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# Special Rapporteur on human rights and the environment

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## **The right to a clean, healthy and sustainable environment: non-toxic environment**

### **Supplementary information to the Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment**

The following information is supplementary to the report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment (A/HRC/49/53). It is available in English only on the website of the Office of the High Commissioner for Human Rights:

<https://www.ohchr.org/EN/Issues/Environment/SREnvironment/Pages/Annualreports.aspx>

## I. Introduction

1. Due to a restrictive word limit, the following good practices could not be included in the main body of the Special Rapporteur's report "The right to a clean, healthy and sustainable environment: non-toxic environment" (A/HRC/49/53). However, these good practices are vitally important because they demonstrate the availability of effective actions to prevent pollution, avoid exposure to toxic substances and rehabilitate contaminated sites. Of particular concern from the human rights perspective are the disproportionate impacts of pollution and toxic chemicals upon vulnerable and marginalized populations, often described as environmental injustices. As chronicled in the report, priority must be given to people living in the most extreme environmental injustices, areas known as sacrifice zones.

2. Drawn from every region and featuring more than 100 States and a wide range of actors, the following examples are intended to inspire others to take ambitious action to fulfil human rights by preventing pollution and eliminating exposure to toxic substances. It should be noted that these examples are illustrative rather than exhaustive, meaning many more good practices are being implemented across the world. The Special Rapporteur is grateful for the detailed and helpful submissions received from Argentina, Austria, Azerbaijan, Brazil, Cambodia, Chile, Costa Rica, Côte d'Ivoire, El Salvador, Finland, Greece, Guatemala, Malta, the Marshall Islands, Mauritius, Mexico, Montenegro, the Niger, Poland, Qatar, Singapore, Switzerland and Togo, and from youth, Indigenous peoples, students, academics, civil society and human rights institutions.<sup>1</sup> The Special Rapporteur also hosted a virtual researchathon on sacrifice zones, which yielded a number of good practices in reducing pollution in these contaminated communities, restoring their dignity and improving their quality of life.

## II. International law

3. Several global environmental treaties have played a key role in preventing certain types of pollution and the use of some toxic substances. The Montreal Protocol has been successful in removing ozone-depleting substances from the atmosphere and protecting the ozone layer, thus avoiding more than 100 million cases of skin cancer; the Basel Convention has successfully strengthened national capacities for the environmentally sound management of hazardous wastes; the Rotterdam Convention has facilitated the exchange of critical information on the trade of hazardous substances; and the production and use of a number of POPs has been restricted or eliminated under the Stockholm Convention. The Minamata Convention on Mercury is also expected to achieve positive results, for example through phasing out the use of mercury in various products.

4. The Montreal Protocol is widely regarded as the most successful international environmental treaty ever negotiated. Every country in the world is a party to it. The protocol controls the use of approximately 100 ozone-depleting chemicals including chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs), and methyl bromide. CFCs were completely phased out by 2010, while deadlines for ending the use of methyl bromide, HCFCs, and HFCs stretch as late as 2040 for some developing countries. Globally, CFC production peaked in 1988 and has fallen by 99 percent. The ozone layer has been steadily recovering at a rate of 1-3% per decade since 2000 and full recovery is expected to occur in the mid-21st century. The Kigali Amendment accelerates the phaseout of HFCs, substitutes for ozone-depleting chemicals that do not deplete the ozone layer but are powerful greenhouse gases, exacerbating the climate crisis. It is estimated that at least 100 million cases of skin cancer and many million cases of cataracts will be avoided by the end of this century as a result of implementation of the Protocol.<sup>2</sup>

5. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal came into force in 1992 with the goal of restricting shipments of hazardous wastes from wealthy States to less wealthy States through a prior informed consent

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<sup>1</sup> See <https://www.ohchr.org/EN/Issues/Environment/SREnvironment/Pages/ToxicFree.aspx>.

<sup>2</sup> UNEP 2019, Global Chemicals Outlook II.

procedure.<sup>3</sup> The Convention also aimed to reduce the volume and toxicity of wastes, ensure their environmentally responsible treatment close to the source, and assist less wealthy States to develop institutions for managing hazardous waste flows. The Ban Amendment to the Basel Convention prohibits shipments of hazardous waste from wealthy States (most OECD members) to less wealthy States. Plastic waste was added to the Basel Convention in 1999.

6. The Stockholm Convention on Persistent Organic Pollutants (POPs) is intended to protect human health from toxic chemicals that persist in the environment for long periods of time, become widely distributed across the planet, bioaccumulate in wildlife and humans, and damage human health and ecosystem health. It began with a list of 12 persistent organic pollutants and substances continue to be added to the Convention's elimination regime. In 2019, two toxic chemical groups which together total about 4,000 chemicals (dicofol and perfluorooctanoic acid and related compounds) were listed on Annex A of the Convention. A review of monitoring data from the Arctic Monitoring and Assessment Programme collected over 20 years reveals that primary emissions of most of the POPs first listed under the Stockholm Convention are declining. However, trends are less positive for other POPs, notably polybrominated diphenyl ethers (PBDEs), HCB and PCBs, among others, due in part to their remobilization.<sup>4</sup> As emissions declined, so did human exposures to these toxic substances.<sup>5</sup>

7. The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, which entered into force in 2004, also provides for the right-to-know through public awareness and outreach activities. Other relevant measures in the Convention include the prior informed consent (PIC) procedure, the need for export notifications for substances that are not listed to Annex III (providing parties with information on chemicals coming through their borders), as well as the requirements set out under Article 13 of the Convention, which require labelling (to ensure adequate availability of information with regard to risks and/or hazards to human health or the environment) and the inclusion of a safety data sheet (for occupational purposes).

8. The Minamata Convention on Mercury is a global treaty intended to protect human health and the environment from the dangers of mercury.<sup>6</sup> Highlights of the Convention include a ban on new mercury mines, the phase-out of existing mines, the phase-out of mercury uses in numerous products and processes, limits on releases to air, land and water, and the regulation of artisanal and small-scale gold mining. It includes several provisions about access to information, public registries, environmental education and awareness, and public participation. It also provides that information relating to the health and safety of people and the environment shall not be considered confidential. The Minamata Convention is consistent with the Aarhus Convention, which specifically provides that commercial confidentiality cannot be used as grounds for refusal to disclose information about emissions to the environment.

9. The Economic Commission for Europe Convention on Long-range Transboundary Air Pollution is an excellent example of regional cooperation. The Convention was signed in 1979, entered into force in 1983 and is now accompanied by eight protocols. Fifty-one parties from three continents have collaborated to set emission reduction targets, monitor compliance, build capacity and raise awareness. Sulphur dioxide emissions in the region have declined 70 per cent since 1990, while nitrogen dioxide emissions fell 40 per cent.<sup>7</sup> The 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone, as amended in 2012, is the first legally binding agreement containing obligations to reduce short-lived climate pollutants. Atmospheric emissions of various POPs have decreased significantly since 1990 among Parties to the Convention on Long-range Transboundary Air Pollution (e.g. 95 per cent for hexachlorobenzene, 75 per cent for PCBs, 70 per cent for dioxins and furans and 83 per cent for PAHs).

<sup>3</sup> See <http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx>

<sup>4</sup> UNEP 2019, Global Chemicals Outlook II.

<sup>5</sup> WHO Regional Office for Europe. 2015. Human biomonitoring: facts and figures.

<sup>6</sup> See <https://www.mercuryconvention.org/en/about>

<sup>7</sup> Economic Commission for Europe, *Towards Cleaner Air: Scientific Assessment Report 2016*, 2017.

10. There are two regional treaties that identify fulfilling the right to a healthy and sustainable environment as their objective and provide a series of procedural tools intended to contribute to respecting, protecting and fulfilling this right. The Aarhus Convention on Access to Information, Public Participation, and Access to Justice in Environmental Matters has been highly effective over the past two decades in strengthening environmental democracy.<sup>8</sup> It is important to note that although the Aarhus Convention was negotiated under the auspices of the Economic Commission for Europe, it is open to participation by any State in the world. Guinea-Bissau recently became the first African State to accede to the Convention. The Kyiv Protocol on Pollutant Release and Transfer Registers to the Aarhus Convention requires its 35 parties to collect and publish information on pollution from industrial facilities. This information must be gathered annually, made available in a user-friendly way to the public for free, and must include at least 86 pollutants covered by the Protocol. Canada, Mexico and the United States of America also have comprehensive pollutant release inventories, while the North American Commission for Environmental Cooperation integrates and analyses data from these three States.<sup>9</sup>

11. The Escazú Agreement on Access to Information, Public Participation, and Access to Justice in Environmental Matters in Latin America and the Caribbean is a similar treaty that provides even stronger protection for the right to a healthy environment as well as pioneering protection for environmental human rights defenders.<sup>10</sup> Both the Aarhus Convention and the 2018 Escazú Agreement establish an enforceable right to access environmental information, including information on chemicals and waste management. The Escazú Agreement includes a reference to shifting the burden of proof in certain cases where chemicals and hazardous wastes could be involved. Article 8.3(e) refers to “measures to facilitate the production of evidence of environmental damage, when appropriate and as applicable, such as the reversal of the burden of proof.”

### III. Constitutions, laws and policies

12. All States should recognize the right to a safe, clean, healthy and sustainable environment in their constitutions and legislation. Research indicates that more than 100 States already recognize the right in their constitutions, while more than 100 States recognize the right in domestic environmental legislation.<sup>11</sup> Evidence indicates that recognizing the right to a healthy environment in law is a catalyst for improving environmental performance including faster reductions in air pollution, faster decreases in greenhouse gas emissions and increased access to safe drinking water.<sup>12</sup> Fiji added this right to its constitution in 2013, Tunisia in 2014 and Cuba in 2019.

#### Legislation

13. Several States explicitly recognize the right to breathe clean air. Examples include the Philippines Clean Air Act, the Environmental Code of France and the General Law on the Environment and Natural Resources 2000 of the Dominican Republic. The right to breathe clean air is also recognized at the subnational level in some countries, including the state constitutions of Pennsylvania and Massachusetts in the United States.<sup>13</sup> In other countries, including India and Pakistan, courts have clarified that the right to breathe clean air is constitutionally protected because it is an integral component of the rights to life and health.

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<sup>8</sup> UNECE. 2018. Aarhus in practice: How the Aarhus Convention made a difference in your country. <https://www.unece.org/environmental-policy/conventions/public-participation/aarhus-convention/20th-anniversary-of-the-adoption-of-the-aarhus-convention/aarhus-in-practice-how-the-aarhus-convention-made-a-difference-in-your-country.html>

<sup>9</sup> See <http://www.cec.org/category/pollutants/tracking-pollutant-releases-and-transfers-in-north-america/>

<sup>10</sup> See <https://www.cepal.org/en/escazuagreement>

<sup>11</sup> See A/HRC/43/53 as well as accompanying regional annexes.

<sup>12</sup> David R. Boyd, 2012, *The Environmental Rights Revolution: A Global Survey of Constitutions, Human Rights and the Environment* (University of British Columbia Press).

<sup>13</sup> Constitution of the State of Pennsylvania: art. 27: “The people have a right to clean air ....”

The National Strategy for Air Quality Management of Lebanon states: “Every citizen has the right to enjoy clean air.”

14. There is compelling evidence that enacting and enforcing strong air quality regulations saves lives and prevents illnesses. Since the Clean Air Act was enacted in 1970, the economy of the United States of America has grown by 262 per cent (measured by increased gross domestic product) while achieving average reductions of 73 per cent for six main air pollutants. Full implementation of the Clean Air Act will prevent 230,000 premature deaths per year by 2020. Its costs are measured in billions of dollars, while the benefits are in the trillions.<sup>14</sup> For example, the closure of 334 coal-fired power plants in the United States between 2005 and 2016 saved an estimated 22,563 lives due to improved air quality.<sup>15</sup> Reduced air pollution in California resulted in significant improvements in children’s lung function.<sup>16</sup>

15. Air quality in China is improving as a result of strong laws, policies and actions. China strengthened its Law on the Prevention and Control of Atmospheric Pollution Control and invested hundreds of billions of dollars to improve air quality. The Government is implementing a “three-year plan on defending the blue sky”, with specific targets for reducing air pollution by 2020. Levels of particulate matter in 74 cities decreased by 33 per cent in five years.<sup>17</sup> China also achieved substantial reductions in nitrogen oxides and sulphur dioxide. Cleaner air is linked to significant declines in infant mortality.<sup>18</sup>

16. In 2015, the city of Lanzhou, which had suffered from extreme air pollution in the past, was awarded "The Award for Today's Transformative Step" at the 2015 World Climate Conference at Paris for its great efforts on air quality improvement since 2012. Annual average concentrations of particulate matter (PM<sub>10</sub>) and sulfur dioxide (SO<sub>2</sub>) in 2014-2017 dropped by 19.28% and 66.29% respectively compared to 2004-2009, while concentrations of nitrogen dioxide (NO<sub>2</sub>) increased by 16.61% in comparing the same time periods. Research demonstrates that the risk of premature death in Lanzhou decreased substantially due to the enforcement of more strict limits on air pollution.<sup>19</sup>

17. A growing number of countries are adopting e-waste legislation, including, for example, India’s E-Waste Management Rules, adopted in 2016 and the EU Waste Electrical and Electronic Equipment Directive, revised in 2012.

18. Several countries have recently taken regulatory actions to restrict the manufacture, import and sale of microbeads in cosmetics, including Canada, France, New Zealand, Sweden, United Kingdom, and the United States.

19. Restrictions on the use of certain phthalates in some applications have been put in place in recent years in several countries, including in Canada, China, the Republic of Korea and the United States and in the European Union. For example, under its REACH directive, the European Union phased out all uses of butylbenzyl phthalate (BBP), dibutyl phthalate (DBP), diisodecyl phthalate (DIDP), and bis(2-ethylhexyl) phthalate (DEHP) due to toxicity for reproduction and endocrine disrupting properties in humans.<sup>20</sup>

<sup>14</sup> United States Environmental Protection Agency, *The Benefits and Costs of the Clean Air Act from 1990 to 2020* (2011).

<sup>15</sup> Jennifer A. Burney, 2020, “The downstream air pollution impacts of the transition from coal to natural gas in the United States”, *Nature Sustainability* 3: 152-160.

<sup>16</sup> W.J. Gauderman and others, “Association of improved air quality with lung development in children”, *New England Journal of Medicine*, vol. 372, No. 10 (5 March 2015), pp. 905–913.

<sup>17</sup> J. Huang and others, “Health impact of China’s Air Pollution Prevention and Control Action Plan: an analysis of national air quality monitoring and mortality data”, *Lancet Planetary Health*, vol. 2, No. 7 (July 2018), pp. e313–323.

<sup>18</sup> S. Tanaka, “Environmental regulations on air pollution in China and their impact on infant mortality”, *Journal of Health Economics*, vol. 42 (July 2015), pp. 90–103.

<sup>19</sup> Liu J, Ruan Y, Wu Q, Ma Y, He X, Li L, Li S, Niu J, Luo B. Has the mortality risk declined after the improvement of air quality in an ex-heavily polluted Chinese city-Lanzhou? *Chemosphere*. 2020 Mar;242:125196. doi: 10.1016/j.chemosphere.2019.125196. Epub 2019 Oct 29. PMID: 31896208.

<sup>20</sup> UNEP 2019, *Global Chemicals Outlook II*.

20. After discovering polybrominated diphenyl ethers (PBDEs) accumulating in breast milk, Sweden quickly banned PBDEs domestically and led a successful global effort to add PBDEs to the list of substances prohibited under the Stockholm Convention. Levels of PBDEs in breast milk rapidly declined. Norway was one of the first States to ban the use of PFOA in all consumer products and targeted additional flame retardant and stain repellent chemicals in 2019.<sup>21</sup>

21. France has prohibited the use of all neonicotinoid pesticides, meaning that acetamiprid, clothianidin, imidacloprid, thiacloprid, and thiamethoxam can no longer be used on crops grown in field or greenhouses.<sup>22</sup> According to the UN Food and Agriculture Organization, 71 percent of 100 crop species (which provide 90 per cent of global food), are pollinated by bees.<sup>23</sup>

22. In 2019, France introduced a law banning export of plant protection products (pesticides, herbicides, etc.) not approved for use in the European Union because of health or environmental concerns. The constitutionality of this law was challenged by chemical manufacturers but the Constitutional Council upheld its validity.<sup>24</sup> While the law sets an important precedent, its date for coming into force has been delayed until 2025 because of lobbying by pesticide businesses.<sup>25</sup>

23. In Austria, the Act on the Remediation of Contaminated Sites (1989) forms the basis for identifying and remediating contaminated sites. The Act creates a unique financing model that allocates earmarked levies from waste management to remediation of contaminated sites. This ensures reliable protection of human and environmental health in Austria. Since 1989, 332 contaminated sites have been detected and most of them have been cleaned up.<sup>26</sup>

24. In Italy, a variety of laws promote green and sustainable remediation.<sup>27</sup> These laws provide guidance regarding treatment of contaminated soil, restoration of water quality and vegetation, and installation of renewable energy sources.<sup>28</sup>

25. Costa Rica's environmental legal framework embodies the polluter pays principle in Law 7554 of 1995, the Organic Law of the Environment (Ley Orgánica del Ambiente), which states that: "Whoever pollutes the environment or causes any damage to it will be liable, when so established by the laws of the Republic and international conventions in force". According to these provisions, the "polluter pays principle" responds to the fact that economic agents that pollute or damage natural resources are obliged to take all necessary measures to avoid or minimize such potential damage to the environment (internalize the cost). It also responds to the concept of liability for environmental damage. This means that any damage caused to environmental elements must be repaired. The main bodies in charge of sanctioning and compensating environmental damage to the detriment of the right to a healthy and ecologically balanced environment are the Ministry of Environment and Energy and the Ministry of Health. For example, in 2006 there was a fire in a chemical manufacturing plant that caused a spill of chemicals that contaminated the soil, water and air. As part of the mitigation measures, the Environmental Tribunal ordered the business to: (i) contain the spill and its spread, (ii) remove and incinerate all contaminated soil and, (iii) decontaminate the affected water sources. The Tribunal also conducted an economic assessment of the environmental damage.<sup>29</sup>

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<sup>21</sup> UNEP 2019, Global Chemicals Outlook II.

<sup>22</sup> Government of France. 2018. Ban on neonicotinoid insecticides: France is leading the way in Europe, September 4th, 2018. <https://www.gouvernement.fr/en/ban-on-neonicotinoid-insecticides-france-is-leading-the-way-in-europe>

<sup>23</sup> UNEP. 2010. Global Honey Bee Colony Disorders and Other Threats to Insect Pollinators.

<sup>24</sup> Constitutional Council, 2020, Union of Plant Protection Industries, Decision No. 2019-823, 31 January 2020.

<sup>25</sup> See [https://www.francetvinfo.fr/monde/environnement/pesticides/l-assemblee-decale-de-trois-ans-l-interdiction-de-la-production-de-certains-pesticides\\_3236123.html](https://www.francetvinfo.fr/monde/environnement/pesticides/l-assemblee-decale-de-trois-ans-l-interdiction-de-la-production-de-certains-pesticides_3236123.html)

<sup>26</sup> Submission from Austria, see [www.altlasten.gv.at](http://www.altlasten.gv.at)

<sup>27</sup> Environmental Act (Decree 152/06) and Ministerial Decree 161/2012.

<sup>28</sup> Submission from Italy.

<sup>29</sup> Submission from Costa Rica.

26. In Chile, Law No. 19,300 on General Bases of the Environment establishes as “saturated zones” those communities in which one or more environmental quality standards are exceeded. In these cases, a decontamination plan must be developed and implemented. In the case of standards that protect people's health, these are called primary standards and when exceeded require the implementation of prevention and decontamination plans. As a result of these efforts, substantial improvements in air quality have occurred in Tocopilla, Tierra Amarilla and Andacollo.<sup>30</sup> In relation to the responsibility of companies in the remediation of contaminated sites, according to Chilean jurisprudence, there is an action to repair environmental damage in Law No. 19,300 and Law No. 20,417, and a civil action to pursue compensation for damages, established in the Civil Code.

27. Viet Nam has strengthened its regulatory system governing pollution and toxic substances, as highlighted by the inclusion of the right to a healthy environment in the Constitution (2013) and a new law on environmental protection (2014). In 2016, following massive discharges of toxic substances into the ocean that killed large quantities of fish and shellfish, the Ministry of Natural Resources and Environment fined the Formosa Steel company \$500 million for pollution exceeding permitted levels and required the company to carry out environmental remediation of damaged areas.

28. Singapore relies on legislation, air quality monitoring and strict enforcement programmes to limit emissions from major pollutant sources. These ensure that air quality remains good despite Singapore’s dense urban landscape and large industrial base. The primary piece of legislation concerning air pollution control and enforcement is the Environmental Protection and Management Act. Singapore also has a comprehensive waste management system. Stringent regulations are in place to ensure proper waste collection, disposal and treatment to safeguard our public health and living environment, particularly for toxic industrial waste that can pose serious public health concerns if they are not managed properly. The National Environment Agency regulates the collection and disposal of toxic industrial waste under the Environmental Public Health (Toxic Industrial Waste) Regulations. Toxic waste must be collected and disposed of by licensed industrial waste collectors.<sup>31</sup>

29. Israel’s Ministry of Environmental Protection's Marine Environment Protection Division implemented new regulations and increased supervision and enforcement on discharge permit holders. They also imposed large fines on polluting corporations, which has helped to deter other companies from polluting the Mediterranean. These policies led to a 95% reduction of all pollutants, including mineral oil, heavy metals, and ammonia, discharged into the Mediterranean Sea from 1998 to 2017.<sup>32</sup>

30. The Gulf Cooperation Council members – Bahrain, the United Arab Emirates, Kuwait, Oman, Qatar and Saudi Arabia – and Yemen recently initiated legislation to restrict the use of certain chemicals of concern in products such as electrical and electronic equipment, cosmetics and personal care products, toys and detergents.<sup>33</sup>

31. Qatar attempts to ensure the environmental rights of the population through a variety of mechanisms including the Constitution, Environmental Protection Law No. 30 of 2002, Executive Regulations No. 4 of 2005 for the Environmental Protection Law, and Qatar Vision 2030.<sup>34</sup>

32. In 2014, Saudi Arabia’s Presidency of Meteorology and Environment announced a decree giving all companies five years to meet new air, water, and noise pollution standards. All projects must meet international benchmarks standards as part of Saudi Arabia’s environmental plan to protect human and environmental health. Sudan has also created strict limits for air, water, soil, and noise pollution from the oil industry.

<sup>30</sup> Submission from Chile.

<sup>31</sup> Submission from Singapore.

<sup>32</sup> Israel Ministry of Environmental Protection. February 27, 2019. Ministry Report Reveals Nearly 100% Reduction in Discharge of Pollutants into the Sea.

<sup>33</sup> UNEP 2019, Global Chemicals Outlook II.

<sup>34</sup> Submission from Qatar.

33. In recent years, a growing number of African countries have enacted legislation addressing chemicals in products, such as restrictions on certain substances in cosmetics in Morocco and Rwanda and new toy safety standards in Egypt. As of 2018, 11 African countries (Algeria, Burundi, Cameroon, Ethiopia, Kenya, Nigeria, Rwanda, South Sudan, Tanzania, Uganda and Zimbabwe) had legislation and statutes limiting lead in all paints.

34. In 2016 Ghana enacted a new law to strengthen waste management and recycling systems, including through the establishment of a fund to provide finance for the management of electrical and electronic waste.

### **Policies**

35. Perverse subsidies are government subsidies that provide financial support for activities that cause environmental harm, including pollution and exposure to toxic substances. For example, in most States, taxes are lower on diesel fuel than gasoline despite the higher levels of toxic emissions from diesel. The United Kingdom was the first State member of the European Union to impose higher fuel excise duties on diesel fuel than regular gasoline.<sup>35</sup> A new report indicates that government subsidies to environmentally damaging activities are approximately \$1.8 trillion annually.<sup>36</sup>

36. Taxes can be used effectively to reduce environmental threats. Pollution fees are widely used. States that levy water effluent charges include France, Germany, Malaysia, the Netherlands and the Philippines. Studies show that water pollution taxes lead to a significant decline in pollution levels.<sup>37</sup> Air emission charges are used in many States, including Finland, France, Germany, Japan, the Netherlands, Norway, Sweden and the United States. Sweden, Norway, Denmark, Finland, France and Italy impose taxes on pesticides. Sweden reduced pesticide use by over 80 percent since 1980 by charging a special tax on pesticides, offering economic support for organic agriculture, funding research on alternatives to pesticide use, and providing mandatory education programs for pesticide users to assist them in reducing their reliance on these chemicals. Norway's pesticide tax is noteworthy for being one of the first to apply higher tax rates to products of higher toxicity, resulting in a shift toward the use of less hazardous pesticides. Denmark employed a similar approach to pesticide taxes, contributing to a 40 percent reduction in pesticide use between 2013 and 2017.<sup>38</sup> Turkmenistan's 1996 Law on Protection of Atmospheric Air authorizes a fee on emissions from stationary sources that is based on their toxicity to humans. France's General Tax on Polluting Activities, established in 1999, applies to a wide range of pollutants, including benzene, arsenic, selenium, mercury, nitrogen oxides, sulphur oxides, volatile organic compounds, polycyclic aromatic hydrocarbons, particulate matter, and garbage. French tax rates on air pollutants tripled in 2013 in an effort to improve air quality. Netherlands also ranks highly in terms of taxing pollution.<sup>39</sup>

37. In many countries the establishment of extended producer responsibility (EPR) programs has shifted the cost of waste management from authorities to producers and greatly increased the rate of recycling of different waste categories. A provincial EPR programme for tires across Canada, for example, increased the rate of collection to roughly 90 per cent, and largely eliminated the stockpiling and burning of end-of-life tires.

38. Singapore launched a Zero Waste Masterplan in 2019 to chart the vision towards a Zero Waste Nation and Circular Economy. Adopting a circular economy approach enables the recovery of resources and the prevention of waste to enhance resource and economic resilience. The Zero Waste Masterplan encourages sustainable production and consumption through regulations targeted at three priority waste streams – electrical and electronic waste

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<sup>35</sup> See European Environment Agency, Transport fuel prices and taxes in Europe, at <https://www.eea.europa.eu/data-and-maps/indicators/fuel-prices-and-taxes/assessment-4>.

<sup>36</sup> B Team and Business for Nature, 2022, "Financing Our Survival: Building a Nature Positive Economy through Subsidy Reform."

<sup>37</sup> Organization for Economic Cooperation and Development, Environmental Taxation: A Guide for Policymakers, 2011.

<sup>38</sup> Orum, Kudsk and Jensen, 2017, cited in UNEP 2019, Global Chemicals Outlook II.

<sup>39</sup> Eurostat, 2021, "Environmental Tax Revenues," <https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>

(e-waste), packaging waste including plastics, and food waste. Singapore implemented its Extended Producer Responsibility programme for e-waste in 2021. Under this programme, producers of regulated electrical and electronic products are responsible for the collection and proper treatment of their products when they reach their end-of-life. In this context, businesses must recover resources from a waste stream that grows with rising affluence, thus preventing e-waste from contaminating the environment.<sup>40</sup>

39. The overall goal of Sweden's environmental policy is to hand over to the next generation a society in which the major environmental problems have been solved, without increasing environmental and health problems outside Sweden's borders. One of Sweden's 16 broad environmental quality objectives is a non-toxic environment, defined as follows: "The presence of substances in the environment created or extracted by society should not threaten human health or biodiversity. The levels of naturally occurring contaminants are close to zero and their impact on human health and ecosystems is negligible. Levels of naturally occurring substances are close to background levels."<sup>41</sup> Specific targets for the environmental quality objective of a toxic-free environment, including: total exposure to chemical substances via all exposure routes is not harmful to humans or biodiversity; use of particularly hazardous substances has been phased out as far as possible; dispersion of unintentionally formed substances with hazardous properties is very low; and contaminated sites are remediated to the extent that they do not pose a threat to human health or the environment.<sup>42</sup>

40. To achieve its objectives, Sweden strengthened national legislation governing chemicals and is implementing a national strategy.<sup>43</sup> Among Sweden's priorities are: phasing out mercury, lead, carcinogens, mutagens, substances that harm reproduction, and persistent and bioaccumulative substances; restricting the use of perfluorinated substances; strengthening EU chemicals management; and working to reduce children's exposure to hazardous substances. Sweden also identified "nanomaterials, endocrine disruptors and combination effects of chemicals" as topics needing additional research and regulation.

41. In Italy, the National Epidemiological Study of Territories and Settlements Exposed to Pollution Risk, also known as the SENTIERI project, examines the health of populations impacted by National Priority Contaminated Sites. The SENTIERI project offers public health advice and pays attention to vulnerable groups reflecting recognition of the pivotal importance of addressing environmental injustice. The SENTIERI project has detected an excess of malignant mesothelioma, lung, colon and gastric cancer, and non-malignant respiratory diseases in the population affected by national priority contaminated sites. Excessive incidences of various types of cancers have disproportionately affected people living near chemical and petrochemical plants, oil refineries, and hazardous wastes dumps.<sup>44</sup>

42. In 2021, US President Joe Biden introduced two executive orders that included extensive actions to promote environmental justice.<sup>45</sup> Executive Order 14008 stated, in part, that "Agencies shall make achieving environmental justice part of their missions by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities". Significant funding for environmental justice programs was

<sup>40</sup> Submission from Singapore.

<sup>41</sup> See <https://sverigesmiljomal.se/miljomalen/giftfri-miljo/>

<sup>42</sup> Swedish Chemicals Inspectorate (Kemikalieinspektionen) 2019, *Fördjupad utvärdering av Giftfri miljö 2019 (In-depth evaluation of Toxic Free Environment 2019)*.

<sup>43</sup> 'Towards a toxin-free everyday environment – a platform for chemicals policy' (Govt Bill 2013/14:39).

<sup>44</sup> Marcos A. Orellana, 2021, "End-of-visit statement by the United Nations Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes" Visit to Italy, 30 November to 13 December 2021.

<https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=27957&LangID=E>

<sup>45</sup> Executive Order 14008 of January 27, 2021, Tackling the Climate Crisis at Home and Abroad <https://www.govinfo.gov/content/pkg/FR-2021-02-01/pdf/2021-02177.pdf> Executive Order 13990 of January 20, 2021 on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, <https://www.energy.gov/nepa/articles/eo-13990-protecting-public-health-and-environment-and-restoring-science-tackle>

included in the \$1.9 trillion American Rescue Plan Act. The Administrator of the Environmental Protection Agency, Michael Regan directed all offices within the EPA to strengthen the enforcement of environmental laws in communities overburdened by pollution.

43. Portugal imposes mandatory financial security for all environmentally risky activities identified in the EU's Environmental Liability Directive. Portugal accepts a wide range of financial security instruments, including insurance policies, bank guarantees, environmental funds and own funds. This approach increases the likelihood that polluters will be able to pay for the environmental damage caused by their activities, and reduces the probability that the public will bear the cost of remediation.<sup>46</sup>

## IV. Procedural elements of the right to a healthy environment

### Information

44. A number of governments have made efforts to compile chemical inventories in order to obtain a better understanding of the number of chemicals on the market. Examples include the following:

- As of 2017, there were 140,000 chemical substances in the EU's chemical inventory
- The US Environmental Protection Agency maintains an inventory covering about 85,000 chemicals sold in the United States.
- There are now approximately 28,000 substances on the Canadian Domestic Substances List.
- In 2018, Viet Nam launched a national chemicals database, which includes more than 170,000 substances.

45. Community right-to-know laws help increase the public's knowledge and access to information on chemicals at individual facilities, as well as their uses and releases to the environment. These provisions allow public concerns to be addressed regarding environmental and safety hazards due to the storage, handling and emissions of toxic chemicals in the vicinity of industrial installations.

46. An example of a consumer right-to-know law is Proposition 65 (also known as the Safe Drinking Water and Toxic Enforcement Act of 1986), created in the State of California in the United States. Proposition 65 requires businesses in California to provide warnings about significant exposures to chemicals in products, homes or workplaces, or those released to the environment, that cause cancer, birth defects and other types of reproductive harm. This enables residents to make informed decisions about their exposures to these chemicals. Proposition 65 requires California to publish a list (updated once a year) of such chemicals. It has grown to include approximately 900 chemicals since it was first published in 1987.

47. Another example of consumers' right-to-know is a provision under the European REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) Regulation. For substances of very high concern (SVHC), consumers have the right to receive information from the suppliers of an article about the presence of any SVHC in that article, and the supplier is obliged to provide the information within 45 days.

48. Reporting data on the uses of ozone-depleting chemicals, and modelling data on GHG emissions, provide some broadly accepted global trend metrics. New initiatives such as the Global Mercury Observation System, the Stockholm Convention Global Monitoring Plan and the Global Atmospheric Passive Sampling (GAPS) for monitoring and modelling mercury, POPs and other pollutant concentrations offer useful indications of releases. These systems could provide models for tracking programmes that cover releases of chemicals in pesticides, fertilizers and other manufactured products at the global level.<sup>47</sup>

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<sup>46</sup> European Court of Auditors, 2021, "The Polluter Pays Principle: Inconsistent Application Across EU Environmental Policies and Actions".

<sup>47</sup> UNEP 2019, Global Chemicals Outlook II.

49. France developed an online portal for environmental information, which includes data on: pollutant emissions from vehicles sold in France; exposure of urban populations to fine particulate pollution; electricity production (by source) and consumption; the quality of water bodies; municipal solid waste generation and collection; and household energy prices.<sup>48</sup>

50. North Macedonia developed a national environmental information system that includes air quality monitoring (17 stations), water quality monitoring (eighteen hydrological stations that monitor surface water), and comprehensive, easily accessible information on the state, quality and trends in all aspects of the environment.

51. Field schools for farmers can significantly reduce pesticide use, as inputs are replaced by knowledge. Large-scale studies conducted in Bangladesh, Indonesia and Viet Nam showed decreases of 34 to 92 per cent in pesticides used on rice crops.<sup>49</sup>

### **Public Participation**

52. Uruguay's National Water Policy Law enshrines the right to participate effectively in the formulation, implementation and evaluation of plans and policies. To this end, Uruguay created a Water and Sanitation Advisory Commission, three Regional Councils, and a number of other advisory bodies to seek public and expert input and provide advice on national water and sanitation policies. As a result, action plans have been implemented to improve water quality in the Santa Lucía, Río Negro and Río Tacuarembó river basins.

53. In Kazakhstan, public participation in decision-making on environmental issues is carried out through holding public hearings; conducting public environmental assessment reviews; participation in public councils under state bodies; and submission of comments and suggestions on environmental impact assessments as well as draft laws, plans, and policies.<sup>50</sup>

54. Ukraine has new laws on Environmental Impact Assessment and Strategic Environmental Assessment that enable broad public participation. The EIA law requires the creation of an open access electronic register of EIA information and procedures. Within the first year over seventeen hundred EIA procedures were initiated throughout Ukraine. User-friendly tools have been developed, including an 'eco bot' – a computer program that provides information updates on PCs or smartphones regarding specific EIAs or new EIA procedures in a selected region.

### **Access to Justice**

55. The economic barriers to access to justice include the costs of filing lawsuits and the so-called loser pays rule, which requires unsuccessful litigants to pay the costs of the winning parties. Costa Rica, Finland, Ireland, Slovakia, and Sweden are States where unsuccessful litigants are usually not required to pay the costs of the government in environmental cases. In Denmark, Hungary, Romania, Slovenia, Spain and Hungary, civil society organizations have access to legal aid in environmental cases.<sup>51</sup>

56. The Philippines offers a variety of good practices in access to justice through three national institutions including the Environmental Ombudsperson, the Commission on Human Rights, and the Supreme Court of the Philippines. The Environmental Ombudsperson investigates allegations that public agencies or officials have acted (or failed to act) in ways that either violate environmental laws or cause environmental degradation. The Commission on Human Rights conducted a ground-breaking global investigation into human rights violations caused by transnational corporations responsible for a large proportion of greenhouse gas pollution. The Supreme Court created specialized Rules of Procedure for environmental cases that expedite justice, reduce costs, and provide for a new writ of Kalikasan (nature) a special remedy to protect the right to a healthy environment. The

<sup>48</sup> See <https://www.data.gouv.fr/fr/>

<sup>49</sup> Henk Van den Berg and Janice Jiggins, "Investing in Farmers: the Impacts of Farmer Field Schools in Relation to Integrated Pest Management", *World Development*, vol. 35, No. 4, April 2007, pp. 663–686.

<sup>50</sup> Environmental Code, Article 57-1.

<sup>51</sup> J. Darpo. 2013. Effective Justice: Synthesis report of the study on the Implementation of Articles 9.3 and 9.4 of the Aarhus Convention in the Member States of the European Union.

Supreme Court has issued many precedent-setting decisions involving the right to a healthy and ecologically balanced environment, including cases about standing, intergenerational equity, the precautionary principle, polluter's liability, the accountability of government agencies, and continuing mandamus.<sup>52</sup>

57. In response to a lawsuit asserting that chronic water pollution in Manila Bay violated the right to a healthy environment, the Supreme Court of the Philippines ordered 13 responsible agencies to implement the following actions: install and operate sewage treatment facilities, clean up hazardous and toxic wastes, prevent pollution and wastes from ships, develop adequate facilities and programmes for the proper disposal of solid waste, revitalize marine life by reintroducing indigenous species, require septic tank and sludge companies to use adequate treatment facilities, prevent illegal fishing, establish comprehensive environmental education programmes, and allocate a budget sufficient to carry out the restoration plan. In its conclusion, the Court stated that State agencies "cannot escape their obligation to future generations of Filipinos to keep the waters of Manila Bay as clean and clear as humanly possible. Anything less would be a betrayal of the trust reposed in them."<sup>53</sup>

58. The Administrative Court of Thailand plays a vital role in protecting the right to a healthy environment in cases brought by citizens and local communities. The Administrative Court has made orders in more than 65 cases involving human rights and environmental issues such as pollution from gold mining that violated human rights, impacts of limestone mining on people's health, and industrial lead contamination in a creek.<sup>54</sup> Klity Creek was contaminated with lead in an industrial accident, poisoning people who depended on the creek for drinking water and food. With the help of EnLAW and other civil society organizations groups, the local villagers won three lawsuits—one administrative and two civil—against the company that had polluted Klity Creek and the state agency in charge of cleaning it up. Thanks to their persistence and tenacity, 159 villagers were awarded \$1.7 million in damages. The court ordered that the mining company rehabilitate the creek, a process that is now underway.<sup>55</sup>

59. Uruguay has a very straightforward system for enabling persons to submit complaints about pollution and other types of environmental degradation. Any citizen, from anywhere in the country, can make an environmental complaint through a form available on the Ministry website.<sup>56</sup> Each complaint is evaluated by a technical team, and if well-grounded and within the Ministry's jurisdiction, an investigation is carried out, which may require inspections, monitoring and laboratory analysis. The results of the investigation are provided to the complainant. Through this process, citizens increase the environmental monitoring capacity of the government.

60. Article 19(8) of the Constitution of Chile states that every person has "the right to live in an environment free of contamination." In 2019, the Supreme Court of Chile issued a powerful decision condemning the government's longstanding failure to address industrial air pollution in the Quintero-Puchuncaví region.<sup>57</sup> The Court concluded that the constitutional right to a healthy environment had been violated and ordered the government to implement a suite of remedial actions to protect public health and the environment. It stated that "economic development, such as that represented by the creation of Ventanas Industrial Complex, even when it legitimately aims to improve the quality of life of people, including those who live in Quintero, Ventanas and Puchuncaví, cannot be implemented by ignoring

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<sup>52</sup> *Oposa v. Factoran* (1993); *MMDA v. Concerned Citizens of Manila Bay* (2008), *Resident Marine Mammals et al v. Reyes* (2015), *International Service for the Acquisition of Agri-biotech Application vs. Greenpeace Southeast Asia (Philippines)*, and *Rules of Procedure for Environmental Cases*, A.M. No. 09-6-8-SC, effective April 29, 2010

<sup>53</sup> *Concerned Residents of Manila Bay et al. v. Metropolitan Manila Development Authority et al.* (2008), General Register Nos. 171947-48, Supreme Court.

<sup>54</sup> Cases No. E.1544/2013 (Loei province), No. E. 9/2012 (Nong Bua Lamphu), and No. 597/2008 (Thong Pha Phum District, Kanchanaburi Province).

<sup>55</sup> See <https://globalhumanrights.org/stories/hope-in-action-taking-on-corporate-crimes-in-thailand/>

<sup>56</sup> See <http://www.mvotma.gub.uy/denuncias-ambiente.html>

<sup>57</sup> *Francisco Chahuan Chahuan versus Empresa Nacional de Petróleos*, ENAP S.A, Case No. 5888-2019, (May 28, 2019).

or abandoning the conservation and protection of the environment, while it also cannot compromise the expectations of future generations.”<sup>58</sup> Chile’s National Human Rights Institution and the Chilean Ombudsperson for Children both were involved in this litigation. The Ombudsperson also undertook on-site visits to schools and called for a focus on preventing pollution so children and youth can enjoy all of their human rights.

61. The Constitution of Argentina states that “Every citizen has the right to a healthy and balanced environment, suitable for human development and for productive activities to satisfy present needs without compromising those of future generations” (Article 41). In a landmark 2008 decision, the Supreme Court of Argentina concluded that severe air and water pollution in the capital city of Buenos Aires violated residents’ constitutional right to live in a healthy environment.<sup>59</sup> As a result, the Court required the federal government, provincial government, and local municipalities to take measures to reduce pollution, remedy environmental damage, and prevent future damage. The Court established an action plan requiring the governments to fulfill specific measures, including: (i) producing and disseminating public information about the state of the environment and threats to human health; (ii) controlling industrial air and water pollution; (iii) developing an emergency sanitation plan; and (iv) adopting a comprehensive measurement system to assess compliance with the plan’s goals. In order to ensure enforcement, the Court delegated oversight to a federal court and required the governments to provide regular updates to the court on the status of implementation of its orders.

62. The Constitution of Mexico provides that every person “has the right to a healthy environment for his/her own development and well-being (Article 4). In a 2017 decision involving water pollution, the Supreme Court of Mexico found that the Government had not taken all possible measures, to the maximum of available resources, to prevent and control processes of water degradation, to carry out monitoring to ensure that the wastewater discharges complied with current regulations in quantity and quality, or to carry out the necessary corrective actions to clean up the water. The Court concluded that it was indispensable that the State monitor compliance with environmental norms and, if necessary, sanction or limit the actions of private individuals, otherwise the human right to a healthy environment would be void of content.<sup>60</sup>

63. In 2018, the National Human Rights Commission of Mexico published the results of an extensive investigation into air quality in Mexico and the actions of the federal, state and local governments to address air pollution. The Commission determined that there were systemic and ongoing violations of the constitutional right to a healthy environment, including:

- an inadequate air quality monitoring system;
- failure to update air quality standards;
- lack of timely information provided to the public about air quality; and
- failure to take effective actions to reduce air pollution and ensure clean air.<sup>61</sup>

64. 64. In Costa Rica, Article 50 of the Constitution establishes the right of any person to file a complaint for any act that violates the right to a sustainable environment and to request reparation for any environmental damage. Therefore, in case of environmental damage, any member of civil society may file a complaint before the Environmental Administrative Tribunal. According to Article 112 of Law 7554 of 1995 Organic Law of the Environment, the administrative procedure is governed by the principle of informality which means that any complaint may be filed orally or in writing, by any available means and is governed by the principles of orality, officiousness, informality, reversal of the burden of proof,

<sup>58</sup> *Francisco Chahuan Chahuan versus Empresa Nacional de Petróleos, ENAP S.A*, Case No. 5888-2019, (May 28, 2019), para 34.

<sup>59</sup> *Beatriz Silvia Mendoza, et al. v. National State of Argentina* (Supreme Court of Argentina, July 8, 2008).

<sup>60</sup> Amparo en Revisión No. 641-2017, Supreme Court of Justice, 18 October 2017.

<sup>61</sup> Comisión Nacional de los Derechos Humanos. General recommendation 32/2018, paras 445-459. See [https://www.cndh.org.mx/sites/default/files/doc/Recomendaciones/Generales/RecGral\\_032.pdf](https://www.cndh.org.mx/sites/default/files/doc/Recomendaciones/Generales/RecGral_032.pdf)

precaution, in dubio pro Natura (where there is doubt, issues shall be resolved in favor of protecting nature) and objective and joint and several liability of the natural or legal persons causing environmental damage.<sup>62</sup>

65. In El Salvador, recognition of the right to a safe, clean, healthy and sustainable environment has contributed to preventing, mitigating or rehabilitating toxic environments through legislation and jurisprudence.<sup>63</sup>

66. In Europe, a series of legal developments has established that persons in the European Union have an enforceable right to breathe clean air.<sup>64</sup> In 2008, the European Union amended its rules governing air quality.<sup>65</sup> Many States are not in compliance with the new rules. Successful lawsuits based on violations of air quality standards have been brought by civil society organizations including ClientEarth in the United Kingdom of Great Britain and Northern Ireland, Friends of the Earth in France, Deutsche Umwelthilfe in Germany and others in Austria, Czechia and Poland.<sup>66</sup>

67. A number of French courts have issued judgments concluding that the Government of France had taken insufficient and inadequate steps to improve air quality, in contravention of its obligations under the French Environmental Code and the European Union Directive of 21 May 2008 “Cleaner Air for Europe”. These court decisions have been issued by the Administrative Court of Paris, the Administrative Court of Lyon, the Administrative Court of Montreuil, and the Administrative Court of Lille.<sup>67</sup> In each of these regions, air quality monitoring had revealed that national standards (referred to as limit values in European air quality law) for fine particulate matter and other pollutants were consistently exceeded.

68. In 2017, the French Council of State ordered the Government of France to prepare and implement air quality plans to bring down the concentrations of nitrogen dioxide and fine particulate matter below the limit values set by the European Directive of 21 May 2008 and France’s Environmental Code in 13 regions across the country, as quickly as possible.<sup>68</sup> In 2020, following the failure of the Government of France to comply with its order, the Council of State ordered the Government to take steps to reduce air pollution, subject to a fine of ten million euros per half year of delay, the largest fine ever imposed in France to force the State to execute a decision taken by an administrative judge.<sup>69</sup>

69. Courts in Germany have ruled that the government is obligated to take sufficient measures to ensure compliance with air quality standards mandated by the European Union and incorporated into German law.<sup>70</sup> Lawsuits against more than a dozen cities in Germany have also highlighted the requirement for air quality plans that contain strong enough measures to achieve air quality standards. For example, the Administrative Court of Stuttgart determined that the city’s draft air quality plan was inadequate, and ruled that bans on diesel vehicles are required to successfully reduce air pollution.<sup>71</sup> In 2018, Germany’s Federal Administrative Court confirmed that bans on certain heavily polluting vehicles are lawful and necessary.<sup>72</sup>

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<sup>62</sup> Submission from Costa Rica.

<sup>63</sup> Submission from El Salvador, referring to Sentence of Unconstitutionality 5-93/2-96/3-96/9-96/11-96/12-96, in July 1998, which recognized the right to a healthy environment.

<sup>64</sup> A. Andrews, *The Clean Air Handbook: A Practical Guide to EU Air Quality Law* (London, ClientEarth, 2015).

<sup>65</sup> Directive 2008/50/EC on ambient air quality and cleaner air for Europe.

<sup>66</sup> See [www.right-to-clean-air.eu/en/](http://www.right-to-clean-air.eu/en/).

<sup>67</sup> See, for Paris, <http://paris.tribunal-administratif.fr/Actualites-du-Tribunal/Communiqués-de-presse/POLLUTION-DE-L-AIR>. See, for Montreuil, <http://montreuil.tribunal-administratif.fr/Actualites/Actualites-Communiqués/Communiqué-de-presse-du-25-juin-2019>. See, for Lyon, <http://lyon.tribunal-administratif.fr/A-savoir/Communiqués/Pollution-de-l-air>. See, for Lille, Ruling No. 1709919.

<sup>68</sup> Decision No. 394254, dated 12 July 2017.

<sup>69</sup> Decision No. 428409, 10 July 2020.

<sup>70</sup> Decision of the German Federal Administrative Court dated February 27, 2018 (7 C 30/17).

<sup>71</sup> See <https://www.right-to-clean-air.eu/en/lawsuits-and-decisions/germany/lawsuits-and-decisions/>

<sup>72</sup> Deutsche Umwelthilfe e.v. (DUH), 2020. *Legal Actions on Clean Air: Summary 2016-2019*. See <https://www.right-to-clean-air.eu/en/>

70. Hungary established an ombudsperson for future generations (OFG) in 2008, with a mandate to focus on two key issues: the human right to a healthy environment and safeguarding the ‘common heritage of the nation.’ The OFG receives petitions from the public and conducts investigations about alleged violations of human rights as a result of government action or inaction. The OFG also: monitors legislative and policy developments; suggests new laws or the amendment of existing ones; serves as a mediator for negotiations between NGOs, government stakeholders, professionals and academia regarding important legislative reforms; and recommends actions to promote the effective realisation of the rights of future generations. Finally, the OFG can intervene in court proceedings concerning the judicial review of environmental permits and seek constitutional review of national or local legislation by the Constitutional Court or the Supreme Court if the legislation appears to violate the right to a healthy environment. Wales has a law on the rights of future generations and a Commissioner for Future Generations to defend those rights.<sup>73</sup>

71. An interesting example of access to justice in the context of pollution and toxic chemicals was a case filed in the United Kingdom against a shipping company called Trafigura on behalf of approximately 30,000 persons in Cote d’Ivoire after a notorious waste dumping incident in 2006. The parties reached a settlement in 2009, with Trafigura agreeing to pay each claimant roughly \$1,500.<sup>74</sup>

72. Following fires at the Riverton Dump in Jamaica, civil society organizations and concerned citizens commenced legal action against the government of Jamaica. Eventually, the government agreed to pay almost \$25 million to residents whose health was adversely affected. Public Defender Arlene Harrison-Henry and her office assisted.

73. National human rights institutions, including the Kenyan National Commission on Human Rights, the South African Human Rights Commission, the Chilean NHRI and the Chilean Ombudsperson for Children have been involved in litigation that has forced governments to address extreme pollution afflicting vulnerable communities.

### **Enforcement**

74. It is essential that Governments enforce environmental laws when polluters violate standards or the terms of their permits. Lack of adequate environmental enforcement is a global problem. In 2019, Ethiopia shut down four tanneries over toxic waste emissions.<sup>75</sup> Myanmar temporarily suspended operations at two tin mining sites and 17 factories for environmental non-compliance. Pakistan has taken steps to address its severe air quality problems. For example, two steel factories in Manghopir were closed down because of the excessive air pollution they caused.<sup>76</sup>

75. In Mexico, the Federal Attorney’s Office for Environmental Protection (PROFEPA), in order to monitor compliance with environmental legislation, carried out 1,196 inspection visits in 2020 regarding soil contamination; wastewater discharge; atmospheric emissions; hazardous waste and biological-infectious waste; and environmental impact and risk. Of these visits, 711 establishments were found to be out of compliance and 54 were closed for violations of environmental laws.<sup>77</sup>

76. A number of Latin American States, including Colombia, Costa Rica and El Salvador have rejected applications by multinational corporations seeking to establish open pit mines in sensitive ecosystems, determining that the risks to human rights and the environment were too grave. Costa Rica and El Salvador enacted legislation to prevent these kinds of socio-environmental disasters from even being considered in the future.

<sup>73</sup> Well-being of Future Generations (Wales) Act. 29 April 2015.

<sup>74</sup> A/HRC/36/41/Add.1.

<sup>75</sup> A/HRC/WG.6/33/ETH/1, para. 38.

<sup>76</sup> See <https://www.thenews.com.pk/print/742516-sepa-seals-two-steel-factories-in-manghopir-for-creating-pollution>

<sup>77</sup> Submission from Mexico.

## V. Programs to prevent pollution and eliminate toxic substances

77. Human biomonitoring measures concentrations of toxic substances and their metabolites in bodily fluids, faeces, hair, teeth and nails. Biomonitoring data reveal levels of exposure and trends, help researchers to understand health effects and assist in developing and evaluating policies to reduce exposure. Ethical standards must be applied to protect human rights. Canada, Denmark, France, Germany, Norway, Spain and the United States have national biomonitoring programmes, while the EU has a region-wide program.<sup>78</sup>

78. A systemic approach to preventing agricultural water pollution was adopted by the European Union in the Nitrate Directive (1991) and the Water Framework Directive (2000). These reduced the volume of nitrogen fertilizer use by 19% during the period 1990–2010, resulting in improved water quality.<sup>79</sup> The European Union’s Farm to Fork Strategy contains a number of concrete targets that the EU aims to reach by 2030:

(a) Pesticides in agriculture contributes to pollution of soil, water and air. The Commission will take action to reduce the use and risk of chemical and more hazardous pesticides by 50%;

(b) The excess of nutrients in the environment is a major source of air, soil and water pollution, negatively impacting biodiversity and climate. The Commission will act to reduce nutrient losses by at least 50%, while ensuring no deterioration on soil fertility reduce fertilizer use by at least 20%;

(c) Organic farming is an environmentally-friendly practice that needs to be further developed. The Commission will help the EU’s organic farming sector to grow, with the goal of 25 % of total farmland being used for organic farming by 2030.

79. In Poland, the National Programme for Municipal Wastewater Treatment was introduced to ensure compliance with upgraded water legislation. The policy fostered the construction of new and updated wastewater treatment plants that reduced water pollution and generated energy from waste. As at 2017, 99 per cent of the population in Poland had access to at least basic sanitation service, and 99 per cent of wastewater was treated at plants providing at least secondary treatment.

### Waste management

80. Germany has an advanced waste management system, protecting human health, human rights and the environment through strong legislation and regulations, strong institutions to implement, monitor and enforce rules, adequate financing through the application of the “polluter pays” principle, and use of the best available technologies. In 2017, 68 per cent of municipal waste in Germany was recycled, the highest rate in the world.<sup>80</sup>

81. Slovenia is reducing waste through stronger regulations and more comprehensive collection systems.<sup>81</sup> From 2010 to 2016, the rate of recycled municipal waste increased from 22 percent to 58 percent and the share of municipal waste going to landfill fell from 76 percent to 7 percent. Slovenia now has the second-best waste management performance in Europe after Germany.

82. Greece enacted a new law in 2017 that is a step towards a circular economy and applies the approach of Extended Producer Responsibility, making manufacturers and importers of products responsible for the costs of their collection and recycling.<sup>82</sup> There are 22 product categories subject to Extended Producer Responsibility in Greece, including packaging material; batteries; electrical and electronic equipment; tires; end-of-life vehicles;

<sup>78</sup> *Human biomonitoring: facts and figures*, World Health Organization Regional Office for Europe, Copenhagen, 2015. See also European Human Biomonitoring Initiative, [www.HBM4EU](http://www.HBM4EU) [hbm4eu.eu](http://hbm4eu.eu)

<sup>79</sup> Submission from the European Union.

<sup>80</sup> See [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Municipal\\_waste\\_statistics](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Municipal_waste_statistics).

<sup>81</sup> Regulation of mandatory municipal public service of municipal waste collection (Official Gazette of RS, Nos. 33/17 and 60/18).

<sup>82</sup> Law on Recycling (4496/2017).

oils and lubricant waste; and demolition and construction waste. For these waste streams, specific recycling and recovery targets are set out in legislation.<sup>83</sup>

83. Austria, Finland and the Netherlands imposed landfill taxes. These taxes provide an incentive for recycling and composting. The Austrian Government enacted a landfill tax in 1989 to provide funds for cleaning up contaminated sites. Between 1993 and 2013, 212 remediation projects received funding from the landfill tax revenue. Landfill operators pay the tax on the basis of the tonnages deposited and rates vary depending on the type of landfill. In 2004, Austria banned waste with a total organic carbon content of greater than five percent from landfills, contributing to an 80 percent reduction in greenhouse gas emissions from landfills from 1990 to 2014. Waste taxes in Finland helped reduce household waste transported to landfills from 66 percent of municipal waste in 1997 to just three percent in 2016. Finland is on track to achieve their target of reducing greenhouse gas emissions from the waste sector 85 percent by 2050. Netherlands bans 61 categories of waste from being sent to landfill because alternatives are available, leading to the amount of municipal waste sent to landfills dropping from 35 percent in 1985 to two percent in 2014.

84. Other States upgrading waste management systems include Belarus, Benin, Bulgaria, and Uzbekistan. In Belarus, waste management facilities gained new trucks and state of the art equipment to aid in improving waste management. Residents received bins to separate plastics, glass, waste, and biodegradable materials, as well as compost bins. The project is expected to increase the rate of recycling and composting from 10 percent to at least 70 percent. Kuwait treats 100 percent of its medical waste, replacing ten older incinerators with three incinerators using state of the art technology to address this hazardous material.

85. Guatemala invented a simple, inexpensive and easy to implement solution to capture solid, surface waste and reduce pollution in the Motagua and Villalobos Rivers. A Bio-bar is a barrier made of recycled plastic bottles encased in mesh that is placed across the width of a river or stream to capture garbage, large plastics, and other surface debris. BioBars are now being used in Honduras, Panama, Argentina, and the Dominican Republic. They capture 90 percent of the plastic and other surface waste that could have polluted the ocean. Bio-bars enable communities to participate in creating, installing, and maintaining the systems while also creating jobs in the collection, sorting, and recycling of the waste that is recovered from the rivers.

## Plastic

86. Plastic pollution is a huge global concern because of its impact on the health of humans, biodiversity and ecosystems.<sup>84</sup> The European Union has enacted the most comprehensive legislation, Directive (EU) 2019/904, to reduce plastic waste. Banned items include plastic cutlery, plates, stirrers, straws, expanded polystyrene (foam) food and beverage containers, and balloon sticks. Extended producer responsibility rules cover additional plastic products and packaging. By 2029, 90 per cent of single-use plastic wastes must be collected for recycling.

87. In Senegal, the obligation to guarantee to every person the right to a healthy environment, including a toxic-free environment, led to the adoption of a law prohibiting the production, import, distribution, or use of low-density plastic bags.<sup>85</sup> The most severe penalties for plastic bag use are found in Kenya, where making, selling or importing plastic bags can result in maximum fines of \$25,000 and/or jail sentences of up to four years. In 2018 Samoa adopted a national law to ban the import, manufacture, export, sale and distribution of plastic shopping bags, packing bags and straws effective 30 January 2019.<sup>86</sup> Also included in the regulation is a fine for those who fail to comply with the plastic ban, which is set at Samoan Tala \$10,000.

<sup>83</sup> Greece General Secretariat of the Government. 2018. Voluntary National Review on the Implementation of the 2030 Agenda for Sustainable Development

<sup>84</sup> See Special Rapporteur on toxics and human rights, A/76/207.

<sup>85</sup> Law n ° 2015-09 of May 4th, 2015.

<sup>86</sup> Waste (Plastic Ban) Management Regulation 2018.

88. Taxes on plastic bags have reduced their use in Portugal by 85 percent, in Ireland by 90 percent, and in Denmark to just four bags per person per year, the lowest in the world. Chile's law on plastics is expected to virtually eliminate 23 million kg of single-use plastic that restaurants, cafes and other food sellers previously put in the garbage every year and also requires an increasing share of beverages to be sold in refillable bottles. Albania, Bahrain, Burkina Faso, Montenegro, Rwanda, and Uzbekistan also have banned plastic bags, thereby reducing plastic pollution and animal deaths, and preventing clogged drains, which can contribute to flooding and malaria. These policies also improve air quality, as plastic bags are no longer disposed of by burning.

89. During a reforestation project, Burundi replaced plastic bags with bags made from banana bark, increasing the income of poor households (by \$55 per year), reducing pollution and avoiding the use of an estimated 3 million plastic bags. Similarly, the Samoa Women's Association of Growers make traditional baskets from coconut leaves that can be used for shopping.

90. Virgin plastic (made from fossil fuels) is cheaper than recycled plastic. For this reason, regulations are needed to require recycled content in packaging and products to create markets for the recycled material. In the EU, plastic beverage containers manufactured from polyethylene terephthalate ('PET bottles') must contain at least 25 percent recycled plastic by 2025 and 30 percent by 2030.

## VI. Remediation and restoration of contaminated sites

91. The remediation and restoration of polluted or contaminated areas is an important activity in ensuring a toxic-free environment. As of June 2019, Mexico's National Inventory of Contaminated Sites included the registration of 1,041 sites considered environmental liabilities, which in international terminology could be considered to be "sacrifice zones".<sup>87</sup> The inventory also included 805 sites that had already been remediated. Examples of these sites include:

- Cromatos de México (Tultitlán, State of Mexico), whose activity is focused on producing pigments and substances for tanning leather from chromium ore contaminated the soil with approximately 150,000 m<sup>3</sup> of this type of hazardous waste. In 2015, the contaminated site was remediated by the Mexican government.
- Aceros de Chihuahua, a company dedicated to the manufacture of rebar, contaminated approximately 11.2 hectares, which were remediated by the Mexican government, concluding this procedure in 2018.

92. In cooperation with the World Bank, Montenegro identified and remediated several of the most heavily polluted sites in the country, including the Bijela shipyard, Maljevac ash and slag landfill, Gradac tailings pond, and the Podgorica Aluminium Plant. With funds from the GEF, Montenegro is implementing a comprehensive program to identify and permanently dispose of equipment, waste and soil contaminated with polychlorinated biphenyls (PCBs). As noted by the Government, "unhealthy levels of pollution endanger right to healthy environment which is guaranteed by the Montenegrin Constitution".<sup>88</sup>

93. Azerbaijan is in the process of cleaning up sites contaminated with pesticides. Sumgait is a region that is notorious for being heavily polluted, resulting in high levels of breast cancer and lung cancer.<sup>89</sup> Sumgait was identified not only as one of the most contaminated places in Azerbaijan but one of the most polluted places on Earth.<sup>90</sup> A reclamation project in Sumgait reduced levels of benzo(a)pyrene, benzene, and polychlorinated biphenyls (PCBs) in the soil by 97 percent. More than 13,000 m<sup>3</sup> of clean soil and organic fertilizer were placed and leveled over an area of two hectares.

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<sup>87</sup> Submission from Mexico.

<sup>88</sup> Submission from Montenegro.

<sup>89</sup> Submission from Azerbaijan. See also Shelton N. "Azerbaijan: environmental conditions and outlook." *Ambio*. 2003 Jun; 32(4): 302-6.

<sup>90</sup> B. Walsh, "The World's Most Polluted Places," *Time Magazine*, Sept 12, 2007.

Approximately 1,200 locally grown native tree species were planted, and a drip irrigation system was installed. The area is now a park close to the beach.<sup>91</sup>

94. Pursuant to a federal law passed in 1999 and most recently amended in 2019, the Russian Federation is implementing a wide range of actions to protect Lake Baikal and the surrounding region, including the closure of a pulp and paper mill, the rehabilitation of polluted land, a reduction in the volume of polluted wastewater entering the lake, and increasing the amount of solid waste managed properly. To ensure implementation of and compliance with the legislation on environmental protection in the Lake Baikal watershed, as well as to protect the constitutional right of citizens to a favourable environment, the Baikal Interregional Environmental Prosecutor's Office was opened in 2017.

95. On the basis of the constitutional right to a healthy environment, the State of Côte d'Ivoire has carried out large-scale rehabilitation of polluted or heavily degraded sites. These include the rehabilitation of sites polluted by the dumping of toxic waste from the Trafigura ship Probo-Koala, as well as the projects to clean up the Bay of Cocody and to rehabilitate the Akouedo landfill site.<sup>92</sup>

96. In 2016, Honduras processed approximately 170 tonnes of persistent organic pollutants, including polychlorinated biphenyls (PCBs) and highly hazardous pesticides, benefiting approximately 1,300,000 inhabitants of Cañada in Tegucigalpa; Río Lindo and La Lima in Cortés and Las Flores in Lempira.

97. The former Freshkills landfill on western Staten Island in New York City (USA) was the City's main landfill for municipal and household solid waste from 1946 to 2001. By the mid-1990s, Freshkills was the world's largest landfill, receiving up to 29,000 tons of waste every day. In recent years, the landfill has been rehabilitated and transformed into Freshkills Park, three times larger than Central Park. Freshkills Park created opportunities for outdoor recreation, arts and science programming and scientific research. Hundreds of acres of wetlands have been restored. Harvesting methane from the decomposing garbage provides heat for about 10,000 homes and generates \$3.35 million in revenue annually.

98. The civil society organization Pure Earth, in partnership with Green Cross and the Global Alliance on Health and Pollution has been carrying out inspiring environmental remediation projects in low-income nations.<sup>93</sup> For example, in Thiaroye-sur-Mer in Senegal, there was an informal lead-acid battery recycling sector, dominated by women who broke apart the batteries to extract the lead and melted it into ingots for sale. The smoke and dust are extremely hazardous, especially for children. Tests revealed blood lead levels in some children were astronomically high, likely causing irreparable brain damage. The remediation included removal of thousands of cubic meters of contaminated soil and intensive cleaning of homes. To replace the lost income, women were trained in hydroponic agriculture and provided with the materials needed to grow nutritious crops. In Mexico City, a contaminated oil refinery was turned into Bicentennial Park, now receiving more than a million visitors annually. Pure Earth and its partners led remediation projects in more than 30 States including Ghana, Indonesia, Kyrgyz Republic, Madagascar, Peru, the Philippines, Uruguay and Viet Nam.<sup>94</sup>

## VII. International cooperation

99. Eight Caribbean countries (Antigua and Barbuda, Barbados, Belize, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago) are preparing legal frameworks for chemicals management through a Global Environment

<sup>91</sup> Petr Sharov et al, 2019, "Remediation of soil contaminated with persistent organic pollutants in Sumgait, Azerbaijan", *Environ. Monitoring and Assessment* 191(7): 464.

<sup>92</sup> Submission from Côte d'Ivoire.

<sup>93</sup> Blacksmith Institute, Green Cross and the Global Alliance on Health and Pollution, 2014, Top Ten Countries Turning the Corner on Toxic Pollution, 2014.

<sup>94</sup> See [www.pureearth.org](http://www.pureearth.org)

Facility funded project supported by the Basel Convention Regional Centre for Training and Technology Transfer for the Caribbean Region.<sup>95</sup>

100. A good example of international cooperation is Togo's work with the European Union's Centers of Excellence for Chemical, Biological, Radiological and Nuclear Threats (CBRN) through various projects, including Project 35 "Management of chemical and biological hazardous waste on the African Atlantic coast"; Project 41 "Management of chemical risks in classified facilities in the countries of the African Atlantic coast"; Project 69 "Strengthening the regulatory framework for the management of high-risk classified facilities in the countries of the African Atlantic coast"; and Project 71 "Safer transport of dangerous goods by road and rail in the Atlantic coast region".<sup>96</sup>

101. The South Asia Cooperative Environment Programme and the Secretariat of the Pacific Regional Environment Programme, for example, implement projects to strengthen capacities for environmentally sound management of waste and support the development of chemicals management legislation.

102. Saint Vincent and the Grenadines participated in the project "Disposal of Obsolete Pesticides, including POPs, Promotion of Alternatives and Strengthening Pesticides Management in the Caribbean", led by the Food and Agriculture Organization.<sup>97</sup> This resulted in over 3,000 kilograms of obsolete, dangerous pesticides being safely managed and exported for disposal. Other Caribbean nations also participated in this program. Governments should ban all further use of highly hazardous pesticides and collect any remaining inventory for safe disposal.<sup>98</sup>

103. Bahrain, Jamaica, Sierra Leone and Saint Vincent and the Grenadines demonstrate good practices by using strong regulations and import controls to phase out ozone-depleting chemicals pursuant to the Montreal Protocol. More than 100 refrigeration and air conditioning technicians in Jamaica have been trained to use ozone-friendly substitutes. Sierra Leone is replacing HCFCs with natural refrigerants and other energy efficient technologies with low global warming potential.

104. Efforts led by the UN Environment Programme, including the phase-out of leaded gasoline, reductions in the sulphur content of vehicle fuels and reductions in the lead content of paint have benefitted the health and rights of billions of children. UNEP published an excellent toolkit on plastic policies and a Toolkit for Establishing Laws to Eliminate Lead Paint. National plans to support implementation of the Stockholm Convention were developed in more than 80 countries with funding from the Global Environment Facility.

105. The UN Environment Programme's Guidance on the Development of Legal and Institutional Infrastructures and Measures for Recovering Costs of National Administration for Sound Management of Chemicals (known as the LIRA Guidance) aims to provide practical support to policymakers to strengthen national legislation and institutional arrangements for achieving sound management of chemicals. The main objective of LIRA is to support countries in developing national plans for strengthening legal and institutional infrastructures to govern chemicals through a life cycle chemicals management policy. It includes measures to finance necessary administrative activities. Zambia is a successful example of mainstreaming chemicals and waste into national financing. The Zambian Environment Management Authority retained fees raised through the licensing of chemical manufacturing registration, import and export, and used these revenues for monitoring and enforcement.

## **VIII. Businesses fulfilling human rights responsibilities**

106. Leading businesses in the textile, leather and footwear industries created the Zero Discharge of Hazardous Chemicals initiative in 2018 to eliminate toxic chemicals from their

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<sup>95</sup> UNEP 2019, *Global Chemicals Outlook II*.

<sup>96</sup> Submission from Togo.

<sup>97</sup> See A/HRC/49/53/Add.1.

<sup>98</sup> WHO and FAO, 2015, *Guidelines on Highly Hazardous Pesticides*.

supply chains.<sup>99</sup> The initiative prohibits the use of thousands of toxic chemicals in manufacturing processes, including plasticizers, flame retardants, pesticides, perfluorochemicals and polycyclic aromatic hydrocarbons. Participating businesses use harmonized approaches for audit protocols, while data and rates of compliance are made public. Ninety-eight percent of suppliers who carried out wastewater testing in 2020 had no detections of restricted substances.

107. Brazil, guided by Art 225 of the Constitution (R2HE) has National Guidelines on Business and Human Rights, Decree 9571/2018, which contain extensive guidance concerning environmental sustainability in Article 12.<sup>100</sup>

108. The winners of the 2018 Elsevier Foundation Green and Sustainable Chemistry Challenge, from Nepal and Italy, developed novel approaches to sourcing guava leaves and fish bones in order to create new preservatives and fertilizers. Other examples of promising sustainable chemistry start-ups include:

- an Indonesian start-up that uses seaweed in the production of plastic-free packaging;
- start-ups from Peru and Singapore that use nanotechnology in water purification filters; and
- a Kenyan start-up that is providing alternative building materials and products made from recycled plastics.

109. Evidence of the economic benefits of eco- industrial parks is well-documented. Firms in Ulsan Mipo and Onsan, part of the Republic of Korea's Eco-Industrial Park Initiative, have invested \$520 million in energy efficiency, industrial symbiosis, waste management and other environmentally friendly improvements. That investment has yielded \$554 million in savings, while the firms have generated \$91.5 billion in revenues.

## IX. Conclusion

110. **This annex to the report *The Right to a Clean, Healthy and Sustainable Environment: Non-toxic Environments* summarizes many good practices related to pollution prevention and the elimination of toxic substances, key actions required to fulfil the human right to a safe, clean, healthy and sustainable environment. The most important beneficiaries of the good practices highlighted in this annex are the vulnerable and marginalized individuals and communities who currently bear a disproportionate share of pollution and toxic contamination.**

111. **The Special Rapporteur hopes that these concrete examples of good practices will inspire States to accelerate their efforts to recognize, respect, protect and fulfil all of the inter-connected elements of the right to a safe, clean, healthy and sustainable environment, including clean air, safe and sufficient water, healthy and sustainable food, a safe climate, healthy ecosystems and biodiversity, and non-toxic environments where people can live, work, study and play.**

112. **The adoption on 8 October 2021 of the resolution recognizing the right to a clean, healthy and sustainable environment should be a positive catalyst to accelerate efforts to ensure the enjoyment of this right. Indeed, this was precisely the effect witnessed in many States following the adoption in 2010 of resolutions on the rights to water and sanitation by the General Assembly (64/292) and the Human Rights Council (15/9). A rights-based approach is not only helpful but essential to stimulating the many urgent actions needed to achieve the Sustainable Development Goals as outlined in the 2030 Agenda for Sustainable Development.**

113. **Ultimately, however, it must be emphasized that humanity faces a daunting and unprecedented global environmental crisis involving the climate emergency, the collapse of biodiversity, pervasive air and water pollution, and a rising number of emerging infectious diseases of zoonotic origin. Despite the many good practices**

<sup>99</sup> <https://www.roadmaptozero.com/>

<sup>100</sup> Submission from Brazil

**featured in this report, they are not nearly enough. The continued existence of sacrifice zones in many States provides compelling evidence that there is much, much more work to be done to transform today's unjust and unsustainable society into an ecological civilization where everyone enjoys a non-toxic environment and a safe climate, breathes clean air, drinks safe water, eats healthy and sustainably produced food, appreciates the diversity and abundance of wild species, and lives in harmony with nature.**

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