The first Principles of both the 1972 Stockholm and 1992 Rio Declarations focus on the human right to a safe and clean environment. The Stockholm Declaration describes “the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality…”, while the Rio Declaration states that humans “are entitled to a healthy and productive life in harmony with nature” (United Nations 1972 and 1992). These declarations, have together with other principles informed many national constitutions over the past three decades. At the same time, voluntary environmental initiatives have supported more formal environmental agreements, resulting in progress in some areas. But even more robust governance frameworks are required to bring us closer to a pollution-free planet. The Sustainable Development Goals provide an opportunity to accelerate the implementation of targeted and time-bound actions on pollution, which have been hitherto limited and inadequate.

2.1 Global and regional environmental agreements and national regulations

Multilateral environmental agreements and UN resolutions provide a governance framework for targeted and time-bound actions, while some also include compliance-related actions, monitoring and reporting. Such agreements and resolutions also enable the exchange of resources and information as well as the sharing of technologies and best practices for controlled international trade; they also promote international partnerships to address pollution, including among non-state actors.

A number of multilateral environmental agreements address different types of pollution. For example, the implementation of the Paris Agreement on climate change will be a major step forward in tackling air pollution, as the root causes of global warming and air pollution largely overlap. Addressing short-lived climate pollutants could avoid
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As much as 0.5°C of warming and prevent 2.4 million premature deaths from air pollution (United Nations Environment Programme and World Meteorological Organization 2011).

Specific air pollution-related agreements, such as the Convention on Long-Range Transboundary Air Pollution, provide additional protocols to address transboundary issues, such as acid rain (Box 3).

With regards to chemicals and waste, existing multilateral environmental agreements enable actions notably in relation to ozone-depleting substances, persistent organic pollutants, certain hazardous industrial chemicals and pesticides in international trade, of hazardous and household waste, and more recently mercury, with the entry into force of the Minamata Convention on 16 August 2017 (Annex 4). Such legally binding approaches at the global level are essential to addressing the most critical and complex pollution challenges. Several of the multilateral environmental agreements enjoy universal or near universal ratification. A clear success story is that of the Montreal Protocol and its Multilateral Fund. As of June 2017, the Fund had provided roughly $3.7 billion to more than 140 countries to phase out ozone-depleting substances, with lasting influence on innovation, technology transfer, strengthening of environmental governance, and training of customs officers and technicians.

Global conventions provide a legal framework for international governance of seas and the ocean, prevention of pollution from ships, as well as dumping at sea, and are often complemented by regional agreements and conventions on specific seas (Annex 5). Freshwater pollution is mostly addressed by regional agreements looking at specific transboundary water basins, while land and soil pollution is indirectly addressed by the United Nations Convention to Combat Desertification and chemicals and waste conventions and processes.

The Convention on Biological Diversity’s Aichi Biodiversity Targets call for a decrease in pollution and demands specific actions on excess nutrients. Most of the other environmental agreements at the regional or global level have an indirect impact on various pollution areas, but many areas remain unaddressed.

Annexes 4 and 5 provide a summary of the mandates of global and regional agreements on pollution. The potential of global and regional environmental agreements to achieve their objectives related to pollution is not...
necessarily fully utilized due to various factors, including the lack of capacity and financial resources to assist parties and stakeholders. Whereas global and regional environmental initiatives such as the Strategic Approach to International Chemicals Management can help to safely manage some of the most polluting substances, some other pollutants are not covered. Some pollutants do not have substitutes or alternatives, while others are too pervasive.

In some regions, ministerial environment and health forums support integrated action to tackle environmental risks affecting health. Their integrative role offers significant opportunities for upscaled and impactful results and exchange of experiences within and across regions. Formal legal agreements are often complemented by non-legally binding policy frameworks and initiatives, such as the Strategic Approach to International Chemicals Management (SAICM) (United Nations Environment Programme 2017d), the Climate and Clean Air Coalition, and the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA).

However, global and regional agreements cover only a part of the pollution governance landscape. Most countries have adopted national policy and legal frameworks to respond to these agreements and to address some of the other pollution issues.

Today, a majority of UN Member States recognize environmental rights. As of 2015, over 100 countries guaranteed their citizens a right to a healthy environment, with the majority of countries building this into their national constitutions (Figure 15) (data updated from Boyd 2012). Although no international agreement explicitly recognizes the right to a healthy environment, national constitutions have played a vital role at the forefront of human rights and environmental protection. The majority of constitutional environmental rights include substantive, procedural, and emerging rights, such as the right to health and food, while others refer to policy-based, reciprocal-duty, and miscellaneous provisions.

Figure 15 indicates countries that recognize the right to a healthy environment, either through their national constitutions, legal frameworks, or ratification of regional or other agreements. Also shown are the few countries that do not recognize this right. However, in some of these countries, subnational governments recognize rights to a healthy environment. UN Environment, in collaboration

Figure 15: Map of countries that recognize the right to a healthy environment as of 2015

Source: updated from Boyd D.R. 2012
with the UN Special Rapporteur on Human Rights and the Environment and the UN Office of the High Commissioner for Human Rights, works to assist countries to operationalize and implement these rights, which make a difference to people’s lives.

Progress can also be tracked in some specific areas of pollution. By 2015, 109 Member States had adopted air quality standards; 73 had a specific air quality policy, act or rules (Figure 16); and 104 had vehicle emission standards (Figure 17) (United Nations Environment Programme, 2016k).

Legislation, regulations, and standards for chemicals and waste management are diverse and complex. Some countries have more than 100 instruments covering imports and exports, product standards, occupational exposure limits, bans and restrictions, registration schemes, framework legislation, and so on (United Nations Institute for Training and Research 2012). To date, 167 countries have national legislation addressing the issues covered by the Basel Convention, 142 of which have specific chemicals or waste legislation. As of 2017, 65 countries had legally binding controls on lead in paint. In water pollution management, 41 per cent of 130 countries surveyed in 2012 indicated that they had fully implemented, started or advanced implementation of integrated water resources management plans or the equivalent (United Nations Economic and Social Council 2017).

Figure 17: Ongoing actions taken by countries to address air pollution

<table>
<thead>
<tr>
<th>Where is the world in taking action to improve air quality?</th>
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</thead>
<tbody>
<tr>
<td>Non-solid fuels access</td>
</tr>
<tr>
<td>Cook/heating stoves</td>
</tr>
<tr>
<td>Vehicle emission standards</td>
</tr>
<tr>
<td>Fuel sulfur content</td>
</tr>
<tr>
<td>Public transport</td>
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<tr>
<td>Industrial energy efficiency</td>
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<tr>
<td>Clean production incentives</td>
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<tr>
<td>Waste burning</td>
</tr>
<tr>
<td>Laws and regulations</td>
</tr>
<tr>
<td>Air quality standards</td>
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</tbody>
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<table>
<thead>
<tr>
<th>No. of Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>193</td>
</tr>
</tbody>
</table>

Source: United Nations Environment Programme 2016k
The Strategic Approach to International Chemicals Management (SAICM) is an international, voluntary, and non-binding approach to achieving the goal of protecting human health and the environment from the harmful effects of chemicals by 2020. Its global approach covers all agricultural and industrial chemicals throughout their life cycle. It addresses significant health and environmental harms caused by chemical exposure and is the only global forum in which the full range of known and newly discovered health and environmental concerns associated with the chemical life cycle can be identified, assessed and addressed. It aims to support the development of an overall, preventive chemicals management system in every country; it also aims to address a set of emerging policy issues including, among others, chemicals in products (United Nations Environment Programme 2015b) electronics, nanomaterials, lead in paint, endocrine-disrupting chemicals, environmentally persistent pharmaceutical pollutants, perfluorinated chemicals, and the transition to safer alternatives to highly hazardous pesticides (Watts 2015). Significant progress has been achieved in the areas of risk reduction, governance, capacity building and technical cooperation. Less progress has been measured in the areas of knowledge and information, and few data are available to assess progress related to illegal international traffic. The ongoing multi-stakeholder process on sound management of chemicals and waste beyond 2020 offers opportunities to agree on measurable goals and actions that contribute to achieving the 2030 Agenda for Sustainable Development in the area of chemicals and waste management.
Over the course of ten years, the Partnership for Clean Fuels and Vehicles – a public-private partnership formed by UN Environment – supported more than 80 countries. Governments, the oil and auto industries, and civil society have worked together to support a global shift to unleaded fuels. To date, only three countries still use small amounts of leaded fuels, all of which are set to stop by the end of 2017. This massive shift prevents an estimated 1.2 million premature deaths every year. Studies have shown that blood lead levels drop dramatically in countries that ban leaded petrol. It also has a positive impact on children's intellectual ability (Tsai and Hatfield 2011).

Figure 18: The use of unleaded petrol in 2002 (left) and today (right)

Now that lead in automobile fuels has been almost completely phased out, decorative paint is one of the largest sources of exposure to lead. Although global regulation on white lead paint started as early as 1921, decorative paint containing lead is still sold in many developing countries. They are used in homes and schools, on furniture and toys, exposing children to this dangerous neuro-toxic pollutant. As of April 2017, regulation on lead paint is in place in 65 countries. The Lead Paint Alliance is working towards the goal of having regulation in place in all countries by 2020. Countries that introduced new regulations include India, Kenya, Nepal, the Philippines, Sri Lanka, Tanzania and Thailand. Many paint manufacturers, including AkzoNobel and PPG Industry, the two largest global companies in the sector, have committed to phasing out lead paint. However, there are concerns that voluntary labelling and certification efforts by industry are insufficient, and that government action on lead paint laws may be required.
Established in 2012, the Climate and Clean Air Coalition (CCAC) is a voluntary partnership of governments, the private sector, civil society and other stakeholders committed to “achieve concrete and substantial action to accelerate efforts to reduce short-lived climate pollutants”. Concerted global action to reduce these pollutants has the potential to prevent an estimated 2.4 million premature deaths annually from outdoor air pollution, significantly reduce the estimated 4.3 million deaths and other health impacts from indoor air pollution, and avoid more than 52 million tons of crop losses annually, while reducing the near-term warming of up to 0.5°C Celsius by 2050.

The membership has grown from 7 to 115 partners including 53 countries, 17 intergovernmental organizations and 45 nongovernmental organizations. The Coalition combines strong science, high-level political will, and partnership leadership, with a range of cost-effective measures to reduce emissions, commitments by partners to implement actions at home and a Trust Fund to finance some initial collective activities. This is delivered through 11 initiatives targeting transformational change in household energy, cooling, bricks production, oil and gas production, agriculture, transport, solid waste, and national/local planning. A Scientific Advisory Panel keeps the Coalition abreast of new scientific developments on short-lived climate pollutants to better inform policies.

Box 6: Climate and Clean Air Coalition: A voluntary partnership model

2.2 Actual and potential benefits of addressing pollution

Limited and inadequate as current responses may be, it is evident that tackling pollution has already brought multiple benefits. Projections indicate that further actions have the potential to enhance health and well-being and the economy. Many case studies already point to the multiple benefits of tackling pollution (Table 3). Two success stories in particular show what can be achieved: the healing of the ozone layer (Box 7) and the phasing out of lead in fuel (Box 5).

Traditional pollution control that relies on end-of-pipe technologies has been shown to reduce polluting substances, such as in the case of sulphur dioxide (SO₂) and nitrogen oxides (NOₓ). However, these technologies also require materials and energy upfront, and, as a consequence, may increase environmental impacts (International Resource Panel 2017a). Resource efficiency over the whole production-consumption system can generate products which are identical or have the same functionality as when using traditional technologies and processes, while also reducing critical emissions and mitigating resource requirements and environmental impacts in the upstream processes (International Resource Panel 2017b).

Moving to less-polluting and nature-based technologies also offers economic and employment opportunities. Renewable energy provided jobs for 9.8 million people worldwide in 2016, compared to 5.7 million in 2012 (International Renewable Energy Agency 2013 and 2017). Waste recycling and reuse also offers the chance to convert waste into economic opportunities, including jobs. The scope and extent of these opportunities depends on the availability of the secondary materials market, which can be local (compost), national or regional (glass, fertilizers) or global (ferrous and non-ferrous materials), depending on the material recovered (United Nations Environment Programme and International Solid Waste Association 2015). As secondary materials replace virgin materials (for example phosphate from fertilizer nutrient recovery) they reduce the resource and environmental footprint of growth, but they can also have income and job impacts on primary exporting countries. Thus, careful and inclusive transition planning is required for those affected by these transformations (United Nations Environment Programme 2017b). Environmental technologies that help to control and prevent pollution also bring tremendous trade and investment opportunities. It is estimated that the global market for environmental goods and services reached $866 billion in 2011, and is expected to rise to $1.9 trillion by 2020 (Bucher et al. 2014).

Innovation in the chemicals sector opens up new ways to use existing resources at lower cost or more productively through
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<table>
<thead>
<tr>
<th>Pollution area</th>
<th>Intervention</th>
<th>Benefits of interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air pollution</td>
<td>Regulation</td>
<td>United States Environmental Protection Agency regulations issued between 2004 and 2014 to limit air pollution generated benefits of between $157 billion and $777 billion (2010 prices). Costs of implementation were estimated to be between $37 billion and $44 billion. This is a clear indication that benefits outweighed costs by a ratio of at least 4 to 1 (World Bank and Institute for Health Metrics and Evaluation 2016).</td>
</tr>
<tr>
<td>Air pollution</td>
<td>Reduction</td>
<td>The health welfare benefits of reducing air pollution in China in the period 2015 to 2025 were estimated at $125 billion (2015 prices). (Sun et al. 2016)</td>
</tr>
<tr>
<td>Shipping emissions</td>
<td></td>
<td>A review of the health impacts of shipping emissions found that on-time (2020) implementation of a global low-sulphur fuel cap for shipping would prevent some 200,000 premature deaths due to a reduction in toxic fumes, mainly in coastal communities in the developing world (Seas at Risk 2016).</td>
</tr>
<tr>
<td>Freshwater</td>
<td>Access to clean drinking water and sanitation</td>
<td>Access to improved drinking water can yield substantial welfare gains to many developing countries. The World Health Organization (2012) estimates the benefits of avoided mortality from universal access to improved drinking water to be $3 billion per year (2015 prices) for sub-Saharan Africa, Asia (East, South, South-East and West), Latin America and the Caribbean. The benefits of water pollution control amounted to 7.4 billion (2015 prices). This includes averted mortality from unsafe drinking water, externality effects from agriculture, and other costs.</td>
</tr>
<tr>
<td>Chemicals and waste</td>
<td>Strengthened governance of chemicals management</td>
<td>In Uganda, the benefits of strengthening the governance of chemicals management for the agriculture sector are estimated to be $1.98 billion over the period 2011 to 2025. Crop yield gains are estimated at 20 per cent in the cultivated areas concerned (Kateregga 2010).</td>
</tr>
<tr>
<td></td>
<td>Reduction of global mercury emissions</td>
<td>If global mercury emissions could be reduced by 50 per cent to 60 per cent before 2020, the resulting prevention of water and fish contamination, and exposures to pregnant women and children, could reap global economic benefits of between $2.2 billion and $2.7 billion in 2020 (Sundseth et al. 2010).</td>
</tr>
</tbody>
</table>

Box 7: Healing the ozone layer

The ozone treaties (The Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer) have ensured that to date more than 99 per cent of the historic baseline levels of consumption and production of harmful ozone-depleting substances have been phased out. Through the Multilateral Fund, nearly $3.7 billion has been allocated to developing countries. As a result, the ozone layer is healing; it is expected to be restored by the middle of the century.

Health impacts: Up to two million cases of skin cancer may be prevented each year by 2030 (Van Dijk, Van Staalduinen and Van der Sluijs 2013). Further, 283 million cases of skin cancer (including 8.3 cases of melanoma) will have been avoided, 1.6 million deaths from skin cancer prevented and 46 million cases of cataracts prevented for those born between 1890 and 2100 in the United States alone (United States Environmental Protection Agency 2015).

Economic impacts: The phase-out of ozone-depleting substances has avoided reductions in agricultural and fishery yields. During the period 1987 to 2060, $460 billion worth of damage to agriculture, fisheries and materials such as plastic and wood will have been avoided (United Nations Environment Programme 2012b).

Climate change impacts: International action to protect the ozone layer averted 135 billion tons of carbon dioxide equivalent emissions between 1990 to 2010 (Molina et al. 2009). In October 2016, the Parties to the Montreal Protocol adopted the Kigali Amendment, in which they agreed to phase down hydrofluorocarbons (HFCs). These measures are expected to avoid up to 0.5°C of global warming by the end of the century, while continuing to protect the ozone layer.

Ecosystem impacts: Averting dangerous climate change and reducing the exposure of wildlife and plants to ultraviolet light will also have enormous benefits for ecosystem functioning.
the development of safer alternatives to the hazardous chemicals currently used in industry, and the supply of new chemical resources (United Nations Environment Programme 2013a). Forecasts indicate that total savings across industry from green chemistry developments could reach $65.5 billion, and that it represents a market opportunity worth approximately $100 billion by 2020 (Pike Research 2012).

Various scenarios, projections and stories of success highlight the opportunity, added value and multiple benefits of accelerating action to tackle pollution:

• Under its “Clean Air Scenario”, the International Energy Agency projects that an increase of 7 per cent in total clean energy investment for the period 2012-2040 could prevent 1.7 million premature deaths from outdoor air pollution and 1.6 million deaths from household pollution in 2040 compared to the baseline scenario. Investments focus on advanced pollution control technologies, mostly to comply with stricter vehicle emissions standards, with a more rapid transformation of the energy sector, as well as stronger efforts to improve energy efficiency. Under the scenario, most people in urban areas gain access to efficient cookstoves by 2030, and in rural areas by 2040. As a result, the share of India’s population exposed to air with a high concentration of fine particulate matter could fall to less than 20 per cent in 2040, down from more than 60 per cent today. In China, this figure shrinks from well over half to below one quarter, and in Indonesia and South Africa it falls to almost zero (International Energy Agency 2016).

• The Finnish Meteorological Institute concluded a study on “Health Impacts Associated with Delay of MARPOL Global Sulphur Standards”, which shows that a five-year delay (from 2020 to 2025) in the implementation of global sulphur limits in ships by the International Maritime Organization (IMO) and its parties would contribute to more than 570,000 additional premature deaths, mostly in coastal communities (International Maritime Organization 2016).

• Scenarios developed by the Organisation for Economic Co-operation and Development (OECD) suggest that specific measures to further reuse nutrients in agriculture and reduce both domestic and agricultural discharges of nitrogen and phosphorus could bring significant benefits. By 2050, nitrogen and phosphorus surpluses in agriculture could be almost 20 per cent less than in a baseline scenario, the effluent of nutrients in wastewater could fall by nearly 35 per cent, total nutrient loads to rivers could be reduced by nearly 40 per cent for nitrogen and 15 per cent for phosphorus compared to baseline. These would require a combination of measures on nutrients: 1) an increase in fertilizer use efficiency, 2) higher nutrient efficiencies in livestock production, 3) using animal manure instead of synthetic nitrogen and phosphorus fertilizers in countries with a fertilizer-dominated arable system, 4) investments in sewage systems that separately collect urine from other wastewater in household, and 5) recycling treated wastewater back into agriculture to significantly reduce wastewater nutrient flows and fertilizer use (Organisation for Economic Co-operation and Development 2012).

• Well-planned and appropriate ecosystem restoration, compared to the loss of ecosystem services, may provide benefit-cost ratios of 3:75 in return on investments, as well as an internal rate of return of between 7 per cent and 79 per cent, depending on the ecosystem restored and its economic context (Kumar 2017). Thus, in many cases ecosystem restoration can provide some of the most profitable public investments including generation of jobs directly and indirectly related to an improved environment and health. Ecological restoration can further
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act as an engine of economic growth and a source of green employment (Kumar 2017).

2.3 Challenges and gaps

Despite current actions and environmental governance frameworks, the problem of pollution persists and remains pervasive. New pollution issues continue to emerge for which responses have yet to be developed. While successful responses to the pollution challenge exist, their scope, scale and effectiveness are still limited. Evidence of the continuing trends and impacts of pollution demonstrates the tenacity of the problem. Many multilateral environmental agreements are not as effective as they could be for lack of institutional capacity or resources. But other challenges and gaps are limiting the efficacy of current actions on pollution; they also point to a neglect of pollution issues.

The following key gaps help to explain why pollution is still an issue:

• **Implementation gaps** are due to a lack of resources; inadequate administrative, financial, institutional and technical capacity; and the absence of interministerial coordination and political will. Absence of interministerial coordination is a key reason why action does not happen. Many sectors contribute to pollution, and action will only follow if there is interministerial coordination and a greater consciousness with regards to pollution and its social and economic impacts. In many countries, there is a focus on economic development and raising livelihood standards at the expense of pollution prevention. Information on the costs of inaction to society, the economy and the health of individuals and highlighting the benefits of action are therefore key to informing public policy. The absence of enforceable rights on the environment within a country’s border (for example in villages, indigenous lands), and beyond the borders (for example in the oceans, atmosphere and open lands) result in them being treated as dumping grounds.

• **Knowledge gaps** continue to hinder effective action on pollution, despite the fact that access to pollution-related information has improved dramatically alongside advancements in information technology and the continual implementation of pollutant release and transfer registers (PRTRs) by countries throughout the world. There is a need, however, for much greater awareness of information on the sources of pollution, the pathways of exposure, and the impacts and solutions. Emerging issues and new research findings on the impacts on health and ecosystems need to be taken into account. There is also insufficient information disclosure, and a limited understanding of pollution’s social, health and gender dimensions. Without broader public awareness, the socio-political pressure needed to prevent and mitigate pollution will not follow. Information disclosure and greater awareness will enable the development of more effective interventions, support meaningful and effective participation, and empower the public to play a role in ensuring that government institutions and the regulated community and business meet their legal obligations and strengthen implementation.

• **Infrastructure gaps** exist with regards to monitoring pollution, collecting and disposing of waste, treating wastewater, facilitating recycling and improving food storage, among other areas. Major forms of pollution exist due to the absence of infrastructure such as monitoring systems, wastewater and sewage treatment plants, controlled waste collection, reception and disposal, facilities for recycling and food storage, etc. This lack of infrastructure not only prevents better practice, but also enhances hazards associated with pollution, such as waste dump collapses, flooding of sewage water or water runoff that leads to mobilization of dangerous
chemicals from storage or remobilization of chemicals already in the environment, e.g. pesticides, or disease outbreaks after natural disasters. Investing in infrastructure improvements is key to addressing pollution.a

- **Leadership gaps** by development banks, finance institutions, and industry, in insufficiently making pollution avoidance and control central to their decision-making, are also hindering progress on the pollution reduction and control front. This gap is especially evident with regards to requirements related to pollution information disclosure, due diligence, pollution prevention approaches, internalization of pollution costs, and green financing. Improved assessments and reporting of pollution exposure risks and internalization of environmental costs of activities and products are key to cleaner production and consumption investment decisions. The integration of the economic costs of pollution into product pricing would incentivize companies and consumers to make more informed choices and would create pressure on producers to reduce their pollution footprint and adopt better practices.

- **Mispricing, and the invisibility of ecosystem values and externalization of pollution costs** result in wastage and over-use; the treatment of ecosystems as dumps and sinks for waste; and choices made without full knowledge of what is being consumed or traded off. Subsidies for, for example, energy, water, electricity and commodity crops, also result in wastage and overuse. Lack of valuation of ecosystem goods and services, such as those from oceans, rivers, land, wetlands, and others result in the treatment of these ecosystems as dumps and sinks for waste. Externality caused by upstream actions are often difficult to include in compliance downstream. Plastics in the oceans is a case in point: the environmental costs of producing and using plastics are not internalized, such that a lack of actions upstream in the value chain has downstream impacts through rivers and streams that open into the sea. One of the key barriers to change is the fact that the economic costs of pollution are not integrated in policy and decision-making. This results in choices that are made without full knowledge of the trade-offs.

- **There is insufficient recognition by different actors that producer and consumer choices have pollution consequences.** Such choices – even in the presence of pollution policies and regulations – can be made out of habit, a feeling that one person or firm cannot make a difference, a free-rider problem, peer pressure or the lack thereof, social norms and practices, short termism, and even the absence of information on products and alternative affordable options (United Nations Environment Programme 2017a).

2.4 The sustainable development goals: an opportunity to accelerate pollution action

The 2030 Agenda for Sustainable Development offers a great opportunity to enhance and accelerate action to tackle pollution. Pollution prevention, control and reduction will also create multiple opportunities for achieving the Sustainable Development Goals in a mutually beneficial manner.

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a An ongoing evaluation of the Independent Evaluation Group, “Towards a Clean World for all – World Bank Group’s Support to Pollution Management”, to be released later this year, will provide further insight into how to address pollution challenges.
Every pollution area described under Part 1 is addressed by one or more targets. Addressing pollution helps to reduce poverty (Goal 1), as it improves health and worker productivity and work days. Addressing pollution also protects the poor, as these are often most exposed to pollution for lack of options in where they work, live or how they cook or what they eat or drink. Addressing pollution also contributes to poverty alleviation by supporting Target 15.9 on “integrating ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts”. Addressing pollution in all its forms helps to fight hunger and ensure the provision of safe food year round (Target 2.1), as it tackles the food safety issues of irrigation with untreated wastewater or sewage as well as the growing of food on contaminated soil. In all actions against pollution, it is also important to ensure women’s equal participation, decision-making and access to opportunities and resources (Goal 5). In this respect, the provision of clean water (Goal 6) and energy (Goal 7) also reduces the domestic burden of women to carry water and their exposure to indoor air pollution from cooking activities.

Under Goal 3 on health and well-being, one target (Target 3.9) is central, requiring that by 2030 we “substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination”. Human health and the environment are compromised by the mismanagement of chemicals and waste, which form a fundamental obstacle to the achievement of sustainable development. This is strongly linked to how we produce and consume (Goal 12) and our ability to reduce resource degradation, pollution and waste. Indeed, environmental impacts and pollution cannot be effectively mitigated unless raw material inputs into production and consumption systems are decreased, since the magnitude of what goes into these systems determines the final waste and emissions released to the environment (United Nations Environment Assembly of the United Nations Environment Programme 2016). One key approach is the decoupling of economic and human activity from resource use (Goal 8) through enhanced resource efficiency (European Environment Agency 2016).

Other goals and related targets that are essential to reduce and prevent pollution, such as Target 6.3 under Goal 6, which aims to improve water quality by reducing pollution, eliminating dumping and minimizing the release of hazardous chemicals and materials. Not only could it significantly reduce the number of deaths from diarrhoeal diseases; it could also provide incentives for more innovative water resource management practices, including recycling and safe reuse. Target 14.1 already addresses pollution explicitly by requesting “the prevention and significant reduction of all kinds of marine pollution, in particular from land-based activities, including marine debris and nutrient pollution”.

Clean household energy (Goal 7) and access to affordable, reliable, sustainable and modern energy can cut air pollution indoors, which will particularly benefit women and children. Sustainable transport, waste management, buildings and industry (Goal 11 on inclusive, safe, resilient and sustainable cities and settlements) will lead to cleaner air in cities. Those policies could prevent more than six million deaths each year due to air pollution and mitigate climate change and its impacts (Goal 13).

Another group of Sustainable Development Goals is instrumental in enabling the effective implementation of actions to address various forms of pollution. Goal 16 provides the momentum for good governance, public access to environmental information, public participation and access to justice for all in environmental matters. Goal 17 is an enabler for achieving all Sustainable Development Goals and focuses on means of implementation, such as finance, technology, capacity development, global partnerships and policy coherence. Goal 4 promotes quality education so that people acquire the
knowledge and skills needed to promote sustainable development and sustainable lifestyles (Target 4.7).

A fundamental principle of the 2030 Agenda is to “leave no one behind”. In the context of pollution, this means that no group or community is made to bear a disproportionate share of the harmful effects of pollution. Sustainable development is not possible without a healthy population. Goal 10 – the inequality goal – includes the specific target: “By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status” (Target 10.2).

All Sustainable Development Goals are interlinked and indivisible. While there is ample scope for synergies between progress towards the goals and reducing pollution, there is also a potential for conflict. For example, achieving targets related to economic growth, industrialization, infrastructure, agricultural development and urbanization, could be at odds with movement towards a pollution-free planet. A case in point is Target 2.3, which aims to double agricultural productivity by 2030. This may result in increased air, land and freshwater pollution, in a business-as-usual scenario, whereas Target 8.4 endeavours to decouple economic growth from environmental degradation. Modelling studies suggest that sustainable consumption and production (Goal 12) policies are the most effective in reducing trade-offs (Obersteiner et al. 2016).

Figure 19 visualizes how addressing pollution supports the achievement of the Sustainable Development Goals. Annex 6 provides a detailed mapping of the specific targets that are benefiting from addressing pollution; it also explores in a preliminary way how the international environmental governance landscape is currently set up to address pollution.

The 2030 Agenda also provides business with an opportunity to respond to the Sustainable Development Goals and act on pollution. In

<table>
<thead>
<tr>
<th>Acting on pollution for the Sustainable Development Goals</th>
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<tbody>
<tr>
<td><strong>1.</strong> Cleaner environments improve health and worker productivity and work days</td>
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<tr>
<td><strong>2.</strong> Growing food on non-contaminated soils helps to fight hunger and ensure the provision of safe food round</td>
</tr>
<tr>
<td><strong>3.</strong> Actions on pollution substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination</td>
</tr>
<tr>
<td><strong>4.</strong> A clean environment enables quality education and education enables acquisition of knowledge and skills needed to promote sustainable development and sustainable lifestyles</td>
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<tr>
<td><strong>5.</strong> Pollution reduction as well as equality, for example through reduced burden of fetching clean water,usher cleaner indoor air quality and better health enable gender equality</td>
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<tr>
<td><strong>6.</strong> Better managed freshwater ecosystems and cleaner water significantly reduce the number of deaths from diarrhoeal diseases</td>
</tr>
<tr>
<td><strong>7.</strong> Access to affordable, reliable, sustainable and modern energy can cut air pollution indoors, which will particularly benefit women and children</td>
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<tr>
<td><strong>8.</strong> Reduced exposure to pollution leads to improved health and well-being of workers and therefore increased productivity and economic growth</td>
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<tr>
<td><strong>9.</strong> Pollution avoidance through adoption of green technologies and ecosystem based solutions fosters innovation and sustainability in industry and infrastructural sectors</td>
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<tr>
<td><strong>10.</strong> Pollution governance and actions can ensure that no group or community is made to bear a disproportionate share of the harmful effects of pollution</td>
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<td><strong>11.</strong> Sustainable transport, waste management, buildings and industry lead to cleaner air in cities</td>
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<tr>
<td><strong>12.</strong> Resource efficiency and circularity in materials and input use reduce pollution and waste and contribute to sustainable consumption and production</td>
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<tr>
<td><strong>13.</strong> Clean energy and low carbon policies reduce air pollution and mitigate climate change impact at the same time</td>
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<tr>
<td><strong>14.</strong> Action on marine pollution reduces potential bioaccumulation of toxic substances as well as habitat destruction, and help maintain healthy fisheries and ecosystems</td>
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<tr>
<td><strong>15.</strong> Integrating ecosystem and biodiversity values into development plans and poverty reduction strategies supports better land management and avoids pollution</td>
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<tr>
<td><strong>16.</strong> Good ‘pollution-related’ governance reduces environmental burdens and injustices and can enhance availability of ‘saved’ resources for the underserved</td>
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<tr>
<td><strong>17.</strong> Global partnerships to address pollution can have positive implications to health, jobs, worker productivity, planet and well-being</td>
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its 2017 report, the Business and Sustainable Development Commission proposes to business leaders an alternative to business as usual, in the form of a business strategy in line with the Sustainable Development Goals (Business and Sustainable Development Commission 2017). The report shows the linkages between business needs and the global goals. It identifies at least $12 trillion in opportunities, of which the 60 biggest are in food and agriculture, cities, energy and materials, and health and well-being. At least 23 of these opportunities can deliver on pollution avoidance, reduction, mitigation and rehabilitation.

2.5 Multiple stakeholders and multi-level engagement: central to improved environmental governance

Strengthening and building on multilateral environmental agreements will require greater multi-level and multi-actor involvement, coordination and policy coherence, across global, regional, national, subnational and local levels. Improving environmental governance calls for the following:

• **Strengthening the science-policy-society interface:** Bringing knowledge flows into policy requires a rigorous political economy analysis, a systemic monitoring system that includes both indicators and targets, including on resource footprints of production and consumption (Giljum et al. 2015); taking science to various communities; incorporating traditional, business, and other knowledge into science; and bringing all of this combined knowledge into policy formulation.

• **Supplementing and complementing legal agreements and conventions with more outcome-based and voluntary initiatives:** International and regional agreements require national implementation, which in turn requires appropriate infrastructure, capacity, local partners and direct technical and financial assistance. There are several benefits of having the global and regional environmental agreements work together, and more synergistically with other initiatives. Supporting voluntary initiatives such as the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, the Climate and Clean Air Coalition, the Batumi Action for Cleaner Air, the Global Alliance for Clean Cookstoves, the Global Partnership on Marine Litter, the Global Partnership on Nutrient Management, the Global Wastewater Partnership, the Lead Paint Alliance, Partnership for Clean Fuels and Vehicles, the Global Mercury Partnership, the Partnership for Action on the Green Economy, Principles for Sustainable Insurance, and so on can provide the integrating, catalytic, and scaling up power of partnerships and initiatives for layered actions and next steps.

• **Engaging diverse actors and stakeholders:** To protect the environment and human health, use resources in a sustainable way, and combat pollution, we will need commitments and action from all parts of society: governments (national, subnational and local), business and industry, civil society, the academic and scientific community, youth groups, farmers and the individual consumer. Involving diverse actors early in the discussions enhances the understanding of the problem and the viability of proposed solutions. It may also make it easier to attract the support of parties who might otherwise show reluctance.

• **Engaging industry and the business community in solutions:** One of the key reasons for the success of the Montreal Protocol was that relevant industrial sectors showed leadership and assisted the transition through new technologies and improved practices. The transition brought significant investment in the innovative redesigning of products and equipment to use greener chemicals.
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Such investment has stimulated more efficient production processes, including with regard to energy efficiency.

• **Integrating innovations in production systems with social considerations, competitiveness and employment:**
  Increases in resource efficiency along the whole production and consumption chain are necessary to reduce pollution and its environmental impacts on a system-wide basis. Changing production systems involves converting existing production facilities and training personnel in new technologies and processes while retaining existing jobs. Thus, the protection of the environment goes hand in hand with social development and economic growth.

Pollution cannot be resolved solely through global and regional multilateral agreements, even with better coordination and synergies. The problem of pollution is closely connected with behavioural and technology choices, production and consumption practices, industrial processes and pricing policies, financial and business sector orientation, and social norms that are centred on a culture of consumerism and irresponsibility with regards to the environment and impacts on people's health.
Annex 4: How pollution is reflected in various multilateral frameworks and environmental agreements

Multilateral environmental agreements and related initiatives and frameworks form the overarching international legal basis that supports governments and other stakeholders in addressing environmental issues and sustainable development. They play a critical role in the analysis of linkages between pollution, human well-being and the environment and are a tool-set that helps to achieve international and national environmental objectives. Environmental pressures such as air pollution, contamination of water and soil with hazardous chemicals and waste, uncontrolled waste generation and disposal, and ecosystem disruption have both direct and indirect effects which can be felt immediately as well as over the medium to long term in the achievement of the agreements’ goals, as well the goals of other international and national environmental initiatives.

International environmental principles and declarations

The Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration (1972)) was the first instrument to recognize the impact of pollution in water, air, earth and living beings. Principle 6 of the Declaration proclaims that the just struggle of the peoples of all countries against pollution should be supported. Principle 7 calls on states to take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea. Principle 22 provides that states shall cooperate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States to areas beyond their jurisdiction.

Principle 13 of the Rio Declaration on Environment and Development (1992) added that states shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction. Principle 16 calls upon national authorities to endeavor to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

The principles envisaged in the Stockholm Declaration and Rio Declaration have subsequently been reflected in various multilateral environmental agreements.

Key global multilateral environmental agreements, initiatives and frameworks

The United Nations Recommendations on the Transport of Dangerous Goods (1956) establishes principles for all aspects of classification, packaging, testing, and labelling of dangerous goods. The recommendations are presented in the form of “Model Regulations on the Transport of Dangerous Goods” that present a basic scheme of provisions that allow uniform development of national and international regulations governing the various modes of transport; yet they remain flexible enough to accommodate any special requirements that might have to be met. The recommendations have been used for determining classes of wastes under the Basel Convention and in developing the Globally Harmonised System of Classification and Labelling of Chemicals (GHS).
The Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat (1971) provides measures for the conservation and wise use of wetlands. According to the Article 3 of the Convention each Contracting Party shall arrange to be informed at the earliest possible time if the ecological character of any wetland in its territory and included in the List has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference. The 4th Strategic Plan of the Convention for the period 2016-2024 highlights that wetlands play a key role in economic activity linked to transportation, food production, water risk management, pollution control, fishing and hunting, leisure and the provision of ecological infrastructure.

The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Dumping Convention) (1971) aims to control and prevent pollution of the sea by the dumping of waste and other matter that is liable to create hazards to marine life.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973) seeks to regulate international trade in endangered animals and plants and their products. It does not specifically provide for pollution control in its articles. However, its objectives to reduce pressures on wildlife would include reduction of pressures resulting from habitat loss and pollution. E.g. the impact of pollution on sea turtle populations and their habitat has been recognized by the Conference of the Parties through the adoption of “The Guidelines for evaluating marine turtle ranching proposals submitted pursuant to Resolution Conf. 11.16 (rev. COP15)”. CITES works closely with the INTERPOL Pollution Crime Working Group to tackle pollution crime.

The International Convention for the Prevention of Pollution from Ships (MARPOL) (1973) aims to eliminate pollution of the sea by oil and other toxic substances which might be discharged during normal operations, or released accidentally as a result of collisions or stranding of ships. The Convention, further, seeks to regulate the handling of substances that would present a major hazard to either marine resources or human health or cause serious harm to amenities or other legitimate uses of the sea.

The Convention on the Prevention of Marine Pollution from Land-Based Sources (1974) obligates Parties to eliminate, if necessary by stages, pollution of the maritime area from land-based sources and strictly limit pollution of the maritime area from land-based sources.

The Barcelona Convention for the Protection of the Mediterranean Sea against Pollution (1976) and its Protocols seeks to protect the maritime waters of the Mediterranean Sea from substances that could harm the living resources, cause hazards to human health, and impair quality of seawater. Seven Protocols addressing specific aspects of Mediterranean environmental conservation processes have been adopted since 1976:


- **LBS Protocol**: Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources (1980)
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- **The Land-based Sources and Activities Protocol**: Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities (1996)

- **Specially Protected Area and Biodiversity Protocol**: Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (1995)


The **International Convention for the Safety of Life at Sea (SOLAS) (1980)** specifies minimum standards for the construction, equipment, and operation of ships, compatible with their safety. The Convention's Chapter VII - Carriage of dangerous goods covers construction and equipment of ships carrying dangerous liquid chemicals in bulk and requires chemical tankers to comply with the International Bulk Chemical Code (IBC Code).

The **United Nations Convention on the Law of the Sea (UNCLOS) (1982)** provides the legal framework for international governance of seas and oceans. Article 194 of the UNCLOS prescribes measures to prevent, reduce and control pollution of the marine environment, taking into consideration international rules and national laws. The Convention seeks to control pollution from land-based sources pollution from seabed activities subject to national jurisdiction, pollution from activities in the Area, pollution from dumping, pollution from vessels and pollution from or through the atmosphere.

The **Convention on the Conservation of Migratory Species of Wild Animals (1983)** seeks to conserve migratory species by ensuring that Contracting Parties take the necessary action, individually and collectively, to avoid species becoming endangered. It does not specifically provide for pollution control in its articles. However, its objectives have been expanded to include reduction of the impact of pollution on migratory species. Based on the reports on Management of Marine Debris (UNEP/CMS/COP11, Inf. 27, 28 and 29) the Conference of Parties in 2014 adopted Resolution 11.10 on Management of Marine Debris encouraging Parties to implement monitoring processes in order to assess the cumulative environmental impacts of pollution on migratory species and take relevant actions. The **Strategic Plan for Migratory Species 2015-2023** defines its Target 7: Multiple anthropogenic pressures have been reduced to levels that are not detrimental to the conservation of migratory species or to the functioning, integrity, ecological connectivity and resilience of their habitats. The pressures concerned may include those relating to climate change, renewable energy developments, power lines, by-catch, underwater noise, ship strikes, poisoning, pollution, disease, invasive species, illegal and unsustainable take and marine debris.

The **Vienna Convention for the Protection of the Ozone Layer (1985) and the Montreal Protocol on Substances that Deplete the Ozone Layer (1987)** seeks to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer.

The **Montreal Protocol** was designed to reduce the production and consumption, as well abundance of ozone depleting substances in the atmosphere. The protection of the ozone layer would result in reduced production, import, and export of ozone-depleting substances.
The Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer (2016) (not yet in force) commits Parties to cut the production and consumption of hydrofluorocarbons by more than 80 percent from 2019-2047 and thereafter.

The International Code of Conduct on Pesticide Management (1985) is the framework on pesticide management for all public and private entities engaged in, or associated with, production, regulation and management of pesticides. The new Code of Conduct on Pesticide Management, which was approved by the FAO Conference in 2013 and recognized by the WHO Executive Board in January 2014, provides standards of conduct that serve as a point of reference in relation to sound pesticide life cycle management practices, in particular for government authorities and the pesticide industry. The Code of Conduct is supported by technical guidelines that are developed by the Panel of Experts on Pesticide Management.

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989) was adopted to protect human health and the environment against the adverse effects of hazardous wastes. Parties have committed to protect, by strict control, human health and the environment against adverse effects which may result from the generation and management of hazardous wastes and other wastes. Each party shall take the appropriate measures to ensure that persons involved in the management of hazardous wastes or other wastes within it take such steps as are necessary to prevent pollution due to hazardous wastes and other wastes arising from such management and, if such pollution occurs, to minimize the consequences thereof for human health and the environment; parties shall undertake to review periodically the possibilities for the reduction of the amount and/or the pollution potential of hazardous wastes and other wastes which are exported to other states, in particular to developing countries.

The preamble to Basel Convention Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and their Disposal (1999) provide that states shall develop international and national legal instruments regarding liability and compensation for the victims of pollution and other environmental damage.

The International Labour Organization Chemicals Convention (1990) (No. 170) specially addresses the protection of workers from harmful effects of chemicals at the workplace. Because of the tri-partite composition of the International Labour Organization, under whose jurisdiction the Convention was negotiated, it includes obligations for governments, suppliers, employers and workers regarding the safe management and handling of chemicals. This ranges from developing coherent policies to the establishment of information exchange mechanisms.

The Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC) (1990) aims to facilitate international cooperation and mutual assistance in preparing for and responding to major oil pollution incidents that threaten the marine environment and coastlines, and to encourage countries to develop and maintain the capability to respond to major oil pollution emergencies involving ships, offshore units, seaports, and oil handling facilities. The Convention, which entered into 1995, currently has 108 Parties. In 2000, the Protocol on Preparedness, Response and Co-operation to pollution Incidents by Hazardous and Noxious Substances (OPRC-HNS Protocol) was adopted, extending the scope of the Convention to hazardous and noxious substances.

The UN Economic Commission for Europe Espoo Convention on Environmental Impact Assessment in a Transboundary Context (1991). According to the Article 2 (1) the Parties shall, either individually or jointly, take all appropriate and effective measures to prevent, reduce and control significant
adverse transboundary environmental impact from proposed activities. Through Decision II/14 on the amendment to the Convention, which entered into force on 26 August 2014, the Meeting of the Parties decided to allow Member States of the United Nations situated outside the UN Economic Commission for Europe region to become Parties to the Convention.

The Convention on Biological Diversity (1992) does not specifically mention pollution in their articles. However, it provides that conservation and sustainable use of biological diversity is of critical importance for meeting the food, health and other needs of the world population. The Strategic Plan for Biodiversity 2011-2020, including the Aichi Biodiversity Targets, adopted at the Tenth Meeting of the Conference of the Parties under decision X/2, called for a decrease in pollution as one of the direct pressures on biodiversity. Aichi Biodiversity Target 8 provides that by 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

The Cartagena Biosafety Protocol (2000) aims to protect biological diversity and human health from the potential risks arising from the import and export of living modified organisms. The Protocol addresses the need to protect human health and the environment from the possible adverse effects of the products of modern biotechnology.

The Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety (2010) contributes to the conservation and sustainable use of biological diversity by providing international rules and procedures for liability and redress relating to living modified organisms.

The United Nations Framework Convention on Climate Change (1992) presents the framework to tackle “adverse effects of climate change” (Article 1), which means changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare. The ultimate objective of this Convention according Article 2 and any related legal instruments that the Conference of the Parties may adopt (Kyoto Protocol for Climate Change, 1997 and Paris Agreement (2015) is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner. The goal of the Marrakech Declaration for Health, Environment and Climate Change is to reduce pollution-related deaths by promoting better management of environmental and climate risks to health.

The UN Economic Commission for Europe Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) (1992) aims to protect and ensure the quantity, quality and sustainable use of trans-boundary water resources by facilitating cooperation. It provides an intergovernmental platform for Parties to prevent, control and reduce pollution of waters causing or likely to cause transboundary impact. Measures taken under the convention shall not directly or indirectly result in a transfer of pollution to other parts of the environment. Initially negotiated as a regional instrument, it turned into a universally available legal framework for trans-boundary water cooperation, following the entry into force of amendment in February 2013, opening it to all UN Member States.

The Protocol on Water and Health (1999) seeks to protect human health and well-being by better water management, including
the protection of water ecosystems, and by preventing, controlling and reducing water-related diseases. The Protocol is the first international agreement of its kind adopted to attain an adequate supply of safe drinking water and adequate sanitation for everyone, and effectively protect water.

The Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters (2003) establishes international civil liability for all damages caused on humans, transboundary waters and the environment.

The International Convention on Civil Liability for Oil Pollution Damage (CLC) (1992) was adopted to ensure that adequate compensation is available to persons who suffer oil pollution damage resulting from maritime casualties involving oil-carrying ships. It places liability for such damage on the owner of the ship from which the polluting oil escaped or was discharged. It covers pollution damage resulting from spills of persistent oils suffered in the territory, including the territorial sea, of a State Party to the Convention.

The United Nations Convention to Combat Desertification (UNCCD) (1994) requires parties to combat desertification and mitigate the effects of drought. According to the Convention "land degradation" means reduction or loss, in arid, semi-arid and dry sub-humid areas, of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns. Under the regional implementation Annex V, the Desertification Convention provides guidelines and arrangements for the effective implementation of the Convention in the country parties of the Central and Eastern European region, which are affected by unsustainable exploitation of water resources leading to serious environmental damage, including chemical pollution, salinization and exhaustion of aquifers as well as forest coverage losses due to climatic factors, consequences of air pollution and frequent wildfires. The 10-year strategic plan and framework to enhance the implementation of the Convention (2008–2018) took these concerns into consideration.

The Convention on the Law of the Non-navigational Uses of International Watercourses (1997) commits Watercourse States to, individually and, where appropriate, jointly, prevent, reduce and control the pollution of an international watercourse that may cause significant harm to other watercourse States or to their environment, including harm to human health, to the use of the waters for any beneficial purpose or to the living resources of the watercourse.

The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997) applies to spent fuel and radioactive waste resulting from civilian nuclear reactors and applications and from military or defense programmes if and when such materials are transferred permanently to and managed within exclusively civilian programmes, or when declared as spent fuel or radioactive waste for the purpose of the Convention by the Contracting Party. The Convention also applies to planned and controlled releases into the environment of liquid or gaseous radioactive materials from regulated nuclear facilities.

The Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1998) does not specifically mention pollution in its articles. However, the substances it controls are those likely to cause pollution and harm human health and the environment. It seeks to promote shared responsibility and cooperative efforts among Parties in the international trade of hazardous chemicals in order to protect human health and the environment from potential harm. It also seeks to contribute to
the environmentally sound management of these chemicals when their use is permitted by facilitating information exchange about their characteristics, potential dangers, safe handling and use by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.

The **UN Economic Commission for Europe Aarhus Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters (1998)**. In order to contribute to the protection of the right of every person of present and future generations to live in an environment adequate to his or her health and well-being, each Party shall guarantee the rights of access to information, public participation in decision-making, and access to justice in environmental matters in accordance with the provisions of this Convention (Article 1). Pursuant to Decision IV/5 of 2011 on accession to the Convention by non-UN Economic Commission for Europe member states, all UN Member States are encouraged to accede to the Convention. Under the Convention the **Kyiv Protocol on Pollutant Release and Transfer Registers (2009)** was adopted. The objective of this Protocol is to enhance public access to information through the establishment of coherent, integrated, nationwide pollutant release and transfer registers in accordance with the provisions of this Protocol, which could facilitate public participation in environmental decision-making as well as contribute to the prevention and reduction of pollution of the environment. All UN Member States can join the Protocol, including those which have not ratified the Aarhus Convention and those which are not members of the UN Economic Commission for Europe.


**International Health Regulations (IHR) (2005)** are meant to help the international community prevent and respond to public health risks and emergencies that can have devastating impacts on human health and economies.

The **Strategic Approach to International Chemicals Management (SAICM)**, adopted by the First International Conference on Chemicals Management on 6 February 2006, is a policy framework to promote chemical safety around the world. The objective of Strategic Approach is to achieve sound management of chemicals throughout their life cycle so that by 2020, chemicals are produced and used in ways that minimize adverse impacts on human health and the environment. The “2020 goal” was adopted by the World Summit on Sustainable Development in 2002 as part of the Johannesburg Plan of Implementation. The Strategic Approach is not legally binding.

The **Bali Declaration on Waste Management for Human Health and Livelihood (2008)** reaffirms the commitment, of parties to the Basel Convention and from other states, to the principles and purposes of the Basel Convention, including the fundamental objective to protect, by strict control, human health and the environment against the adverse effects resulting from the generation, transboundary movement and management of hazardous wastes and other wastes.

The objective of the **Minamata Convention on Mercury (2013)** is to protect the human health and the environment from the adverse effects of mercury and mercury compounds. Its preamble recognizes the substantial lessons of Minamata Disease, in particular the serious health and environmental effects resulting from the mercury pollution, and the need to ensure proper management of mercury and the prevention of such events in the future.
Regional multilateral environmental agreements, initiatives and networks are also significant platforms for enhancing synergies and cooperation in tackling global pollution issues at the local level, while benefiting from the localized knowledge bases that cannot be easily accessed at the global level. For example, the Pan-European Strategic Framework on Greening the Economy provides a platform for a coordinated regional approach to a green and inclusive economy, operationalized by the Batumi Initiative on Green Economy (BIG-E) at present comprising 115 commitments to actions by 25 countries and 12 organizations.

The degree of focus on the various types and elements of pollution varies from one region to another, but across all the five regions, water and air pollution are given a greater focus. The various regional agreements, networks and initiatives have established or are in the process of establishing databases, tools and joint actions taking into consideration the different sectoral and regional experience, cultural and political practices and challenges as regards pollution control. The available data reflects in detail the character and focus of the particular region, including policy and regulatory gaps. The Global Atmospheric Pollution Forum, for instance, relies on data from Africa, Asia and Latin America and the Caribbean to support the development of solutions to air pollution-related problems and promote effective cooperation among nations at the regional, hemispheric and global scales.

The European Environment and Health Process (EHP) and its Ministerial Conference provide a unique intersectoral policy platform that brings together the environment and health sectors and partners to shape policies and actions to reduce the adverse health impact of environmental threats through effective environmental health interventions. The latest conference held in Ostrava, Czech Republic with a strong political commitment (Ostrava Declaration) accompanied by a compendium of meaningful actions to protect the health and well-being of European citizens and the environment they live in. The Environment and Health Process enhances synergies and cooperation and an important platform to tackle the causes and consequences of pollution.

There is need for additional resources or efforts to enhance the capacity of weak regional initiatives, specifically in Africa, Asia and Latin America and the Caribbean. There is also a need to further develop joint initiatives – on topics such as environment and health, environment and water, environment and agriculture – or to integrate them into the concept of the green or circular economy.

**Africa**


5. The Maputo Declaration on the Prevention and Control of Regional Air Pollution in southern Africa and its likely Transboundary Effects. (2003)

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7. Regional Policy Framework on Air Pollution (2008)
10. Southern African Development Community (SADC) Regional Policy Framework on Air Pollution (Lusaka Agreement 2008)
11. Eastern Africa Regional Framework Agreement on Air Pollution (Nairobi Agreement 2008)
12. West and Central Africa Regional Framework Agreement on Air Pollution (Abidjan Agreement-2009)
14. Southern Africa Development Community Protocol on Regional Air Quality and Atmospheric Emissions
15. Libreville Declaration on Health and Environment in Africa (2008) recognizes the need for further research to increase understanding of the vulnerability of humans to environmental risk factors, particularly in Africa. It calls upon countries to develop or update national, subregional and regional frameworks in order to address more effectively the issue of environmental impacts on health.
16. West, Central and Southern Africa Region Regional Contingency Plans and other Means of Preventing and Combatting Pollution Incidents (2011)

Asia

1. The Association of Southeast Asian Nations (ASEAN) (1967)
2. ASEAN Agreement on Transboundary Haze Pollution (2002)
3. Central Asian International Environmental Forum

4. Intergovernmental Networks on Regional Air Pollution in Asia and the Pacific Region

5. The Acid Deposition Monitoring Network for East Asia (EANET) (1998)

6. Joint Forum on Atmospheric Environment in Asia and the Pacific

7. Asia-Pacific Regional Forum on Health and Environment

8. The Asia Pacific Clean Air Partnership (APCAP)

9. Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC)

10. Clean Air Asia's Integrated Programme for Better Air Quality in Asia (IBAQ)

11. Asian Co-benefits Partnership (ACP)

12. The Long-range Transboundary Air Pollutants in North East Asia (LTP)

13. The Northeast Asian Subregional Programme for Environmental Cooperation (NEASPEC)


15. The Convention on Conservation of Nature in the South Pacific (Apia Convention)


17. Regional Environmental Centre for Central Asia (CAREC) (1998) creates opportunities to attract to Central Asia the advanced knowledge, best international practices and technologies in the field of environmental management and sustainable development.

18. The Convention to Ban the importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement of Hazardous wastes within the South Pacific Region (Waigaini Convention) (1995) objectively seeks to reduce and eliminate transboundary movements of hazardous and radioactive waste, to minimize the production of hazardous and toxic wastes in the Pacific region and to ensure that disposal of wastes in the Convention area is completed in an environmentally sound manner. The Convention applies the strict controls of the Basel Convention to the South Pacific area, and ensures that hazardous waste cannot travel from New Zealand or Australia to another Pacific country, or to Antarctica.


**Europe and North America**

1. European Environment and Health Ministerial Board (EHMB)
2. The Barcelona Convention for the Protection of the Mediterranean Sea against Pollution (1976) and its Protocols seeks to protect the maritime waters of the Mediterranean Sea from substances that could harm the living resources, cause hazards to human health, and impair quality of seawater.

Seven Protocols addressing specific aspects of Mediterranean environmental conservation processes have been adopted since 1976:


• Prevention and Emergency Protocol: Protocol Concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft or Incineration at Sea (2002), which replaced the Protocol Concerning Cooperation in Combating Pollution of the Mediterranean Sea by Oil and other Harmful Substances in Cases of Emergency (1976).

• Land-based Sources Protocol: Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources (1980)

• The Land-based Sources and Activities Protocol: Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities (1996)

• Specially Protected Area and Biodiversity Protocol: Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (1995)


3. Batumi Action for Cleaner Air (2016–2021) hosted by the United Nations Economic Commission for Europe: a voluntary initiative supporting countries’ efforts in improving air quality and protecting public health and ecosystems. 108 commitments have been submitted by 27 countries and 4 organizations.


5. The United Nations Economic Commission for Europe Convention on Long-range Trans-boundary Air Pollution (1979) and its Protocols:


b) Protocol on Reduction of Sulphur Emissions or their Transboundary Fluxes by 30% (1985);

c) Protocol on Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes (1988);
d) Protocol on Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes (1991)

e) Protocol to the Convention on long-range Transboundary air pollution concerning the further reductions of Sulphur Emissions (1994).


g) Protocol to the Convention on long-range Transboundary air pollution on Heavy Metals (1998)


i) Protocol to the Convention on long-range Transboundary air pollution to abate acidification, eutrophication and ground-level ozone (1999)


11. Alpine Convention (1991) and its Protocols encourage parties to adhere to the basic principles of all the activities not harmful to humans, animals and plants and their habitats.


13. River Basin Conventions (Danube (1994), Elbe (1990), Oder (1996), Rhine (1999)) seek to ensure that surface waters and groundwater within river basins are managed and used sustainably and equitably; improve water quality and reduce hazardous pollution to ensure that human health and the aquatic ecosystem of the waters are not threatened by hazardous substances.

14. Agreement for cooperation in dealing with pollution of the North Sea by oil and other harmful substances (Bonn Agreement) (1983) is applicable whenever the presence or the prospective presence of oil or other harmful substances polluting or threatening to pollute the North Sea presents a grave and imminent danger to the coast or related interests of one or more Contracting Parties.

15. The Convention on the Protection of the Black Sea Against Pollution (Bucharest Convention) and its Protocol on Protection of the Black Sea Marine Environment Against Pollution from Land Based Sources (1992), Protocol on Cooperation in Combating Pollution of the Black Sea Marine Environment by Oil and other Harmful Substances in Emergency Situations; and Protocol on the Protection of the Black Sea Marine Environment Against Pollution ~by Dumping

Latin America and the Caribbean

1. The Forum of Ministers of Environment of Latin America and the Caribbean

2. Regional Action Plan for Intergovernmental Cooperation on Air Pollution for Latin America and the Caribbean (2014)

3. Regional Intergovernmental Network on Atmospheric Pollution of Latin America and the Caribbean


5. Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (Cartagena Convention) (1983) calls on Parties to take appropriate measures to control pollution of the wider Caribbean Sea region from land based sources, ships, dumping, sea bed activities, and airborne sources. It covers the marine environment of the Gulf of Mexico, the Caribbean Sea and the areas of the Atlantic Ocean and is complimented by the following protocols:
   c) The Protocol Concerning Pollution from Land-Based Sources and Activities (1999)

6. Convention for the Protection of the Marine Environment and Coastal Area of the South-East Pacific (1981) (Lima Convention) obligates Parties to take measures to prevent, reduce and control pollution of the marine environment and coastal area of the South-East Pacific and to ensure appropriate environmental management of natural resources.


The Antarctic Treaty System


2. Convention for the Conservation of Antarctic Seals (1972)


4. The Antarctic Treaty Consultative Meeting (ATCM) adopts Measures, Decisions and Resolutions for implementing the principles of the Antarctic Treaty and the Environment Protocol and provide regulations and guidelines for the management of the Antarctic Treaty area. The Decisions address internal organizational matters of the meeting. The Resolutions are not legally binding on Contracting Parties but they can provide guidance on the implementation of the Antarctic Treaty system. The Measures, once approved, are legally binding on the Consultative Parties.
5. The Committee for Environmental Protection (CEP) provides advice and formulate recommendations to the Parties in connection with the implementation of the Environment Protocol (German Environment Agency 2016).

The Arctic Council

1. Arctic Contaminants Action Program (ACAP) mandated to prevent adverse effects from, reduce, and ultimately eliminate pollution of the Arctic environment.

2. Arctic Monitoring and Assessment Programme (AMAP) mandated to provide reliable and sufficient information on the status of, and threats to, the Arctic environment, including scientific advice on actions to be taken to support Arctic governments in their efforts to take remedial and preventive actions relating to contaminants.

3. Conservation of Arctic Flora and Fauna (CAFF) mandated to develop common responses on issues of importance for the Arctic ecosystem, including responses on conservation opportunities and political commitments.

4. Emergency Prevention, Preparedness and Response (EPPR) mandated to contribute to the protection of the Arctic environment from the threat or impact that may result from an accidental release of pollutants or radionuclides.

5. Protection of the Arctic Marine Environment (PAME) mandated to address policy and non-emergency pollution prevention and control measures for the protection of the Arctic marine environment from both land and sea-based sources. Sustainable Development Working Group (SDWG) incorporates activities to prevent and control disease and injuries by monitoring the impact of pollution and climate change on health and Sustainable Development of the people living in the Arctic.
Annex 6: Analysis of the linkages between addressing pollution types and implementing Sustainable Development Goal targets

The figures below map out how addressing pollution through multilateral environmental agreements and other international initiatives contributes to achieving Sustainable Development Goal targets. The logos in the centre provide an indication of the institutions that play a key role in tackling that type of pollution.

Air pollution

[Diagram of pollution types and SDG linkages]
Freshwater pollution
Towards a Pollution-Free Planet

**Marine and coastal pollution**

- **15.1** By 2020, ensure the conservation, restoration and sustainable use of marine and coastal ecosystems and their services, in particular wetlands, mangroves and deltas, in line with obligations under international agreements.
- **15.2** By 2020, prevent and significantly reduce marine pollution of all kinds, including inputs from land-based activities, including marine debris, and end all legislative, institutional and regulatory gaps.
- **15.3** By 2030, enhance the conservation and sustainable use of oceans and their resources by 2030, including through an efficient and effective framework of international environmental standards and actions, and national and area-based management approaches, and, by 2020, protect and prevent the degradation of marine and coastal ecosystems, applying the best available technologies and scientific knowledge.

**UNCCD**
- **16.1** By 2030, achieve the sustainable management and development of all soils, addressing their vulnerability to desertification,土地退化 and drought, and halting the loss of biodiversity and desertification.

**14.1** By 2030, prevent and significantly reduce marine pollution of all kinds, including inputs from land-based activities, including marine debris.
- **14.2** By 2020, significantly and sustainably improve the management of marine resources using, as appropriate, scientific data, including remote sensing and satellite technology.
- **14.3** By 2030, increase scientific knowledge, develop research capacity and transfer technology in order to enhance the conservation and sustainable use of oceans and their resources, particularly for developing countries, in particular small island developing States and least developed countries.
- **14.4** By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices, and implement science-based management measures, in line with international law, that build on the one hand on the precautionary approach and the sustainable use of fish stocks, and on the other hand on the principle of equitable sharing of the benefits derived from the utilization of marine biological resources.

**Sustainable Production and Consumption (SPC)**

- **12.1** By 2030, 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, in particular small island developing States and least developed countries.

**UNEP**
- **12.2** By 2020, achieve the sustainable management and efficient use of natural resources.

**OFF (Ocean, Fish, and Food)**
- **12.3** By 2020, in countries subject to implementing international law as defined in the convention on the law of the sea, agree on a framework for the conservation and sustainable use of marine biological resources in areas beyond national jurisdiction, in order to ensure that such resources are managed and used in an optimal manner, for the benefit of all nations, in accordance with international law, as defined in Articles 81 and 82 of the convention on the law of the sea.
- **12.4** By 2020, substantially reduce marine pollution, including by reducing release of nitrogen and phosphorus from agriculture, plant nutrients, waste and sewage, and marine debris, and taking into account international instruments as appropriate.
- **12.5** By 2020, substantially reduce the destruction of habitats, including wetlands, the release of toxic chemicals and materials, and marine pollution from land-based activities.

**14.5** By 2020, launch and implement strategies, policies and action plans, including research and development, to achieve the sustainable management and conservation of all types of fisheries, in particular small-scale fisheries, and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices, in line with international law.

**11.1** By 2020, reduce the adverse per capita environmental impact of cities, including by paying special attention to small and other urban areas.