of sustainability in companies' business strategies and enhances circularity by looking at the full value chain and all relevant partners. Significantly, the Eco-design of tech products favors the recycling and production of second-hand equipment. Basel Convention offers certification schemes that validate the recycling process. Consequently, this also contributes to the universal and affordable access to technologies.

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 9:

- Target 9.4: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.
- Target 9.5: Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.
- Target 9.a: Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States.
- Target 9.b: Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities.

- Target 9.c: Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020.[31]

GOAL 10: REDUCE INEQUALITY

Since 1980, notwithstanding some gains at the lowest parts of the income distribution of the global population, income inequality has risen sharply. Although the poorest 50 percent of the world population did see incomes rise significantly (primarily due to high growth in Asia), they only received a 12 percent share of the global gains, while the richest 1 percent of the world population received 27 percent (Global Sustainable Development Report 2019).

It is a documented fact that poverty and chemical and wastes exposure go hand-in-hand, contributing to exacerbate existing inequalities within and across countries. One of the major contributors to the inequality is the lack of access to natural resources.

The chemicals and wastes related MEAs contribute to the reduction of inequity through sound management of chemicals and their related wastes, **technical assistance, technology transfer, and mobilizing resources especially in developing countries and countries with economies in transition.**

For example, the chemicals and wastes related MEAs contribute to the mobilization of resources for developing countries, in order to facilitate their participation in training activities or to the Conference of the Parties and other technical working groups. Also, lots of technical and guidance documents are available in different languages to promote knowledge sharing. In the same line, through its Knowledge platform[32] SAICM offers a repository of resources, facilitates networking among people working for a safer environment, and provides information on articles and events on chemical-related topics.

MEAs promote equality by striving to achieve geographical and gender balance in their activities, from exchange and discussion groups to global decision-making instances. For example, there are 14 members in the Executive Committee of the Multilateral Fund of the Montreal Protocol, all from different countries. 7 of them are from Article 5 countries (developing countries): two members from Africa, two from Asia and the Pacific, and two from Latin America and the Caribbean. One additional member rotates between these regions, including the region of Eastern Europe and Central Asia. Additionally, the Montreal Protocol protects all countries from the damaging effects of ozone depletion. Article 5 parties are committed to controlling ODSs gradually and over a longer timescale than developed countries. At the same time, they have received financial and technical support for implementation controls on ozone-depleting substances and HFCs.

Considering financial matters, to favor capacity building activities, the Basel and Stockholm Conventions regional centers have formulated projects considering developing countries' needs in relation to chemicals and waste management within the Conventions implementation.

Equitable access to chemicals training through Electronic Distance Learning, possibilities a professional from a developing country be trained in a specific skill which they need. One of Quick Start Programme (QSP) projects developed a ground-breaking electronic distance learning tool (eDLT) at the Chulbahorn

[31] The evaluation of this target, with a 2020 deadline, informed that is achieved or on track to being achieved, Coverage by mobile networks is now nearly universal ((UN Statistics Division website, 2020î)
[32] Available at https://saicmknowledge.org

Research Institute (CRI) in Thailand. Since its launch in 2014, it has broadened the accessibility of training in risk assessment. The QSP includes a voluntary, time-limited trust fund for the implementation of SAICM objectives (SAICM website 2020).

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 10:

- Target 10.3: Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard.
- Target 10.6: Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions.
- Target 10.a: Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements.
- Target 10.b: Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes.

GOAL 11: SUSTAINABLE CITIES

At current rates of growth, by 2030, 60 percent of the world's population (close to 5 billion people) will live in cities, and by 2050 that proportion will be nearly 70 percent and cities will produce 85 percent of global economic output. If current trends continue, at least 15 percent of the new urban population added between now and then will be living with some kind of disability. Globally, 35 percent of urban populations have no access to municipal waste management. In addition, urban areas are often supported by surrounding peri-urban and rural areas that suffer from high rates of poverty (Global Sustainable Development Report 2019).

The chemicals and wastes related play important role in achieving sustainable cities, either through sound waste management and reducing impacts of chemicals in products, water, air, soil.

The Basel Convention provides the legal instrument and technical guidelines for waste management, including household waste (because of the potential for contamination with hazardous substances), e-waste, and plastic waste.

In regards to mechanisms to prevent the generation of hazardous waste, SAICM promotes products eco-design and the Minamata Convention establish that after 2020, manufacture, import, and export of products containing mercury (batteries, lamps, thermometers, and cosmetics, among others) are prohibited (Minamata Convention website, 2020).

In the same line, Rotterdam and Stockholm Conventions eliminate/reduce a long list of chemicals that have adverse impacts on human health and environment. Stockholm Convention's role in regulating plastic additives is crucial because the volume of plastic-waste production could grow from 260 million

tons per year in 2016 to 460 million tons by 2030. Nearly half of that comes from packaging materials (Global Sustainable Development Report 2019). Also, it promotes the continuing minimization and, where feasible, ultimate elimination of unintentionally produced POPs listed in Annex C which affect especially air quality.

The transparency of information about chemicals in global supply chains has been an emerging policy issue for the Strategic Approach to International Chemicals Management (SAICM) since 2009, leading to programmes such as the UNEP Chemicals in Products (CiP) Programme. The CiP programme focuses specifically on the textiles, toys, elec- tronics and building materials sectors. Information exchange in the value chain is key in identifying and addressing any chemicals of concern1 in products. Brands and retailers frequently lack crucial knowledge about the properties and risks of chemicals used to manu- facture products or are direct ingredients of the products. They are not fully aware of whether harmful chemicals are contained in the finished products they sell. Beyond the supply chain, consumers are asking for more user-friendly, easily accessible and appropriate information on chemicals throughout the chemicals' life-cycle. To safely manage chemicals of concern, it is necessary to identify during which life-cycle stage (e.g., production, product use, disposal) hazardous chemicals in products can result in adverse human health and environmental impacts, and target solutions adopting a life-cycle approach (SAICM 2019).

On another hand, the ozone layer protects construction materials from damage caused by too much UV radiation. By protecting the ozone layer, the Montreal Protocol prevents damage to plastics and wood. It also supports the development of safe, sustainable, and affordable refrigeration and air-conditioning that are increasingly required in our cities.

From the examples above, it can be observed the chemicals and wastes related MEAs contributes to achieving the following targets of SDG 11:

- Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.
- Target 11.b: By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels.[33]
- Target 11.c: Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials

GOAL 12: RESPONSIBLE CONSUMPTION AND PRODUCTION

[33] The progress analysis of the target 11.b is color yellow (Progress has been made, but is insufficient to meet the target) As of April 2020, 85 countries – slightly over 40 percent – reported that they had national disaster risk reduction strategies aligned, to some extent, to the Sendai Framework, with 6 of the countries reporting fully aligned national strategies. In 2018, 55 countries reported that at least some of their local governments had local disaster risk reduction strategies in line with national strategies (UN Statistics Division website 2020)

Eleven targets have been defined for SDG 12 and majority of them are directly linked to the chemicals and wastes related MEAs.

All the SDG 12´s targets refer, among others, to achieving sustainable management and efficient use of natural resources, environmentally sound management (ESM) of chemicals and waste, strengthen the developing countries scientific and technological capacity to move towards more sustainable patterns of consumption and production.

Almost all countries are party to at least one international environmental agreement on hazardous wastes and other chemicals. International frameworks to achieve environmentally sound management of hazardous wastes, chemicals and persistent organic pollutants have been established by the Basel, Rotterdam and Stockholm Conventions. With six exceptions, all Member States of the United Nations are party to at least one of these conventions. Becoming a party to these international agreements brings certain obligations (UN Statistics Division website 2020). Through the commitments taken following the ratification/accession to the Basel, Rotterdam and Stockholm Conventions, Parties need to comply with the reporting requirements thus contributing to measuring the SDG 12 achievement through SDG indicator 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.

Chemicals and wastes related MEAs are promoting solutions to move away from an approach focused on dealing with chemicals and waste problems once they have reached the market (post-market solutions) and more systematically stimulate pre-market solutions (at the design phase and across the entire production cycle). It also promoting taking actions in changing consumers' behaviour, including through incentive structures towards sound management of chemicals and wastes, in particular by minimizing waste generation and reducing the demand for products containing toxic chemicals. When it comes to the consumer side, the MEAs work towardnew production schemes based on a life cycle to enable identification of sustainable solutions, which may include higher efficiency in use, use of alternative chemicals or the elimination of hazardous chemicals.

SAICM is promoting the disclosure of the chemicals used by industry, including, but not limited to the chemicals used in articles, as lack of information about chemicals in products is an obstacle to consumer choices and the sustainable recycling of product materials.

Regarding the sustainable management and efficient use of natural resources, the Minamata Convention, in Article 3, bans new mercury mining open and sets a 15-year period to end existing primary mercury mining. In the same line, the Basel Convention provides, among others, technical guidelines to recycle e-waste which contribute to the reduction of metal extraction for the production of electronics equipment.

The global chemical sector is a major economic factor, and a key enabler for achieving sustainable development. Chemicals and waste in the context of SDG 12 on Sustainable Consumption and Production Patterns is about ensuring healthy lives and a healthy planet well into the future. Sustainable Consumption and Production requires a systematic approach throughout the life cycle of chemicals and cooperation across actors and sectors throughout the supply chain, from producers to final consumers. Target 12.4 in

particular is set for achievement by 2020, which is aligned with the overall SAICM objective (SAICM website 2020).

On another hand, currently, food loss is about 30 percent of the food produced every year. The Kigali Amendment of the Montreal Protocol is encouraging access to high-energy efficient, ozone-safe cooling systems that help to reduce food waste.

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 12:

- Target 12.1: Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries.
- Target 12.2: By 2030, achieve the sustainable management and efficient use of natural resources.
- Target 12.3: By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.
- Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.
- Target 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.
- Target 12.6: Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.
- Target 12.8: By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.
- Target 12.a: Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production.

GOAL 13: CLIMATE ACTION

There is growing support and political traction for climate action, changing consumer behaviors, and environmental protection. By bringing together societal actors and non-academic knowledge providers committed to the 2030 Agenda, science can secure its position as an indispensable provider of valuable, trustworthy evidence and advice (Global Sustainable Development Report 2019).

On one hand the sound management of chemicals and wastes prevents and mitigate the climate active substances entering the environment, thus reducing the need for difficult and costly environmental remediation. On the other hand, the climate change has the potential to impact human exposure to chemicals due to changes in use patterns, releases and environmental pathways (IOMC 2018).

1.07 million km2 of the Arctic's sea ice is lost every decade due to warming. A wide range of POPs long trapped in the region's snow have been remobilized into the Arctic atmosphere over the past two decades because of climate change. Thus, the interventions taken in the context of Stockholm Convention implementation are crucial and reducing with the aim of ultimate elimination of POPs.

The Montreal Protocol has already made a large contribution to protecting the climate by phasing-out ozone-depleting substances (ODS), such as chlorofluorocarbons (CFCs), which are also very potent greenhouse gases. The reduction in ODS emissions is already equivalent to around 135 billion tons of CO2. For example, in terms of global warming, one kilogram of CFC-12 is the equivalent of more 10,000 kilograms (ten tons) of carbon dioxide. HFCs pose no threat to the ozone layer but some are powerful greenhouse gases (HFC-143a is more than 5,000 times more powerful than carbon dioxide). Looking to the future, modeling studies suggest that by controlling ODS emissions and also the HFCs through the Kigali Amendment to the Montreal Protocol will have prevented temperature increases of 4-6°C at the poles and over 2°C in the tropics by 2070 (Montreal Protocol website, 2020).

As previously detailed, chemicals and wastes related MEAS contribute to the development of strategies to cope with disasters. By increasing the ambient temperature, the probability of fires increases, so the implementation of environmentally sound management of the chemicals and wastes stockpiles increases in relevance.

The Intergovernmental Panel on Climate Change (IPCC) estimates that solid waste management accounted for around 3% of global greenhouse gas (GHG) emissions in 2010, with most of that attributable to methane emissions from landfill sites[34]. However, the sound management of chemicals and wastes is an important element of addressing climate change mitigation and adaptation. Improved life cycle management as well as the chemicals industry's products, processes, information in the value-chain about the characteristics of chemicals and their presence in products, innovation and research capacity is critical to improve energy efficiency, develop renewables, capture greenhouse gases, and increase resource efficiency. Procurement policies can be used to provide market incentives, fostering the use of best available techniques (BAT) and best environmental practices (BEP). Efforts should be made to generate co-benefits for sound management of chemicals and wastes and climate action. Relevant national action plans (e.g. the National Implementation Plans (NIPs) developed under the Stockholm Convention and National Action Plans developed under Minamata Convention) explore connections between climate change and sound management of chemicals and wastes (UNEP 2016).

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 13:

- Target 13.1: Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries
- Target 13.2: Integrate climate change measures into national policies, strategies and planning.
- Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

GOAL 14: LIFE BELOW WATER

The ocean provides critical regulating and provisioning services that synergistically support most of the Sustainable Development Goals. Securing the ocean can feed and provide livelihoods for people and, at the same time, maintain habitats, protect biodiversity and coastal areas, and regulate climate change

[34] https://www.unenvironment.org/resources/report/global-waste-management-outlook

through its role as a carbon sink. The ocean also receives a growing amount of garbage, sewage, plastic debris, anthropogenic nanoparticles, fertilizers, hazardous chemicals, and oil, all of which endanger marine species and biodiversity, contaminate human food chains, pose risks to the human immune system, reduce fertility, and increase the risks of cancer (Global Sustainable Development Report 2019).

The implementation of the Conventions protects life below water from damage caused by some hazardous chemicals and excessive UV radiation. Besides, it helps to protect aquatic resources, which in turn protect food supplies and the economies of countries and sectors that rely on those resources. For instance, the temperature increase that has been avoided by the Montreal Protocol (through phasing out ozone-depleting substances) prevents the risk of damage to fish, some shellfish, and warm water corals (Montreal Protocol website, 2020).

Large-scale plastics production began in the early 1950s, and by 2015, humans had generated 8.3 billion metric tons of plastics, of which 6.3 billion tons were deposited in landfills or in the natural environment. In 2010 alone, 8 million tons of plastic were dumped into the ocean, threatening the well-being of marine life (Global Sustainable Development Report 2019). Plastic waste may contain various POPs. The leaching out of POPs from plastic particles may have a significant adverse effect on the health of both terrestrial and marine wildlife. Also, plastic debris can also adsorb POPs such as PCBs, DDT, and dioxins which, if ingested, exhibit a wide range of adverse chronic effects in marine organisms. Particularly, the Stockholm Convention controls various POPs which have been used as additives, flame retardants, plasticizers in plastics, or the manufacture of fluoropolymers (Stockholm Convention website, 2020).

The Basel Convention is the only global legally binding instrument to specifically address plastic waste. The new plastic waste entries clarify the scope of control under the Basel Convention, as of January 1, 2021, for other types of plastic waste and mixtures of it, and the specific conditions under which plastic waste is subject to the PIC procedure. Furthermore, through decision BC-14/13 (MAY 2019), the COP welcomed the work of the Stockholm Convention to eliminate or control the production or use of POPs in plastic products that may reduce the presence of such pollutants in plastics waste, thus contributing to reducing the risks associated with marine plastic litter and microplastics at the global level (Basel Convention website, 2020).

It is key to highlight the importance of regulations and voluntary standards and commitments, to enable a circular economy that is safely reusing and recycling materials and avoids exposure of vulnerable populations. SAICM provides some key lessons about Plastics and Chemicals of Concern in Consumer Products (SAICM 2020).

From the examples above, it can be observed the chemicals and wastes related MEAs contributes to achieving the following targets of SDG 14:

- Target 14.1: By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.
- Target 14.2: By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

GOAL 15: LIFE ON LAND

Two of this goal's targets have been evaluated in 2020. The progress analysis at 2020 of the target 15.5 is color red (no progress or moving away from the target). Globally, species extinction risk has worsened by about 10 percent over the last three decades, with the Red List Index declining from 0.82 in 1990 to 0.75 in 2015, and to 0.73 in 2020 (a value of 1 indicates no threat to extinction and a value of 0 indicates all species are extinct) (UN Statistics Division website, 2020).

Chemicals and waste can cause severe environmental degradation and disrupt ecosystems through the contamination of water, soil, air and flora and fauna. Toxic pollution from contaminated sites affects over 200 million people worldwide, with tens of thousands poisoned each year (IOMC 2018).

All chemicals and wastes related MEAs contributes in reducing the degradation of natural habitats by reducing the release of hazardous chemicals and wastes.

Stockholm and Minamata Conventions provide specific guidelines for the management of sites that are contaminated with POPs (Article 6) and mercury (Article 12). Similarly, the Basel Convention has specific guidelines for landfill management, reducing the release of hazardous chemicals to land, air, and subterranean waters, and also restricting access to the sites.

In order to protect life on land, the MEAs work towards reducing the releases of hazardous chemicals to land. For instance, the Montreal Protocol, by phasing out ozone-depleting substances, especially prevents damage of Arctic regions, given that avoids an increase in temperature. Also, a large reduction in plant growth due to uncontrolled ozone depletion would not only compromise forests and other terrestrial ecosystems' services but would also lower the capacity of vegetation to absorb carbon dioxide from the atmosphere. This would reduce the absorption of CO2 produced by human activities, leading to higher concentrations in the atmosphere (Montreal Protocol website, 2020).

One of the functions of the SAICM is to approach emerging policy issues as they arise and promote consensus on priorities for cooperative action. Regarding the impact on the land biodiversity, some chemicals and waste have more impact than other, however, the endocrine-disrupting chemicals and Highly hazardous pesticides may have significant negative global effects, both are on the SAICM agenda (SAICM website, 2020).

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 15:

- Target 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.
- Target 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.

GOAL 16: PEACE, JUSTICE AND STRONG INSTITUTIONS

The 2030 Agenda recognizes the need to build peaceful, just and inclusive societies that provide equal access to justice and that are based on respect for human rights, including the right to development, on

effective rule of law and good governance at all levels and on transparent, effective and accountable institutions (Global Sustainable Development Report 2019).

Basel Convention works towards addressing the lack of coordination at the national level that poses problems not only in the area of enforcement of waste-related legislation, but also for the sound management of chemicals and waste in general. Preventing and detecting illegal traffic of pesticides and hazardous waste requires the expertise of different ministries and agencies. Customs officers cannot combat illegal traffic alone. They have to rely on the relevant national environmental agencies to provide them with the appropriate legal and technical information, equipment, and facilities. Conversely, national environment agencies need the support of customs agencies. The mechanisms for cooperation and information exchange are established under the Basel and Rotteradam Conventions (Basel and Rotterdam Conventions websites 2020).

The chemicals and wastes related MEAs addresses through its channels the human well-being and environmental injustice.

Through theirs strategic and planning documents (National Implementation Plan (NIP) and National Action Plan (NAP)) Parties designates effective, accountable and transparent institutions at all levels to address the complex issues of environmental sound management of chemicals and wastes.

The chemicals and wastes related MEAs encourages and supports the participation of developing countries chemicals and wastes in global governance (e.g. COPs meetings, technical working groups etc.).

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 16:

- Target 16.5: Substantially reduce corruption and bribery in all their forms.
- Target 16.6: Develop effective, accountable and transparent institutions at all levels.
- Target 16.8: Broaden and strengthen the participation of developing countries in the institutions of global governance.

GOAL 17: PARTNERSHIP FOR THE GOALS

At the national level, data are often not shared across Ministries and thus it is difficult to holistically analyze the environment and the interactions between the environment, the economy, and the people. This lack of data sharing is also prevalent at the regional and global levels (Measuring Progress Towards monitoring the environmental dimension of the SDGs Report 2019).

The implementation of the chemicals and wastes related MEAs at a national level can ensure a stronger environmental dimension in all 17 SDGs. The chemicals and wastes related MEAs encourage the inter-ministerial coordinated work and multi-stakeholder participation to strengthen the synergistic implementation.

Given that in developing countries is usually the same small group of people that manage chemical issues and have to attend and support the implementation of the Conventions in that country, one of the biggest contributions, especially from BRS, is the process of synergies, to accomplish better management of time, and of human and financial resources. Also, the MEAs contribute to the institutional strengthening of developing countries for the implementation of the conventions through found mobilization.

As mentioned before, both Stockholm and Basel, establish regional centers to manage projects. Not only this favors the implementations of the conventions, but it also promotes the North-South and South-South cooperation, optimizing time and efforts, and contributing to the coordination between countries in similar situations or with similar difficulties, strengthening their technical capacities.

Another way in which partnerships are built, is with the establishment of agreements of cooperation between the conventions and other organizations which share their target issues and approaches them in a specific way. For example, Decision BC-14/9 cooperation with the world customs organization (WCO) for amending the HCD and Coding System to allow identification of the various types of waste. **Parties are still faced with challenges related to the enforcement of the Basel Convention.** Countries of export and of import face challenges when it comes to detecting illegal traffic of hazardous and other wastes. One of the challenges is to distinguish second-hand goods from waste, which hampers the work of enforcement officers, especially at the stage of screening documents that accompany the shipments and during visual inspections (Basel Convention website, 2020).

In the same line, in the framework of the Basel Convention, there were established partnerships meant to approach specific issues like household waste, regulatory compliance on illegal traffic (ENFORCE), management of mobile phones (MPPI), plastic waste (PWP) and computing equipment (PACE). These global partnerships established by the Conference of the Parties to the Basel Convention mobilize business, government, academic and civil society resources, interests and expertise to improve and promote the environmentally sound management (ESM) of waste at the global, regional and national levels and to prevent and minimize its generation.

As different problems or issues emerge, the conventions establish the creation of ad hoc groups of experts, who come up with different multi-disciplinary approaches to them. This implicates the sharing of knowledge that enables the thorough approach of the issue (considering its environmental, social, economic, technological, health-related aspects).

Also, the Stockholm Convention involves different stakeholders, especially regarding improve persistent organic pollutants (POPs) analytical and monitoring capacity, for example, the Global Monitoring Plan which involves reference laboratories at the global, regional and national level and encourages appropriate research cooperation. On another hand, facilitate work on the identification of POPs-free products and the exchange of information on alternatives and substitutes to POPs. As mentioned, the POPs-free program also seeks to involve industry in the implementation of the Convention and to reduce the use of exemptions.

Since 2005, the Partnership Global Mercury Partnership consists of stakeholders from governments, industry, NGOs, and academia who are dedicated to approaching the mercury issue offering/sharing information and capacity-building.

As previously detailed, SAICM highlighting the importance of multi-stakeholder collaboration, sharing information with all of them, promotes tools to protect health and the environment from the harmful impacts of pollution arising from unsound management of chemicals and waste.

Finally highlight the United Nations Environment Programme (UNEP), through its different divisions, branches, regional offices, and other entities play a vital role in the achievement of the objectives of all MEAs. Since 1972 UNEP is the leading global environmental authority that promotes the coherent

implementation of the environmental dimension of sustainable development within the United Nations system.

From the examples above, it can be observed the chemicals and wastes related MEAs implementation contribute to achieving the following targets of SDG 17:

- Target 17.1: Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection
- Target 17.2: Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of gross national income for official development assistance (ODA/GNI) to developing countries and 0.15 to 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries.
- 17.3: Mobilize additional financial resources for developing countries from multiple sources
- 17.5: Adopt and implement investment promotion regimes for least developed countries
- 17.6: Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism
- Target 17.7: Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed.
- Target 17.8: Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology.
- Target 17.9: Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the Sustainable Development Goals, including through North-South, South-South and triangular cooperation.
- Target 17.14: Enhance policy coherence for sustainable development.
- Target 17.15: Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development.
- Target 17.16: Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries.
- Target 17.17: Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.
- Target 17.18: By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts.

- Target 17.19: By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries.

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Annex 1 – Matrix on mapping linkages between all 17 sustainable development goals (SDGs) and sound management of chemicals and wastes

Table 3. Linkages between chemicals and wastes MEAs and SDG 1

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTION
Goal 1. End poverty in all its forms everywhere	1.2: By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions;	1.2.1 Proportion of population living below the national poverty line, by sex and age. 1.2.2 Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	Subsistence farmers are working towards producing a surplus that they can sell, using the income to buy additional food for their families, but also send their children to school and pay for health care. For producing a surplus, the subsistence farmers use various pesticides, some of them highly hazardous, thus they may fail to comply with quality standards, trade policies and food safety. In this case the implementation of the Stockholm and Rotterdam Convention brings us closer to achieving this goal. When it comes to Stockholm Convention, it is prohibiting and/or restricting some of the highly hazardous pesticides. At the same time, is providing the necessary knowledge and instruments like national implementation plans for promoting simultaneously switching to alternatives to the highly hazardous pesticides and organic agriculture. On the same matter, Rotterdam Convention is promoting shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm. It also, contributes to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties. Recognizing that highly hazardous pesticides (HHPs) cause adverse human health and environmental effects in many countries, particularly in low-income and middle-income countries, the 4th meeting of International Conference on Chemicals Management (ICCM4) supported concerted action to address HHPs. The Inter-Organization Programme for the Sound Management of Chemicals has agreed to

			facilitate collaboration, cooperation and contributions of stakeholders in the implementation of the HHP Strategy. SAICM stakeholders are encouraged to undertake concerted efforts to implement the HHP Strategy at the local, national, regional and international levels, with emphasis on promoting agroecologically based alternatives and strengthening national regulatory capacity to conduct risk assessment and risk management, including the availability of necessary information, mindful of the responsibility of national and multinational enterprises.
	1.3: Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable;	1.3.1 Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work-injury victims and the poor and the vulnerable	Implementation of the Basel, Stockholm and Minamata Conventions play crucial role in protecting the health of this category of population. On one hand the MEAs are regulating different chemicals and wastes present in these sectors and on the other hand are contributing to the process of formalizing these work sectors, contributing to implementing nationally appropriate social protection systems and measures for all. Also, SAICM has implications in addressing this, ICCM3 endorsed the addition to the Global Plan of Action of new activities related to hazardous substances within the life cycle of electrical and electronic products, including the work areas of e-products green design, environmentally sound manufacturing of e-products and awareness-raising for e-products. In addition, ICCM3 agreed to continue to work to identify, compile and create an international set of best practice resources on topics in this area, drawing on existing initiatives and opportunities for collaboration within the Strategic Approach and with other international forums (UNEP, 2020f). The Montreal Protocol is supporting small, medium and large-scale industrial enterprises and their technicians to successfully transition to new technologies that do not deplete the ozone layer.
	1.5: By 2030, build the resilience of the poor and those in vulnerable situations and	1.5.1 Number of deaths, missing persons and directly affected persons attributed to	Chemicals and wastes related MEAs implementation are also contributing to reducing exposure and vulnerability of poor population to climate-related extreme events and other economic, social and environmental shocks and disasters. For example, while regulating certain hazardous chemicals and chemicals depleting the ozone layer, the Stockholm and Minamata Conventions and Montreal Protocol

	reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters;	disasters per 100,000 population 1.5.2 Direct economic loss attributed to disasters in relation to global gross domestic product (GDP) 1.5.3 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030 1.5.4 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies	contribute to the reduction of CO2 emissions and thus, the reduction of the risk for climate-related extreme events and disasters. In case of Stockholm and Minamata Conventions, application of best available techniques (BAT) and best environmental practices (BEP) is being promoted. In a more practical way, both Stockholm and Minamata provide guidelines to develop National Implementation Plans (NIP) and National Action Plan (NAP), which implicates involvement of government sectors and stakeholders, to reduce the exposure to the chemicals related. Local governments have an important role (regarding indicator 1.5.4 "Proportion of local governments that adopt and implement local disaster risk reduction") Minamata Convention conducts assessments of risk for populations in contaminated sites and contribute to any strategies for their management and to the work on health-related aspects of guidance. Regarding disaster risk reduction, the Basel Convention can assist the parties during a chemical emergency, for example a Party to the Basel Convention can request emergency assistance from the Secretariat of the Basel Convention in case of an incident occurring during a transboundary movement of hazardous wastes and other wastes covered by the Basel Convention (BC-Decision V/32.)
	1.a: Ensure significant mobilization of resources from	1.a.1 Total official development assistance grants from all donors that	The financial mechanisms covering the chemicals and wastes related MEAs e.g. Global Environment Facility, Multilateral Fund for the Implementation of the Montreal Protocol, Special Programme, Specific International Programme under Minamata

	a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions;	focus on poverty reduction as a share of the recipient country's gross national income 1.a.2 Proportion of total government spending on essential services (education, health and social protection)	Convention, are promoting within the projects they are financing the end of poverty in all its dimensions.
	1.b: Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-	1.b.1 Pro-poor public social spending	Each of the chemicals and wastes related MEAs advocates for consideration and integration of pro-poor, vulnerable and gender-sensitive dimensions in the MEAs transposition into national policy and regulatory frameworks.

	sensitive development strategies, to support accelerated investment in poverty eradication actions.		

Table 4. Linkages between chemicals and wastes MEAs and SDG 2

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTION
2. End, hunger, achieve food security and improved nutrition and promote sustainable agriculture	2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.	2.1.1 Prevalence of undernourishment 2.1.2 Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)	The Kigali Amendment of the Montreal Protocol is encouraging access to high-energy efficient, ozone-safe cooling systems, improving access to affordable refrigeration which reduces food waste and enables access to food in good conditions (Montreal Protocol website, 2020). Another way to promote more quality food is by reducing its mercury content, the Minamata Convention helps countries decrease the use of mercury and its release into the environment from various sectors, indirectly halting and reducing the build-up of mercury in the food chain. People may be exposed when they eat fish or shellfish contaminated with methylmercury. Methylmercury can pass through the placenta, exposing the developing fetus. Significant amounts of methylmercury eaten over weeks to months have caused damage to the nervous system. Infants born to women who were poisoned with methylmercury had developmental abnormalities (World Health Organization, Mercury and health fact sheet, 2017). As it was mentioned before, a link between malnutrition and increased uptake of heavy metals exists. In regard to the ESM of contaminated sites, the Stockholm

			Convention developed a Toolkit for investigating and managing POPs-contaminated sites (Stockholm Convention website, 2020). Minamata Convention addresses the sites contaminated by mercury as well as interim storage of mercury, and its disposal once it becomes waste, and it provides guidance on the management of contaminated sites (Article 10 and 12).
	2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters	2.4.1 Proportion of agricultural area under productive and sustainable agriculture	Regarding the use of land and agricultural practices that care for soil quality, the examples provided below show that MEAs contribute to reducing the release of the chemicals by environmentally sound management (ESM). Also, they address security food by reducing mercury content and the care of the frozen chain. As mentioned in the description of MEAs in section 3, the Conventions Parties must take measures to eliminate the production and use of the chemicals used for pest control during crop production and storage. SAICM has contributed to the awareness in regard to the use of some pesticides and encourages stakeholders to take action, as mentioned in their contribution to GOAL 1. For example, the Montreal Protocol has phased out methyl bromide (previously used for pest control during crop production and storage). On the other hand, this convention, reducing the UV radiation by the phase-out of ODSs reduces the damage to aquatic ecosystems that are the basis of commercial fisheries, a vital source of food around the world. Another aspect of land care is the management of landfills. There are contaminated sites caused by waste disposal into or onto the land in an uncontrolled way. In the framework of the Basel Convention was develop technical guidelines on incineration on land (D10) and R1, specially engineered landfill (D5), hazardous waste Physico-chemical treatment (D9), and biological treatment (D8). These Guidance Documents explains what is the environmentally sound management (ESM) of hazardous wastes and must be used as a reference document while developing strategies for the management of wastes within a country. These documents have a special legal value since they were not only developed by highly specialized experts from various countries represented at the Technical Working Group but were also later adopted by the Conference of the Parties to the Basel Convention (Basel Convention website, 2020).

	and that progressively improve land and soil quality.		

Table 5. Linkages between chemicals and wastes MEAs and SDG 3

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTION
3. Ensuring healthy lives and promoting well-being at all ages is essential to sustainable development	3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases	3.3.2 Tuberculosis incidence per 100,000 population 3.3.3 Malaria incidence per 1,000 population 3.3.4 Hepatitis B incidence per 100,000 population	For instance, DDT is listed under Stockholm Convention Annex B with an acceptable purpose for disease vector control. DDT continues to be applied against mosquitoes in several countries to control malaria. Its stability, its persistence (as much as 50% can remain in the soil 10-15 years after application), and its widespreaded use have meant that DDT residues can be found everywhere; residual DDT has even been detected in the Arctic (Stockholm Convention website, 2020). Another hand, exposure to UV radiation can reduce the efficacy of vaccines, including those against bacteria (including tuberculosis) and viruses (including hepatitis B virus poliovirus, measles, and influenza) (Montreal Protocol website, 2020).
	3.4 By 2030, reduce by one third premature mortality from	3.4.1 Mortality rate attributed to cardiovascular disease, cancer,	Chemicals (in particular pharmaceuticals) save lives and improve well-being. SMCW has enabled industrial manufacturing in developed economies as well as a growing number of developing economies to safely harness the benefits of chemicals. At the same time, evidence suggests a significant burden of disease from exposure to chemicals (as shown in the WHO's global assessment, updated in May 2016),

	non-communicable diseases through prevention and treatment and promote mental health and well-being.	diabetes or chronic respiratory disease.	particularly associated with some developing countries and certain general uses, suggesting high costs of inaction associated with a large number of deaths and illnesses, for example due to occupational exposure. However, information is still incomplete, and it is therefore necessary to gather additional data, including on the costs of inaction and the burden of disease (UNEP 2016). Pesticide poisoning is a serious health problem that disproportionately affects infants and children. Pesticides are designed to kill, reduce or repel insects, weeds, rodents, fungi, and other organisms that can threaten public health and national economies. However, when improperly used or stored, these chemical agents can also harm humans. Key risks are cancer, birth defects, and damage to the nervous system and the functioning of the endocrine system. People can be exposed to excessive pesticide levels while working; via food, soil, water or air; or by directly ingesting pesticide products. Pesticides are known to cause millions of acute poisoning cases per year, of which at least one million require hospitalization. The number of children involved in such incidents is unknown but, based on the experience of many countries, likely to be large. Between one and three agricultural workers per every 100 worldwide suffer from acute pesticide poisoning, and adolescents are often the victims (Jeyaratnam 1990; Kahn 1976). The contribution of pesticides to chronic diseases, on the other hand, is unknown. The exposure to persistent organic pollutants can lead to serious health effects including certain cancers, birth defects, dysfunctional immune and reproductive systems, greater susceptibility to disease and damages to the central and peripheral nervous systems. In addition, POPs concentrate in living organisms through another process called bioaccumulation. Though not soluble in water, POPs are readily absorbed in fatty tissue, where concentrations can become magnified by up to 70,000 times the background levels. Fish, predatory birds, mammals, and humans are high up the food chain and so absorb the greatest concentrations. When they travel, the POPs travel with them. As a result of these two processes, POPs can be found in people and animals living in regions such as the Arctic, thousands of kilometers from any major POPs source. Specific effects of POPs can include cancer, allergies and hypersensitivity, damage to the central and peripheral nervous systems, reproductive disorders, and disruption of the immune system. Some POPs are also considered to be endocrine

			disrupters, which, by altering the hormonal system, can damage the reproductive and immune systems of exposed individuals as well as their offspring; they can also have developmental and carcinogenic effects (Stockholm Convention website 2020). Countries should establish and implement policies to prevent dumping of hazardous materials and other means of polluting the environment." Parties to BRS Conventions have to manage hazardous chemicals and wastes that may adversely affect the young and future generations, specifically by ensuring their environmentally sound management. This may be achieved by eliminating, restricting, requiring the phase-out, or by exchanging information to enable a more informed decision-making (through the Prior Informed Consent – PIC – Procedure under the Basel or Rotterdam Conventions) as it relates to their production, use, including trade, and disposal. In implementing the BRS Conventions, Parties (States or economic/political regional organizations of States) need to evaluate and address the impacts of these regulated substances on vulnerable population, including children. For instance, under the Rotterdam Convention, the listing of a new chemicals, by amending Annex III, requires the Party to collect various information, including for example a description of incidents relating to chemical and measures taken, or intended to be taken, by the Party in response to such incidents (Annex IV Part 1 (g) and (h)). Since many Parties, especially developing countries and countries with economy in transition have had difficulties in planning monitoring activities, the Secretariat of the BRS Conventions, in cooperation with UNEP and FAO have developed technical assistance tools to help Parties to establish incident reporting systems. For instance, the "Severely Hazardous Pesticide Formulations (SHPF) Kit: Guidance on monitoring and reporting pesticide poisoning incidents related to SHPFs" is intended to help Parties with few resources to identify incidents related to pesticide exposure: "The system may be designed to identify high risk groups or to better understand the risks for vulnerable groups, e.g. children, pregnant women, landless agricultural workers." (Basel, Rotterdam and Stockholm Conventions Secretariat 2016) Under the Stockholm Convention, the Global Monitoring Plan for POPs in accordance with Article 16 on Effectiveness Evaluation was established in 2005, at the second meeting of the Conference of the Parties so as to evaluate the evolution of human body burden of POPs worldwide. Among the indicators used to evaluate human

			exposure to POPs, breast milk is considered one of the best medium of measurements. The 2013 results of the global survey on concentrations of POPs in human milk by UNEP and the World Health Organization (WHO) underlined that: "The risk-benefit assessment of breastfed infants represents one of the most challenging aspects of human toxicology, as possible adverse health effects associated with exposure to POPs concur with significant health benefits of breastfeeding." Based on information from the Second Global Monitoring Report (2015), the use of human milk as a sampling matrix revealed a relatively high but decreasing level of POPs worldwide, notably PCDD/PCDF, PCB, PFOS and HCHs. In absence of definitive conclusions, both documents however highlight that "the uptake of these chemicals by the infant via human milk is of high toxicological relevance." (Basel, Rotterdam and Stockholm Conventions Secretariat 2016) In relation to this, the Montreal Protocol promotes the phase-out of ODSs, reducing the UV radiation. Exposure to high levels of UV radiation leads to an increased risk of skin cancers and cataracts. Cataracts are a very significant threat to health and well-being as they are responsible for around half of the blindness worldwide. On May 30, 2017, the Seventieth World Health Assembly approved a road map to enhance health sector engagement in SAICM. The road map identifies concrete actions where the health sector has either a lead or important supporting role to play in the sound management of chemicals. These actions are organized into four areas: risk reduction; knowledge and evidence; institutional capacity; and, leadership and coordination (SAICM website, 2020). Also, in the context of SAICM, the ICCM adopted at its 2nd, 3rd and 4th meeting resolutions that recognize the policy imperatives to address identified emerging policy issues (Lead in paint, Chemicals in products, Hazardous substance within the life cycle of electrical and electronic products, Nanotechnology and manufactured nanomaterials, Endocrine-disrupting chemicals and Environmentally persistent pharmaceutical pollutants) and other issues of concern (Perfluorinated chemicals and Highly hazardous pesticides) and agreed on the actions needed and requested specific stakeholders to consider undertaking certain actions as to minimize their impact over the human health and environment.

	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.	3.9.1 Mortality rate attributed to household and ambient air pollution 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) 3.9.3 Mortality rate attributed to unintentional poisoning	One of the major goals of the Stockholm Convention is the continuing minimization and, where feasible, ultimate elimination of unintentionally produced POPs listed in Annex C. To reduce the total releases of POPs derived from anthropogenic sources, parties are also required to implement best available techniques (BAT) and best environmental practice (BEP) for the sources listed in Annex C, Parts II and III. In the framework of Stockholm Convention, a toolkit to comparable releases inventories of Annex C chemicals was developed (Stockholm Convention website, 2020). Dioxins are a group of chemically-related compounds that are persistent organic pollutants. Short-term exposure of humans to high levels of dioxins may result in skin lesions, such as chloracne and patchy darkening of the skin, and altered liver function. Long-term exposure is linked to impairment of the immune system, the developing nervous system, the endocrine system and reproductive functions. The developing fetus is most sensitive to dioxin exposure. Newborn, with rapidly developing organ systems, may also be more vulnerable to certain effects. Some people or groups of people may be exposed to higher levels of dioxins because of their diet (such as high consumers of fish in certain parts of the world) or their occupation (such as workers in the pulp and paper industry, in incineration plants, and at hazardous waste sites). Many countries monitor their food supply for dioxins. This has led to early detection of contamination and has often prevented impact on a larger scale. In many instances dioxin contamination is introduced via contaminated animal feed, e.g. incidences of increased dioxin levels in milk or animal feed were traced back to clay, fat or citrus pulp pellets used in the production of the animal feed. Due to the omnipresence of dioxins, all people have background exposure and a certain level of dioxins in the body, leading to the so-called body burden. Current normal background exposure is not expected to affect human health on average. However, due to the high toxic potential of this class of compounds, efforts need to be undertaken to reduce current background exposure. Prevention or reduction of human exposure is best done via source-directed measures, i.e. strict control of industrial processes to reduce formation of dioxins as much as possible (WHO 2016). One of the major goals of the Stockholm Convention is the continuing minimization and, where feasible, ultimate elimination of unintentionally produced POPs listed in Annex C, including dioxins and furans.

			In addition, the Montreal Protocol promotes research and technical innovations, and the development of solar water disinfection (SODIS), a simple technology for destroying pathogens in drinking water. Access to clean water reduces the exposure to infectious diseases and many other critical dimensions of well-being. According to this, Minamata Convention is prominent. In its article 16, the Convention established a strategic plan for implementation of the health-related articles with Mercury. For instance, Annex C of the Minamata Convention aims to formalize the Artisanal and Small-Scale Gold Mining (ASGM) sector by helping miners to access markets for responsible gold and move to mercury-free mining processing. Also, the Minamata Convention prohibits the manufacture, import, and export of mercury-added products listed in Annex A, Part I, in particular: mercury-containing thermometers and sphygmomanometers in health care, mercury skin-lightening cosmetics, and mercury-containing topical antiseptics. The Convention also establishes measures to phase down the use of dental amalgam, listed in Annex A, Part II. All of these measures also help reduce harmful mercury emissions and protect the health and well-being of millions of men, women, and children working in the industry (Minamata Convention website, 2020). The MEAs promotes the integration of appropriate policies, strategies, and measures for minimizing harm to human health and the environment by chemicals and wastes. The exposure to hazardous chemicals (listed in the MEAs) can be either in a domestic or workplace. The MEAs contribute to reducing this exposure by promoting ESM in general, labeling of products, and ESM of stockpiles.

Table 6. Linkages between chemicals and wastes MEAs and SDG 4

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTION
4. Ensure inclusive and	4.3 By 2030, ensure equal	4.3.1 Participation rate of youth and	All the MEAs promote common understanding, public awareness, shared responsibility, and cooperative efforts to the ESM of hazardous chemicals and waste

equitable quality education and promote lifelong learning opportunities for all	access for all women and men to affordable and quality technical, vocational and tertiary education, including university	adults in formal and non-formal education and training in the	to protect human health and environment, facilitate information exchanges and provide technical assistance for the implementation of the Conventions. The MEAs promote that the parties work together. In the framework of the MEAs, North-South research partnerships and transdisciplinary collaboration is a highly effective way of building transformative capacities and concrete applications across countries. For instance, the Montreal Protocol has a strong network of national ozone officers who take the lead in training and outreach activities in developing countries.
	4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights,	4.7.1 Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment	The Stockholm Convention facilitates information exchanges, as described in their article 10: public information, awareness, and education. Minamata Convention, through article 18: public education, awareness, and information, states that each Party shall use existing mechanisms to inform and educate the public or consider new mechanisms. The Minamata Convention favors the prevention of exposure of vulnerable populations through the National Action Plan and the work with WHO (article 16) by developing different infographics and multimedia and promoting knowledge and information sharing (WHO website, 2020). The Basel Convention brings ESM training and awareness-raising activities and develops e-courses to the Parties on several matters, for example, the E-waste Challenge Massive Open Online Course. Stockholm Convention and Minamata Convention develop courses to explain the use of a toolkit to calculate the emission and release of POPs listed on annex C and mercury. More educated households are more likely to have modern electrification and other cleaner energy sources, so women and children are less exposed to indoor air pollution (Global Sustainable Development Report 2019). More educated families uptake Sustainable Lifestyles. In relation to this, SAICM designed a lot of infographics and reports which contribute to the sustainable development and linkage with other organizations like "The One Planet network" which has formed to implement the 10-Year Framework of Programmes on Sustainable Consumption and Production, which

	gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development		supports the global shift to SCP and the achievement of SDG 12. One of the Programmes is "The Sustainable Lifestyles and Education Programme", which aims to foster the uptake of sustainable lifestyles as the common norm (one planet network website, 2020). Article 10 (1) (c) of the Stockholm Convention creates an obligation for the States to promote and facilitate, within its capabilities: "Development and implementation, especially for women, children and the least educated, of educational and public awareness programmes on persistent organic pollutants, as well as on their health and environmental effects and on their alternatives". The Secretariat developed educational materials on POPs for schools "Ridding the world of POPs: A guide to the Stockholm Convention on POPs" to communicate on hazards specifically to children (Basel, Rotterdam and Stockholm Conventions Secretariat 2016). As highlighted by Mr. Baskut Tuncak in his statement during the 2015 meetings of the Basel, Rotterdam and Stockholm Conventions' COPs: "The Rotterdam Convention (…) is rooted in the recognition of (...) the human right to access information. Information about hazardous substances is not a privilege of countries with the greatest means; but, rather a right to which all people and peoples are entitled, including those in countries without adequate resources to assess and manage hazardous substances" Nevertheless, article 15 (2) of the Convention provides: "Each Party shall ensure, to the extent practicable, 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." (Basel, Rotterdam and Stockholm Conventions Secretariat 2016). Whereas the Basel and the Rotterdam Conventions implicitly refer to children's right to participation, Article 7 (2) of the Stockholm Convention more specifically provides: "The Parties shall, where appropriate, cooperate directly or through global, regional and subregional organizations, and consult their national stakeholders, including women's groups and groups involved in the health of children, in order to facilitate the development, implementation and updating of their implementation plans." The Basel, Rotterdam and Stockholm Conventions' COPs encourage the Secretariat to further collaborate with NGOs as well as with the private sector, for instance through

			partnerships (see PACE regarding electronic wastes) (Basel, Rotterdam and Stockholm Conventions Secretariat 2016). Also, for the tenth anniversary of the adoption of the Stockholm Convention in 2011, the Secretariat called for NGOs and other stakeholders to share success stories on how the Stockholm Convention triggered positive changes in chemical management and/or sustainable development. The stories received were compiled; chapter 3 of the publication focuses on Health Benefits for Children, Women and Workers. Among them, several contests and exhibitions were organized and held in Yerevan, Armenia, such as "Children against POPs", "Children against Hazards", including amateur theatrical performances, drawings, poems, songs and tales. The Secretariat of the Basel, Rotterdam and Stockholm Conventions endeavors to value children's skills. In this respect, it called for a national, drawing, photography and short film contest on the theme "Chemical Challenges, Sustainable Solutions", divided in three categories of age (5 to 10, 11 to 15 and 16 to 20 years old): 160 submissions from 18 countries were received in total, and a selection of the best entries was presented at the Rio +20 Conference on Sustainable Development, at the Palais des Nations in Geneva, and by three of the Basel and Stockholm Conventions regional centres. They are still used, for example, to illustrate Stockholm Convention posters, publications, T-shirts and other awareness-raising products (Basel, Rotterdam and Stockholm Conventions Secretariat 2016). In the framework of the MEAs, North-South research partnerships and transdisciplinary collaboration is a highly effective way of building transformative capacities and concrete applications across countries. For instance, the Montreal Protocol has a strong network of national ozone officers who take the lead in training and outreach activities in developing countries. The Secretariat of the Basel, Rotterdam, and Stockholm Conventions (BRS), together with its partners the European Institute for Innovation and Technology's Climate Knowledge and Innovation Community (Climate-KIC), the European Institute for Innovation and Technology's RawMaterials Knowledge and Innovation Community (RawMaterials-KIC), the International Telecommunication Union, KU Leuven and the World Resources Forum, launched in February 2020 an updated Massive Open Online Course, or MOOC, on the electronic and electrical waste - or e-waste - challenge, also

			with contributions from the World Health Organization. The course guides through the problem, to opportunities, and to possible actions at local, national and regional levels, and will introduce you to policy tools, standards and best practices for the collection, recycling, and final disposal of e-waste (Basel Convention website 2020). The Secretariat of the Rotterdam Convention has developed the Interactive Training on the Operation of the Rotterdam Convention (ITORC) with the goal of providing technical training to Designated National Authorities (DNA) and other interested stakeholders for the implementation of the Convention. For each of the four key operational elements of the Rotterdam Convention a training course has been designed including an overview of the obligations and operational procedure of the Convention, an introduction to the standard forms to be completed and submitted by the DNA, and in-depth discussions on specific issues. Each course contains a case study that aims to provide practical experience in the implementation of the individual operational procedures (Rotterdam Convention website 2020). The Stockholm Convention facilitates information exchanges, as described in its Article 10: public information, awareness, and education. At its third meeting, the Conference of the Parties to the Stockholm Convention in its Decision SC-3/7 requested the Secretariat, in cooperation with the Secretariat of the Basel Convention, to undertake, within available resources, training and other capacity-building activities to assist developing countries and countries with economies in transition in implementing the Technical guidelines for the Environmentally Sound Management of POPs wastes. In answer to this request, the Secretariat of the Stockholm Convention has developed the interactive Stockholm Convention Training Tool on the Technical Guidelines for the Environmentally Sound Management (ESM) of Persistent Organic Pollutants (POPs) wastes. This electronic Training Tool provides information on the technical guidelines on POPs wastes in a simple and interactive manner. The target audience are persons involved in the management of POPs wastes that already have a basic knowledge on the subject. These include handlers of hazardous chemical waste, treatment and destruction industries, owners of POPs wastes, relevant Government regulators and trainers on hazardous waste management (Stockholm Convention website 2020).

			Minamata Convention, through its Article 18: public education, awareness, and information, states that each Party shall use existing mechanisms to inform and educate the public or consider new mechanisms. The Minamata Convention features an online introductory course on the Minamata Convention on Mercury. The course provides information on the environmental challenges posed by mercury pollution, highlights the urgency of effective global action and gives an overview of the Convention's key operational articles. The final section of the course focuses on institutional arrangements and the overall implementation of the Convention. Also, as part of the ongoing efforts for building national capacity, UN Environment Programme and UNITAR collaborate on an online training platform: MercuryLearn (currently in English and Spanish). The main component of the platform is the UNEP Toolkit for Identification and Quantification of Mercury Releases, which provides interactive modules to assist in the development of mercury inventories. The platform also provides links to awareness-raising materials and other tools (Minamata Convention website 2020).

Table 7. Linkages between chemicals and wastes MEAs and SDG 5

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTION
5. Achieve gender equality and empower all women and girls	5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making in political,	5.5.1 Proportion of seats held by women in (a) national parliaments and (b) local governments 5.5.2 Proportion of women in managerial positions	Gender issues related to the implementation of the conventions have been discussed and taken into account by the Conferences of the Parties to the Basel, Rotterdam, and Stockholm Conventions, particularly the impact of poor management of hazardous chemicals and wastes on vulnerable groups such as women and young children. The BRS Gender Action Plan (BRS-GAP) was concluded in December 2013 and includes a vision, a list of expected short, medium, and long-term goals, and monitoring and reporting plans. The vision of the BRS-GAP aims to ensure that principles of gender equality are firmly embedded in activities undertaken by the BRS Secretariat (BRS synergies website, 2020). As mentioned, the SDG 5 has a specific section on the BRS website but on the other MEAs' webpages, there is no significant mention.

	economic and public life.		In general, women play a much larger role in Artisanal and Small-Scale Gold Mining (ASGM) communities than in large-scale mining and in both sectors, they are critical to community stability and growth. A study completed in 2003 reported that among the more than 20 million ASGM and small-scale active miners, the proportion of women was estimated at 30 percent (Hinton et al., 2003). Their involvement is often invisible as they are usually found in the household; therefore, there may be a significant discrepancy between the estimated and actual numbers of women involved in the ASGM. Because women are involved in processing and waste disposal, they are exposed to harmful chemicals, with severe consequences for family well-being and health, including pregnancy. The risk of exposure during pregnancy, and consequently, exposure of the fetus to mercury is also of significant risk within ASGM communities. The Minamata Convention addresses this issue through the Assessment Toolkit ASGM. (UNEP, global mercury partnership website, 2020) Regarding the Gender approach, SAICM has a specific publication (Gender Review Mapping with a Focus on Women and Chemicals) about how sex and gender are highly influential in an individual's physiological susceptibility to chemicals. The varying roles of men and women in the workplace and at home help determine the respective vulnerabilities to chemical exposure. The report also provides concrete steps that can be taken to safeguard the health of women and empower women in decision-making and in their roles as agents of change (SAICM website, 2020). Currently in the Strategic Approach, the inclusion of women is highlighted as an important aspect through direct mention once in the Dubai Declaration, five times in the Overarching Policy Strategy, and twice in the Global Plan of Action. Women are referenced in both their biological roles and social roles as key populations that need equal participation and specific risk prevention measures (SAICM 2017). All of the emerging policy issues and other issues of concern under SAICM have susceptibility and exposure considerations related to gender (SAICM 2017, SAICM 2018). **Lead**, a widely used toxic metal, contaminates the environment and causes extensive public health problems. Children are particularly vulnerable, and the exposure of pregnant women to high levels of lead may cause miscarriage, stillbirth, premature birth, and minor malformations. A large number of women in South Asia,

			East Asia, and sub-Saharan Africa work in agriculture and related tasks such as washing pesticide containers and thinning crops exposed to pesticides. The resulting exposure calls for the regulation of the use of **highly hazardous pesticides**. The **CiP Programme** promotes information transparency in supply chains, and focuses on textiles, toys, electronics and building materials. The manufacture of **electrical and electronic products** relies on the use of over 1,000 chemicals, many of which lack comprehensive health and safety information due to weak regulatory policies. As the electronics industry has grown, women in Latin America and Asia have become the primary source of labour, and are now exposed to high levels of toxins such as lead and chromium. **Endocrine-disrupting chemicals (EDCs)** affect the hormone systems of men, women and children. The International Federation of Gynecology and Obstetrics notes that the global rise in non-communicable diseases, as well as the increase in preterm births, low-birth-weight babies, and the early onset of breast development can be partially attributed to EDCs. The sources of pharmaceutical pollution include drug manufacturing, human excretion, disposal from homes and hospitals, and wastewater from large-scale livestock operations. Gender-specific effects of **Environmentally persistent pharmaceutical pollutants (EPPPs)** remain largely unknown due to the limited methods to measure such a widespread phenomenon. Perfluorinated chemicals (PFCs) have become extensively used in both industrial and consumer products to make them resistant to stains, water, grease, or heat. Studies have shown that high levels of PFCs can be highly toxic, and animal tests have found PFCs to be potentially carcinogenic in the reproductive and fetal development stages, although these effects on humans remain inconclusive (SAICM 2018). In May 2018, the Multilateral Fund secretariat prepared a report to the Executive Committee on a desk study for the evaluation of gender mainstreaming in the Montreal Protocol projects and policies. The objective of the study was to “take stock of efforts to include gender mainstreaming into the activities and projects related to the implementation of the Montreal Protocol, to explore a more systematic approach to include gender mainstreaming in the relate policies and projects.” It looked at how the gender policies of the individual implementing agencies were considered in the Multilateral Fund activities. It also considered gender representation at the country

			level. At the country level, the report also described responses provided by 32 National Ozone Units (out of a total of 126 who were invited) to a questionnaire related to the desk study, which indicate varying degrees of involvement of women in project development and implementation, including decision-making. Access to capacity building was in most cases regarded as equal for men and women, although in practice participation was more skewed towards men. The report noted that women are more commonly represented "as customs officers, importers and brokers" and in small family-run refrigeration businesses. Women are also frequently decision-makers on purchases of household appliances and the end-users of those appliances (Ozone Secretariat 2019).

Table 8. Linkages between chemicals and wastes MEAs and SDG 6

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTION
6. Ensure availability and sustainable management of water and sanitation for all	6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater	6.3.1 Proportion of domestic and industrial wastewater flows safely treated 6.3.2 Proportion of bodies of water with good ambient water quality	As it was already mentioned, many drinking water sources are contaminated due to bad management of chemicals and waste. MEAs help to reduce their introduction into the environment. Stockholm Convention encouraged Parties and others to undertake additional research on the development and use of alternatives to industrial chemicals e.g. PFOS, its salts and PFOSF, including monitoring activities related to sulfluramid, PFOS and other relevant degradation products in the different environmental media (e.g., soil, groundwater, surface water) on application sites. Rotterdam Convention contribute to the environmentally sound use of hazardous chemicals (pesticides and industrial chemicals), by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties. Basel Convention pursue the prevention and minimization of hazardous waste and other waste generation at source, especially through supporting and promoting activities designed to reduce at the national level the generation and hazard potential of hazardous and other wastes.

	and substantially increasing recycling and safe reuse globally		Reduced chemicals' levels in environmental media is achieved through the implementation of several actions promoted by MEAs, like the prohibition of some chemicals' use, the introduction of environmentally sound management (ESM) in industries and other activities as waste management and guidance application related to best available techniques (BAT) and best environmental practices (BEP). Also, SAICM promotes knowledge and information sharing with different stakeholders, encouraging them to take individual and collective action for the care of water. Additionally, the Montreal Protocol promotes research and technical innovations, such as the development of solar water disinfection (SODIS), a simple technology for destroying pathogens in drinking water (Montreal protocol website, 2020). As to landfills, their operation is the weakest point in the process of solid waste management, spreading contaminants that have a direct impact on water sources, air quality, and even on local populations living in nearby areas. The Basel Convention promotes the prevention and minimization of hazardous waste and other waste generation at the source. In the framework of the Convention, technical guidelines are developed on incineration on land (D10) and on specially engineered landfill (D5). On another hand, mercury releases to air, water, and land from artisanal and small-scale gold mining (ASGM) are estimated to be over 2000 tons each year. It is the sector demanding the largest quantity of mercury, with virtually all the mercury used released to the environment. The sector produces about 12 to 15% of the world's gold. An estimated 10 to 15 million miners, including 4 to 5 million women and children, are involved in the sector (Global mercury partnership website, 2020). Miners in the process of extraction of gold use water and release it into the rivers without any treatment. The promotion of better practices and substitution of methods without mercury reduce its levels in the environment. Development of National Action Plans (NAPs) for artisanal and small-scale gold mining (ASGM) is a requirement under the Minamata Convention on Mercury (article 7). These plans include the aims to formalize the ASGM sector, which has global and local benefits, reduces mercury emissions, mercury pollution of water sources, and damage to ecosystems.
	6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	6.5.1 Degree of integrated water resources management 6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation	

Table 9. Linkages between chemicals and wastes MEAs and SDG 7

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTION
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	7.1.1 Proportion of population with access to electricity 7.1.2 Proportion of population with primary reliance on clean fuels and technology	The contribution of the MEAs to this goal is related to the use of cleaner technologies with greater energy efficiency. Also, it promotes the use of the calorific energy of the waste. Some examples explain below. The Stockholm Convention aims at removing from use of PCBs containing electrical equipment e.g. transformers and capacitors by 2025, by replacing it with PCB-free equipment, and final dispose it by 2028. Moreover, through the BAT/BEP guidance documents Stockholm Convention is promoting the implementation of measures addressing both POPs reduction and enhanced energy-efficient processes. The Montreal Protocol continues to bring opportunities to enhance energy efficiency. The Kigali Amendment to the Protocol is not only encouraging a shift towards low global warming coolants, it is also stimulating improved energy efficiency in the refrigeration, air-conditioning and heat pump sectors (Montreal Protocol website, 2020).
	7.3 By 2030, double the global rate of improvement in energy efficiency	7.3.1 Energy intensity measured in terms of primary energy and GDP	
	7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems	Minamata Convention in the Article 8 concerns controlling and, where feasible, reducing, emissions of mercury and mercury compounds, often expressed as “total mercury”, to the atmosphere through measures to control emissions from the point sources falling within the source categories listed in Annex D (List of point sources of emissions of mercury and mercury compounds to the atmosphere Point source category, for example Coal-fired power plants and Cement clinker production facilities). Through guidance related to best available techniques (BAT) and best environmental practices (BEP), it promotes processes and technologies to reduce mercury releases and increase efficiency and, most importantly, in adopting clean energy solutions (Minamata Convention website, 2020).

	renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology		Concrete is the most produced material in the world at 4.2 billion tons per year, with most of the demand for construction projects in fast-growing and emerging economies. The high volume of production makes the global cement industry one of the largest producers of CO2, accounting for five to ten per cent of global emissions (Global Sustainable Development Report 2019). Regarding the concrete industry the Basel Convention develop technical Guidelines on Environmentally Sound Co-processing of Hazardous Waste in Cement Kilns. Besides, develop technical guidelines on incineration on land (D10) should be extended to also address incineration as covered by the operation "use as a fuel (other than in direct incineration) or other means to generate energy" (R1) (Basel Convention website, 2020).

Table 10. Linkages between chemicals and wastes MEAs and SDG 8

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTION
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment	8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the	8.1.1 Annual growth rate of real GDP per capita	The implementation of MEAs is linked to this goal because it promotes BAT&BEP and the ESM of chemicals and waste, improving jobs using modern cleaner production. Since 2002 the Basel Convention addresses e-waste issues, promoting environmentally sound management, the prevention of illegal traffic to developing countries, and building capacity around the globe to better management of e-waste, increasing the technical capacity of recyclers, and safe job. Specific guidelines have been developed to help formalize the sector by validating the recycling process, certifying the work done, and favoring market credibility. Another contribution to recycling jobs from the Basel Convention is the addressment of the household waste issue, which may contain hazardous waste co-mingled with non-hazardous waste, by

and decent work for all	least developed countries		providing guidelines and technical assistance. Household waste is classified as requiring special consideration (Basel Convention, Annex II, Y46). As it was previously described, the Minamata Convention through National Action Plan (NAP) contributes to formalizing the Artisanal and Small-Scale Gold Mining (ASGM) sector and develop decent jobs for the mining community. In addition, the Convention bans new primary mercury mining and sets a 15-year period (2017-2032) to end existing primary mercury mining. Minamata Convention promotes the environmentally sound management (ESM) of mercury from various land-based activities, caring for the workers' health, preventing mercury from entering water sources, and reducing the build-up of mercury in the food chain. In article 5, a deadline is set for some industrial processes using mercury or mercury compounds so that they become mercury-free technology. Regarding refrigeration services, the Funding provided by the Protocol's Multilateral Fund has facilitated that transition to greener technologies in developing countries, and by supporting training has helped create a safe and secure working environment for all workers (highly trained workforce and improved health and safety). In 2012 almost 80,000 refrigeration service technicians had been trained by MLF-supported projects. New opportunities have often benefitted small and medium-sized enterprises. In other cases, technology transfer supported by the MLF has enabled developing countries to retain their national manufacturing capacity, so saving local jobs (Montreal Protocol website, 2020). Concerning the jobs in the industry, the agreements promote better safety conditions and the elimination of hazardous chemicals. SAICM establishes the approach to the life cycle of chemicals, spreading the knowledge between different actors for more responsible use of them.
	8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors	8.2.1 Annual growth rate of real GDP per employed person	
	8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises,	8.3.1 Proportion of informal employment in total employment, by sector and sex	

	including through access to financial services		
	8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead	8.4.1 Material footprint, material footprint per capita, and material footprint per GDP 8.4.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP	
	8.5 By 2030, achieve full and productive employment and decent work for all women and	8.5.1 Average hourly earnings of employees, by sex, age, occupation and	

	men, including for young people and persons with disabilities, and equal pay for work of equal value	persons with disabilities 8.5.2 Unemployment rate, by sex, age and persons with disabilities	
	8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment	8.8.1 Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status 8.8.2 Level of national compliance with labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by	

		sex and migrant status	

Table 11. Linkages between chemicals and wastes MEAs and SDG 9

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTION
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.	9.4.1 CO2 emission per unit of value added	Both Best Available Techniques and Best Environmental Practices (BAT&BEP) form Stockholm and Minamata Convention and, Environmentally Sound Management (ESM) Technical Guidelines from Basel Convention for the industry help reducing the release of contaminants and CO2 into the environment. In addition, promoting the formalization of Artisanal and Small-Scale Gold Mining (ASGM), helps adopt clean and environmentally sound technologies.

	9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.	9.5.1 Research and development expenditure as a proportion of GDP. 9.5.2 Researchers (in full-time equivalent) per million inhabitants.	The MEAs provisions technical assistance, technology transfer, and financial resources designed to support the successful implementation of the Conventions in developing countries and countries with economies in transition. In this context, implementation of the Basel Convention has established regional or sub-regional centers for training and technology transfers regarding the management of hazardous wastes and other wastes and the minimization of their generation to cater to the specific needs of different regions and subregions (Article 14). In the same line, the Stockholm Convention has established a network of 16 regional and sub regional centers to provide technical assistance and to promote the transfer of technology to developing country parties and parties with economies in transition relating to the implementation of their obligations under the Convention. Also, Stockholm Convention request Parties, within their capabilities, encourage and/or undertake appropriate research, development, monitoring and cooperation pertaining to persistent organic pollutants and, where relevant, to their alternatives and to candidate persistent organic pollutants at the national and international levels (Article 11). In order to assist developing country Parties and Parties with economies in transition in meeting their obligations under the Stockholm Convention, the POPs-free programme was initiated in 2010 to facilitate work on the identification of POPs-free products and the exchange of information on alternatives and substitutes to POPs. The programme also seeks to involve industry into the implementation of the Convention and to reduce the use of exemptions. A project[35] initiated in 2010 under the programme sought to engage with companies and test products to verify the absence of POPs in products such as furniture, clothing, computer, electronics and plastics. Of the 50 companies contacted, 20 manufacturers and retailers responded positively to the project. Two entities have agreed on a voluntary basis to test products through a

[35] Available at http://chm.pops.int/Implementation/POPsinarticles/PilotProject/tabid/2440/Default.aspx

			laboratory hosted by the Environment Agency of Austria (Stockholm Convention website 2020).
	9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States.	9.a.1 Total official international support (official development assistance plus other official flows) to infrastructure.	Other examples of the promoted innovations aimed at sustainable development in the framework of the Montreal Protocol has stimulated the establishment of innovative infrastructure for (Montreal protocol website, 2020): • the rapid development and deployment of innovative products and technologies across many industrial sectors to be possible the phase-out of ODSs • recovering and recycling refrigerants. • innovation in sun-protection technologies, public health information, and mobile phone apps that allow UV index. • investment by the pharmaceutical industry in Ozone-safe and clime alternatives have replaced aerosols (this includes medical inhalers used for asthma and other lung diseases)
	9.b Support domestic technology development,	9.b.1 Proportion of medium and high-tech industry value	As it was previously mentioned, the Minamata Convention (Article 5) established the phase-out of the industrial processes which use mercury. For the transition process, there are available for Parties mercury-free alternatives that are technically and

	research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities.	added in total value added.	economically feasible taking into account the environmental and health risks and benefits.
	9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020	9.c.1 Proportion of population covered by a mobile network, by technology	Regarding SAICM, it promotes the "Life Cycle Assessment Tools" that cover all stages of the product life cycle. Also, it promotes Eco-innovation and supports the integration of sustainability in companies' business strategies and enhances circularity by looking at the full value chain and all relevant partners. Significantly, the Eco-design of tech products favors the recycling and production of second-hand equipment. Basel Convention offers certification schemes that validate the recycling process. Consequently, this also contributes to the universal and affordable access to technologies. The Montreal Protocol promotes technologies to phase-out the Halons of fire protection systems without compromising the rapid development of infrastructure such as data and server centers required for the global expansion of information and communications technology.

Table 12. Linkages between chemicals and wastes MEAs and SDG 10

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTIONS
10. Reduce inequality within and among countries	10.6 Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions	10.6.1 Proportion of members and voting rights of developing countries in international organizations	In order to contribute to reducing inequality, the MEAs provide technical assistance, technology transfer, and mobilize resources to support the successful implementation of the Conventions especially in developing countries and countries with economies in transition. For example, the MEAs contribute to the mobilization of resources for developing countries, in order to facilitate their participation in training activities or the Conference of the Parties. Also, lots of documents are available in different languages to promote knowledge sharing. In the same line, SAICM promotes access to knowledge and information to implement risk reduction. MEAs promote equality by striving to achieve geographical and gender balance in their activities, from exchange and discussion groups to global decision-making instances. For example, there are 14 members in the Executive Committee of the Multilateral Fund of the Montreal Protocol, all from different countries. 7 of them are from Article 5 countries (developing countries): two members from Africa, two from Asia and the Pacific, and two from Latin America and the Caribbean. One additional member rotates between these regions, including the region of Eastern Europe and Central Asia. Additionally, the Montreal Protocol protects all countries from the damaging effects of ozone depletion. Article 5 parties are committed to controlling ODSs gradually and over a longer timescale than developed countries. At the same time, they have received financial and technical support for implementation controls on ozone-depleting substances and HFCs. Considering financial matters, to favor capacity building activities, the Basel and Stockholm regional centers have formulated projects which keep in mind developing countries' needs in relation to waste and chemicals management to the Conventions implementation. Equitable access to chemicals training through Electronic Distance Learning, possibilities a professional from a developing country be trained in a specific skill which they need. One of Quick Start Programme (QSP) projects developed a ground-breaking electronic distance learning tool (eDLT) at the Chulbahorn Research
	10.a Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with	10.a.1 Proportion of tariff lines applied to imports from least developed countries and developing countries with zero-tariff.	

	World Trade Organization agreements.		Institute (CRI) in Thailand. Since its launch in 2014, it has broadened the accessibility of training in risk assessment. The QSP includes a voluntary, time-limited trust fund for the implementation of SAICM objectives (SAICM website, 2020).
	10.b Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes.	10.b.1 Total resource flows for development, by recipient and donor countries and type of flow (e.g. official development assistance, foreign direct investment and other flows)	

Table 13. Linkages between chemicals and wastes MEAs and SDG 11

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTIONS
11. Make cities and human settlements inclusive, safe, resilient and sustainable	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	11.6.1 Percentage of urban solid waste regularly collected and with adequate final discharge with regard to the total waste generated by the city. 11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted).	In the same line, Rotterdam and Stockholm Conventions eliminate/reduce a long list of chemicals that have adverse impacts on health. Stockholm Convention's role in regulating plastic additives is crucial because the volume of plastic-waste production could grow from 260 million tons per year in 2016 to 460 million tons by 2030. Nearly half of that comes from packaging materials (Global Sustainable Development Report 2019). Also, it promotes the continuing minimization and, where feasible, ultimate elimination of unintentionally produced POPs listed in Annex C which affect especially air quality.
	11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards	11.b.1 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk	The MEAs could collaborate to approaching the challenges by ensuring access to waste management for more people living in cities. In a different way, the MEAs assist parties in fulfilling their obligations and the environmental sound management to prevent contamination, given that it is better to prevent than to treat/remediate/recuperate. Previously, the waste issue, the tools, legal instruments, and technical guides through which the Basel Convention supports the parties were described. Especially, about household waste (because of the potential for contamination with hazardous substances), e-waste, and plastic waste. In regards to mechanisms to prevent the generation of waste, SAICM promotes eco-design, and the Minamata Convention in, Article 4, established that after 2020,

	inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels	Reduction 2015–2030 11.b.2 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies	manufacture, import, and export of products containing mercury would be prohibited. The Convention listed these products in part I Annex A. Some of these products are batteries, lamps, thermometers, and cosmetics, among others. Also, Minamata Convention assists the parties with Guidelines on the environmentally sound interim storage of mercury other than waste mercury (Minamata Convention website, 2020). The transparency of information about chemicals in global supply chains has been an emerging policy issue for the Strategic Approach to International Chemicals Management (SAICM) since 2009, leading to programmes such as the UNEP Chemicals in Products (CiP) Programme. The CiP programme focuses specifically on the textiles, toys, elec- tronics and building materials sectors. Information exchange in the value chain is key in identifying and addressing any chemicals of concern1 in products. Brands and retailers frequently lack crucial knowledge about the properties and risks of chemicals used to manu- facture products or are direct ingredients of the products. They are not fully aware of whether harmful chemicals are contained in the finished products they sell. Beyond the supply chain, consumers are asking for more user-friendly, easily accessible and appropriate information on chemicals throughout the chemicals' life-cycle. To safely manage chemicals of concern, it is necessary to identify during which life-cycle stage (e.g., production, product use, disposal) hazardous chemicals in products can result in adverse human health and environmental impacts, and target solutions adopting a life-cycle approach (SAICM 2019).
	11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient	No suitable replacement indicator was proposed. The global statistical community is encouraged to work to develop an indicator that could be proposed for	On another hand, the ozone layer protects construction materials from damage caused by too much UV radiation. By protecting the ozone layer, the Montreal Protocol prevents damage to plastics and wood. It also supports the development of safe, sustainable, and affordable refrigeration and air-conditioning that are increasingly required in our cities.

	buildings utilizing local materials	the 2025 comprehensive review. See E/CN.3/2020/2, paragraph 23	

Table 14. Linkages between chemicals and wastes MEAs and SDG 12

GOAL	TARGET	INDICATOR	MEAs
12. Ensure sustainable consumption and production patterns	12.2 By 2030, achieve the sustainable management and efficient use of natural resources	12.2.1 Material footprint, material footprint per capita, and material footprint per GDP	Regarding the sustainable management and efficient use of natural resources, the Minamata Convention, in Article 3, bans new mercury mining open and sets a 15-year period to end existing primary mercury mining. In the same line, the Basel Convention provides technical guidelines to recycle e-waste among others which contribute to the reduction of metal extraction for the production of electronics equipment. In relation to the recycling of e-waste, SAICM promotes the Life Cycle approach and Eco-design. Also, SAICM develops specific reports about each of the topics of Goal 12 and organizes dissemination meetings to approach them with all stakeholders. This allows a common understanding to take global actions.

	12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses	12.3.1 (a) Food loss index and (b) food waste index	On another hand, currently, food loss is about 30 percent of the food produced every year. The Kigali Amendment of the Montreal Protocol is encouraging access to high-energy efficient, ozone-safe cooling systems that help to reduce food waste.
	12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment	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 12.4.2 (a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment	Almost all countries are party to at least one international environmental agreement on hazardous wastes and other chemicals. International frameworks to achieve environmentally sound management of hazardous wastes, chemicals and persistent organic pollutants have been established by the Basel, Rotterdam and Stockholm Conventions. With six exceptions, all Member States of the United Nations are party to at least one of these conventions. Becoming a party to these international agreements brings certain obligations (UN Statistics Division website 2020). Through the commitments taken following the ratification/accession to the Basel, Rotterdam and Stockholm Conventions, Parties need to comply with the reporting requirements thus contributing to measuring the SDG 12 achievement through SDG indicator 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. Chemicals and wastes related MEAs are promoting solutions to move away from an approach focused on dealing with chemicals and waste problems once they have reached the market (post-market solutions) and more systematically stimulate pre-market solutions (at the design
	12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	12.5.1 National recycling rate, tons of material recycled	

	12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle	12.6.1 Number of companies publishing sustainability reports	phase and across the entire production cycle). It also promoting taking actions in changing consumers' behaviour, including through incentive structures towards sound management of chemicals and wastes, in particular by minimizing waste generation and reducing the demand for products containing toxic chemicals. When it comes to the consumer side, the MEAs work towardnew production schemes based on a life cycle to enable identification of sustainable solutions, which may include higher efficiency in use, use of alternative chemicals or the elimination of hazardous chemicals. SAICM is promoting the disclosure of the chemicals used by industry, including, but not limited to the chemicals used in articles, as lack of information about chemicals in products is an obstacle to consumer choices and the sustainable recycling of product materials. The global chemical sector is a major economic factor, and a key enabler for achieving sustainable development. Chemicals and waste in the context of SDG 12 on Sustainable Consumption and Production Patterns is about ensuring healthy lives and a healthy planet well into the future. Sustainable Consumption and Production requires a systematic approach throughout the life cycle of chemicals and cooperation across actors and sectors throughout the supply chain, from producers to final consumers. Target 12.4 in particular is set for achievement by 2020, which is aligned with the overall SAICM objective (SAICM website 2020).
	12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature	12.8.1 Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment	
	12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production	12.a.1 Installed renewable energy-generating capacity in developing countries (in watts per capita)	

Table 15. Linkages between chemicals and wastes MEAs and SDG 13

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTIONS
13. Take urgent action to combat climate change and its impacts	13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries	13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population 13.1.2 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030 13.1.3 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies	Given the global feature of the climate change issue, it involves many and different sectors and implicates a large number of activities that go from domestic habits to industrial practices. MEAs and SAICM can contribute to the transversal approach to this issue. The Montreal Protocol has already made a large contribution to protecting the climate by phasing-out ozone-depleting substances (ODS), such as chlorofluorocarbons (CFCs), which are also very potent greenhouse gases. The reduction in ODS emissions is already equivalent to around 135 billion tons of CO2. For example, in terms of global warming, one kilogram of CFC-12 is the equivalent of more 10,000 kilograms (ten tons) of carbon dioxide. HFCs pose no threat to the ozone layer but some are powerful greenhouse gases (HFC-143a is more than 5,000 times more powerful than carbon dioxide). Looking to the future, modeling studies suggest that by controlling ODS emissions and also the HFCs through the Kigali Amendment to the Montreal Protocol will have prevented temperature increases of 4-6°C at the poles and over 2°C in the tropics by 2070 (Montreal Protocol website, 2020). In the examples mentioned in goal 1 (above in this section report), it was explained how MEAS contribute to the development of strategies to cope with disasters. By increasing the ambient temperature, the probability of fires increases, so the implementation of environmentally sound management of the stockpiles takes more relevance.
	13.2 Integrate climate change measures into national policies, strategies and planning	13.2.1 Number of countries with nationally determined contributions, long-term strategies, national adaptation plans, strategies as reported in adaptation	As previously mentioned, the implementation of BAT & BEP and ESM reduces greenhouse emissions. The Stockholm Convention promotes the development of national implementation plans (NIP, Article 7), in which the different sectors that have a relationship with chemicals must participate and cooperate in the creation of strategies, looking to decrease CO2 emissions, and so having a positive impact on climate warming.

		communications and national communications 13.2.2 Total greenhouse gas emissions per year	The Intergovernmental Panel on Climate Change (IPCC) estimates that solid waste management accounted for around 3% of global greenhouse gas (GHG) emissions in 2010, with most of that attributable to methane emissions from landfill sites. However, the sound management of chemicals and wastes is an important element of addressing climate change mitigation and adaptation. Improved life cycle management as well as the chemicals industry's products, processes, information in the value-chain about the characteristics of chemicals and their presence in products, innovation and research capacity is critical to improve energy efficiency, develop renewables, capture greenhouse gases, and increase resource efficiency. Procurement policies can be used to provide market incentives, fostering the use of best available techniques (BAT) and best environmental practices (BEP). Efforts should be made to generate co-benefits for sound management of chemicals and wastes and climate action. Relevant national action plans (e.g. the National Implementation Plans (NIPs) developed under the Stockholm Convention and National Action Plans developed under Minamata Convention) explore connections between climate change and sound management of chemicals and wastes (UNEP 2016).
	13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	13.3.1 Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment	The awareness-raising activities about small actions that can be done to reduce the emissions of greenhouse gas are very important. The MEAs promote information exchange, awareness, and education, as it was thoroughly exemplified. In the same line, the Minamata Convention promotes the National Action Plan (NAP, Article 7), involving the mining sector, promoting the understanding of the relation between their work and environmental matters. SAICM also favors awareness by sharing information and knowledge in a simple and accessible manner (e.g. infographics), not only with involved stakeholders but with the general population, working to accomplish a global reach. Particularly, the Montreal Protocol has a strong network of national ozone officers who take a lead in training and outreach activities in developing countries.

Table 16. Linkages between chemicals and wastes MEAs and SDG 14

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTIONS
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	14.1.1 (a) Index of coastal eutrophication; and (b) plastic debris density	The implementation of the Conventions protects life below water from damage caused by some hazardous chemicals and excessive UV radiation. Besides, it helps to protect aquatic resources, which in turn protect food supplies and the economies of countries and sectors that rely on those resources. For instance, the temperature increase that has been avoided by the Montreal Protocol (through phasing out ozone-depleting substances) prevents the risk of damage to fish, some shellfish, and warm water corals (Montreal Protocol website, 2020). Large-scale plastics production began in the early 1950s, and by 2015, humans had generated 8.3 billion metric tons of plastics, of which 6.3 billion tons were deposited in landfills or in the natural environment. In 2010 alone, 8 million tons of plastic were dumped into the ocean, threatening the well-being of marine life (Global Sustainable Development Report 2019). Plastic waste may contain various POPs. The leaching out of POPs from plastic particles may have a significant adverse effect on the health of both terrestrial and marine wildlife. Also, plastic debris can also adsorb POPs such as PCBs, DDT, and dioxins which, if ingested, exhibit a wide range of adverse chronic effects in marine organisms. Particularly, the Stockholm Convention controls various POPs which have been used as additives, flame retardants, plasticizers in plastics, or the manufacture of fluoropolymers (Stockholm Convention website, 2020). The Basel Convention is the only global legally binding instrument to specifically address plastic waste. The new plastic waste entries clarify the scope of control under the Basel Convention, as of January 1, 2021, for other types of plastic waste and mixtures of it, and the specific conditions under which plastic waste is subject to the PIC procedure. Furthermore, through decision BC-14/13 (MAY 2019), the COP welcomed the work of the Stockholm Convention to eliminate or
	14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans	14.2.1 Number of countries using ecosystem-based approaches to managing marine areas	

			control the production or use of POPs in plastic products that may reduce the presence of such pollutants in plastics waste, thus contributing to reducing the risks associated with marine plastic litter and microplastics at the global level (Basel Convention website, 2020). It is key to highlight the importance of regulations and voluntary standards and commitments, to enable a circular economy that is safely reusing and recycling materials and avoids exposure of vulnerable populations. SAICM provides some key lessons about Plastics and Chemicals of Concern in Consumer Products (SAICM's Policy Brief brochure, July 2020).

Table 17. Linkages between chemicals and wastes MEAs and SDG 15

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTIONS
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	15.1.1 Forest area as a proportion of total land area 15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type	Two of this goal's targets have been evaluated in 2020. The progress analysis at 2020 of the target 15.5 is color red (no progress or moving away from the target). Globally, species extinction risk has worsened by about 10 percent over the last three decades, with the Red List Index declining from 0.82 in 1990 to 0.75 in 2015, and to 0.73 in 2020 (a value of 1 indicates no threat to extinction and a value of 0 indicates all species are extinct) (UN Statistics website, 2020). All MEAs reduce the degradation of natural habitats by reducing the release of hazardous, chemical and plastic waste. Minamata Convention provides guidelines for the management of sites that are already contaminated with mercury (Article 12). This prevents the circulation of animals and people who could consume plants growing in the site, containing high amounts of mercury in them. Similarly, the Basel Convention has specific guidelines for landfill management, reducing the release of hazardous chemicals to land, air, and subterranean waters, and also restricting access to the sites. In order to protect life on land, the Conventions work to reduce the release of hazardous chemicals. For instance, the Montreal Protocol, by phasing out

	15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	15.5.1 Red List Index	ozone-depleting substances, especially prevents damage of Arctic regions, given that avoids an increase in temperature. Also, a large reduction in plant growth due to uncontrolled ozone depletion would not only compromise forests and other terrestrial ecosystems' services but would also lower the capacity of vegetation to absorb carbon dioxide from the atmosphere. This would reduce the absorption of CO2 produced by human activities, leading to higher concentrations in the atmosphere (Montreal Protocol website, 2020). One of the functions of the SAICM is to approach emerging policy issues as they arise and promote consensus on priorities for cooperative action. Regarding the impact on the land biodiversity, some chemicals and waste have more impact than other, however, the endocrine-disrupting chemicals and Highly hazardous pesticides may have significant negative global effects, both are on the SAICM agenda (SAICM website, 2020).

Table 18. Linkages between chemicals and wastes MEAs and SDG 16

GOAL	TARGET	INDICATOR	MEAs CONTRIBUTIONS
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive	16.5 Substantially reduce corruption and bribery in all their forms	16.5.1 Proportion of persons who had at least one contact with a public official and who paid a bribe to a public official, or were asked for a bribe by those public officials, during the previous 12 months 16.5.2 Proportion of businesses that had at least one contact with a public official and that	Another challenge is categorizing whether a waste is hazardous or non-hazardous. While the Convention provides several tools to determine if a waste is hazardous or not, in practice it may remain difficult to identify hazardous characteristics, because of the costs and complexity of applying appropriate sampling, screening, and analytical techniques. In certain cases, internationally recognized sampling and testing standards are still lacking (Basel Convention website, 2020). Section 3 of this report describes the Basel Convention principles which approach this issue. Additional effort was made by the Secretariat of BRS, regional Center, and other stakeholders in the Ban Amendment, which establishes the prohibition of exports of all hazardous wastes covered by the Convention that are intended for final disposal, reuse, recycling, and recovery from countries listed in annex VII to the Convention (Parties and other States

institutions at all levels		paid a bribe to a public official, or were asked for a bribe by those public officials during the previous 12 months	which are members of the OECD, EC, Liechtenstein) to all other countries. The process, that lasted more than 15 years, came to an end on December 5th, 2019, when the amendment, proposed on the Conference of the Parties in March 1994, became part of the Convention. Regarding this topic, SAICM encourages an Overarching Policy Strategy that improves governance, capacity-building, and technical cooperation, and the elimination of illegal international traffic.
	16.6 Develop effective, accountable and transparent institutions at all levels	16.6.1 Primary government expenditures as a proportion of original approved budget, by sector (or by budget codes or similar) 16.6.2 Proportion of population satisfied with their last experience of public services	Furthermore, the Stockholm Convention promotes the strengthening of national capacities for monitoring on POPs through projects. For instance, Global POPs Monitoring (GMP) is a project which builds regional capacity on analysis and data generation for POPs in air and human milk to enable developing countries to identify trends in concentrations over time, evaluate the effectiveness of the Convention implementation and contribute to the global report submitted to the Conference of the Parties of Stockholm Convention.
	16.8 Broaden and strengthen the participation of developing countries in the institutions of global governance	16.8.1 Proportion of members and voting rights of developing countries in international organizations	The MEAs can help developing countries improve cooperation between ministries, such as environmental, health, and farming ministries, so they can work together in the creation of action plans and implementation of the Conventions. As described in other sections, the National Implementation Plan (NIP) and National Action Plan (NAP) improve the work done by the Ministries. Also, the MEAs contribute to the mobilization of resources for developing countries, in order to facilitate, for example, their participation in capacitation activities or the Conference of the Parties.

Table 19. Linkages between chemicals and wastes MEAs and SDG 17

GOAL	TARGET	INDICATOR	MEAs

17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development	17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection	17.1.1 Total government revenue as a proportion of GDP, by source 17.1.2 Proportion of domestic budget funded by domestic taxes	The implementation of the MEAs at a national level can ensure a stronger environmental dimension in all 17 SDGs. The MEAs encourage the inter-ministerial coordinated work with multi-stakeholder to strengthen this synergistic implementation.
	17.2 Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of gross national income for official development assistance (ODA/GNI) to developing countries and 0.15 to 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries	17.2.1 Net official development assistance, total and to least developed countries, as a proportion of the Organization for Economic Cooperation and Development (OECD) Development Assistance Committee donors' gross national income (GNI)	As mentioned before, both Stockholm and Basel, establish regional centers to manage projects. Not only this favors the implementations of the conventions, but it also promotes the North-South and South-South cooperation, optimizing time and efforts, and contributing to the coordination between countries in similar situations or with similar difficulties, strengthening their technical capacities.
	17.3 Mobilize additional financial resources for developing countries from multiple sources	17.3.1 Foreign direct investment, official development assistance and South-South cooperation as a proportion of gross national income 17.3.2 Volume of remittances (in United States dollars) as a proportion of total GDP	Another way in which partnerships are built, is with the establishment of agreements of cooperation between the conventions and other organizations which share their target issues and approaches them in a specific way. For example, Decision BC-14/9 cooperation with the world customs organization (WCO) for amending the HCD and Coding System to allow identification of the various types of waste. **Parties are still**

	17.5 Adopt and implement investment promotion regimes for least developed countries	17.5.1 Number of countries that adopt and implement investment promotion regimes for developing countries, including the least developed countries	**faced with challenges related to the enforcement of the Basel Convention.** Countries of export and of import face challenges when it comes to detecting illegal traffic of hazardous and other wastes. One of the challenges is to distinguish second-hand goods from waste, which hampers the work of enforcement officers, especially at the stage of screening documents that accompany the shipments and during visual inspections (Basel Convention website, 2020). Given that in developing countries is usually the same small group of people that manage chemical issues and have to attend and support the implementation of the Conventions in that country, one of the biggest contributions, especially from BRS, is the process of synergies, to accomplish better management of time, and of human and financial resources. Also, the MEAs contribute to the institutional strengthening of developing countries for the implementation of the conventions through found mobilization. In the same line, in the framework of the Basel Convention, there were established partnerships meant to approach specific issues like household waste, regulatory compliance on illegal traffic (ENFORCE),
	17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism	17.6.1 Fixed Internet broadband subscriptions per 100 inhabitants, by speed	
	17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed	17.7.1 Total amount of funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies	
	17.8 Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology	17.8.1 Proportion of individuals using the Internet	
	Capacity-building	17.9.1 Dollar value of financial and technical	

	17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the Sustainable Development Goals, including through North-South, South-South and triangular cooperation	assistance (including through North-South, South-South and triangular cooperation) committed to developing countries	management of mobile phones (MPPI), plastic waste (PWP) and computing equipment (PACE). These global partnerships established by the Conference of the Parties to the Basel Convention mobilize business, government, academic and civil society resources, interests and expertise to improve and promote the environmentally sound management (ESM) of waste at the global, regional and national levels and to prevent and minimize its generation. As different problems or issues emerge, the conventions establish the creation of ad hoc groups of experts, who come up with different multi-disciplinary approaches to them. This implicates the sharing of knowledge that enables the thorough approach of the issue (considering its environmental, social, economic, technological, health-related aspects). Also, the Stockholm Convention involves different stakeholders, especially regarding improve persistent organic pollutants (POPs) analytical and monitoring capacity, for example, the Global Monitoring Plan which involves reference laboratories at the global, regional and national level and encourages appropriate research cooperation. On another hand, facilitate work on the identification of POPs-free products and the
	17.14 Enhance policy coherence for sustainable development	17.14.1 Number of countries with mechanisms in place to enhance policy coherence of sustainable development	
	17.15 Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development	17.15.1 Extent of use of country-owned results frameworks and planning tools by providers of development cooperation	
	17.16 Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries	17.16.1 Number of countries reporting progress in multistakeholder development effectiveness monitoring frameworks that support the achievement of the Sustainable Development Goals	
	17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships	17.17.1 Amount in United States dollars committed to public-private partnerships for infrastructure	
	17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries	17.18.1 Statistical capacity indicator for Sustainable	

	and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts	Development Goal monitoring 17.18.2 Number of countries that have national statistical legislation that complies with the Fundamental Principles of Official Statistics 17.18.3 Number of countries with a national statistical plan that is fully funded and under implementation, by source of funding	exchange of information on alternatives and substitutes to POPs. As mentioned, the POPs-free program also seeks to involve industry in the implementation of the Convention and to reduce the use of exemptions. Since 2005, the Partnership Global Mercury Partnership consists of stakeholders from governments, industry, NGOs, and academia who are dedicated to approaching the mercury issue offering/sharing information and capacity-building. As previously detailed, SAICM highlighting the importance of multi-stakeholder collaboration, sharing information with all of them, promotes tools to protect health and the environment from the harmful impacts of pollution arising from unsound management of chemicals and waste. Finally highlight the United Nations Environment Programme (UNEP), through its different divisions, branches, regional offices, and other entities play a vital role in the achievement of the objectives of all MEAs. Since 1972 UNEP is the leading global environmental authority that promotes the coherent implementation of the environmental dimension of sustainable
	17.19 By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries	17.19.1 Dollar value of all resources made available to strengthen statistical capacity in developing countries 17.19.2 Proportion of countries that (a) have conducted at least one population and housing census in the last 10 years; and (b) have achieved 100 per cent birth registration and 80 per cent death registration	

			development within the United Nations system.