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**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

Pathway to a Healthy Planet for All
EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'

{SWD(2021) 140 final} - {SWD(2021) 141 final}

1. INTRODUCTION

While an unprecedented worldwide effort is under way to fight the COVID-19 pandemic, **the persistent threats to the health of our planet** call for urgent remedies too. Climate change, environmental pollution¹, biodiversity loss and an unsustainable use of natural resources pose multiple risks to human, animal and ecosystem health. They include infectious and non-communicable diseases, antimicrobial resistance and water scarcity². To build a Healthy Planet for All, the European Green Deal³ calls for the EU to better monitor, report, prevent and remedy **air, water, soil and consumer products pollution**, among other things.

There is an urgency to act: Pollution can cause cancer, ischaemic heart disease, obstructive pulmonary disease, strokes, mental and neurological conditions, diabetes and more⁴ (see Figure 1). Despite tangible progress, in 2015 pollution still led to an estimated 9 million premature deaths worldwide (16% of all deaths) – three times more deaths than from AIDS, tuberculosis, and malaria combined and 15 times more than from all wars and other forms of violence⁵. In the EU, every year, pollution causes 1 in 8 deaths⁶.

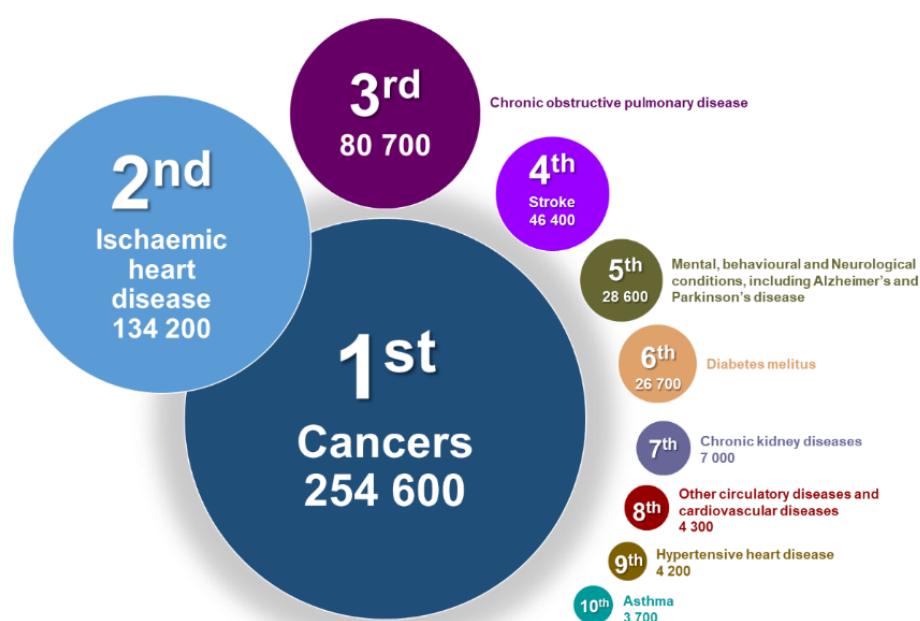


Figure 1: Top 10 non-communicable diseases causing deaths attributable to the environment (Source: EEA – Healthy environment, healthy lives, 2018 based on WHO (2016))

The fight against pollution is also a fight for fairness and equality. Pollution's most harmful impacts on human health are typically borne by the most vulnerable groups. These include children, who can suffer serious long-term harm on their development, people with medical conditions, older persons, persons with disabilities and those living in poorer socio-economic conditions⁷. Worldwide, low- and middle-income countries bear the brunt of pollution-related illnesses, with nearly 92% of pollution-related deaths⁸.

¹ Directive 2010/75/EU, Article 3(2): 'Pollution means the direct or indirect introduction, as a result of human activity, of substances, vibrations, heat or noise into air, water or land which may be harmful to human health or the quality of the environment, result in damage to material property, or impair or interfere with amenities and other legitimate uses of the environment'.

² See UNEP (2021): Making Peace with Nature.

³ COM(2019)640.

⁴ IEEP (2020): 'Mental health and the environment'.

⁵ The Lancet Commission on pollution and health (October 2017).

⁶ EEA Report No 21/2019: Healthy environment, healthy lives.

⁷ EEA Report No 22/2018: Unequal exposure and unequal impacts.

⁸ UNEP/EA.4/3 (2018): Implementation plan 'Towards a Pollution-Free Planet'.

Pollution also threatens our biodiversity and significantly contributes to the on-going mass extinction of species. Together with changes in land and sea use, overexploitation of natural resources, climate change and invasive alien species, pollution is one of the five main drivers of biodiversity loss. Today it is threatening the survival of more than 1 million of the planet's estimated 8 million plant and animal species, and the situation is expected to worsen, unless we change⁹. Overall, the achievement of the Sustainable Development Goals (SDGs) is threatened by an array of escalating and mutually reinforcing environmental risks.

Economic progress and pollution reduction can go together: between 2000 and 2017, the EU's GDP grew by 32% while emissions of the main air pollutants decreased by 10% (ammonia, mainly from agriculture) to 70% (sulphur oxides, mainly from industrial production)¹⁰. However, the overall fivefold **growth of the global economy in the past five decades has come at massive cost to the global environment**¹¹.

The economic case for acting on pollution is clear and the benefits for society far outweigh the costs, just as the costs of inaction hugely outweigh the costs of action. For example, air pollution costs health and economic activities an estimated EUR 330 to 940 billion per year in the EU¹², including lost workdays, healthcare costs, crop yield loss and damage to buildings, whereas all the measures in the EU to improve air quality have an estimated combined cost of EUR 70 to 80 billion per year¹³. The growing demand for less polluting goods and services entails significant business opportunities, already mobilising EU companies towards innovative solutions. The recovery efforts can support this trend. Acting on pollution now also means inter-generational solidarity.

At the same time, **we need a better integrated overview of pollution** for public and private actors to tackle connected pollution issues across space and time and address their interplay with other environmental, social and economic considerations as effectively as possible in their policy, investment and purchase decisions.

Most Europeans support action against pollution: protecting the environment is cited as very important and pollution as the most important environmental problem after climate change¹⁴. Most respondents to the open public consultation on this action plan¹⁵ are of the view that **relevant societal actors are not doing enough** and that the **EU and national governments need to take action**. Stepping up international action, better implementing pollution-related legislation, promoting formal education and influencing behavioural change were identified as the most effective ways forward.

Pollution does not stop at borders. While pollution enters the EU through oceans, rivers, winds or imported goods, the EU also causes significant pollution elsewhere in the world through its own production and consumption patterns as well as its waste. At the same time the EU has powerful tools to contribute to pollution mitigation efforts worldwide, via its policies and funds, its green diplomacy, as well as by stimulating innovation, with cleaner production and more sustainable consumption of goods and services.

⁹ IPBES (2019), [Summary for policymakers](#), pp. 17-19, B.10-B.14; European Environment Agency (2019), [The European environment – state and outlook 2020](#).

¹⁰ SWD(2019) 427.

¹¹ UNEP Report (2021): Making Peace with Nature.

¹² SWD(2013)531.

¹³ IIASA (2017): 'Costs, benefits and economic impacts of the EU Clean Air Strategy and their implications on innovation and competitiveness'.

¹⁴ see Special Eurobarometer 501 (March 2020) 'Attitudes of European citizens towards the Environment'.

¹⁵ Ecorys (2021): "Consultations on the EU Action Plan towards a zero pollution ambition for air, water and soil", Synopsis Report (see ['Have your say' portal](#)).

The public health, environmental, moral and socio-economic case for the EU to lead the global fight against pollution is today stronger than ever¹⁶. Now is the time to be ambitious, to deliver on people's legitimate aspirations to have their health, environment and livelihoods protected – and to make peace with our planet.

2. TOWARDS ZERO AIR, WATER AND SOIL POLLUTION

2.1. The zero pollution ambition

The zero pollution vision for 2050: a Healthy Planet for All

Air, water and soil pollution is reduced to levels no longer considered harmful to health and natural ecosystems and that respect the boundaries our planet can cope with, thus creating a toxic-free environment.

The zero pollution ambition¹⁷ is a cross-cutting objective contributing to the **UN 2030 Agenda for Sustainable Development**¹⁸ and complementing the 2050 climate-neutrality goal in synergy with the clean and circular economy and restored biodiversity goals. It is part and parcel of many European Green Deal and other initiatives¹⁹, and the Commission will continue including the zero pollution ambition in future policy initiatives.

The main objective of this action plan is to provide **a compass for including pollution prevention in all relevant EU policies**, maximising synergies in an effective and proportionate way, stepping up implementation and identifying possible gaps or trade-offs. To steer the EU **towards the 2050 vision** of a Healthy Planet for All, this action plan sets **key 2030 targets to speed up pollution reduction**.

The zero pollution targets for 2030²⁰

Under EU law, Green Deal ambitions and in synergy with other initiatives, by 2030 the EU should reduce:

1. by more than 55% the health impacts (premature deaths) of air pollution;
2. by 30% the share of people chronically disturbed by transport noise;
3. by 25% the EU ecosystems where air pollution threatens biodiversity;
4. by 50% nutrient losses, the use and risk of chemical pesticides, the use of the more hazardous ones, and the sale of antimicrobials for farmed animals and in aquaculture;
5. by 50% plastic litter at sea and by 30% microplastics released into the environment;
6. significantly total waste generation and by 50% residual municipal waste.

This action plan also sets out **key actions for 2021-2024** to complement the many relevant actions in other European Green Deal initiatives, including the chemicals strategy for sustainability.

¹⁶ The Lancet Commission on pollution and health (2018).

¹⁷ As set out through this action plan and the chemicals strategy for sustainability (COM(2020) 667).

¹⁸ See e.g. SDG targets 3, 6, 11, 12, 14, 15.

¹⁹ Such as the 2030 climate ambition, the climate adaptation strategy, the climate pact, clean energy initiatives, the renovation wave strategy, the sustainable and smart mobility strategy, the circular economy action plan, the biodiversity and farm to fork strategies, the new industrial strategy for Europe and the EU's pharmaceuticals strategy, Europe's beating cancer action plan and new consumer agenda, as well as the communication on multilateralism in the 21st century and the trade policy review.

²⁰ The origin, baselines, methodologies and background on these targets: see Annex 2.

While the lockdown measures to fight the COVID-19 pandemic have led to temporarily cleaner air, waters and reduced noise in many places, **slowing down all economic activities is not the way the EU envisions its own and the world's path towards zero pollution**. Instead, the EU can **sustain prosperity while transforming production and consumption modes and directing investments towards zero pollution**. Investments in clean and sustainable design, circular economy business models, cleaner transport and mobility, low-emission technologies, nature-based solutions and sustainable digitalisation offer strong opportunities to consolidate EU leadership in green growth, while reducing inequalities, creating jobs and enhancing collective resilience.

The **2021-2027 multiannual financial framework** and **NextGenerationEU** provide unprecedented budgetary opportunities to support such investments and fight climate change, biodiversity loss, resource depletion and pollution in the EU - and globally²¹.

The zero pollution hierarchy

Alongside efforts to achieve climate neutrality, the EU needs a more effective '**zero pollution hierarchy**' (see Figure 1) **taking into account principles enshrined in the Treaty**: notably, that EU environmental policies should be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should, as a priority, be rectified at source and that the polluter should pay.

It is high time to 'reverse the pyramid' of action and rethink the way goods and services are designed, produced, delivered, performed and/or used and disposed of. This means that, first of all, pollution should be prevented at the source. Where fully preventing pollution from the outset is not (yet) possible, pollution should be minimised. Finally, when pollution occurred, it should be remediated – and the related damage compensated.

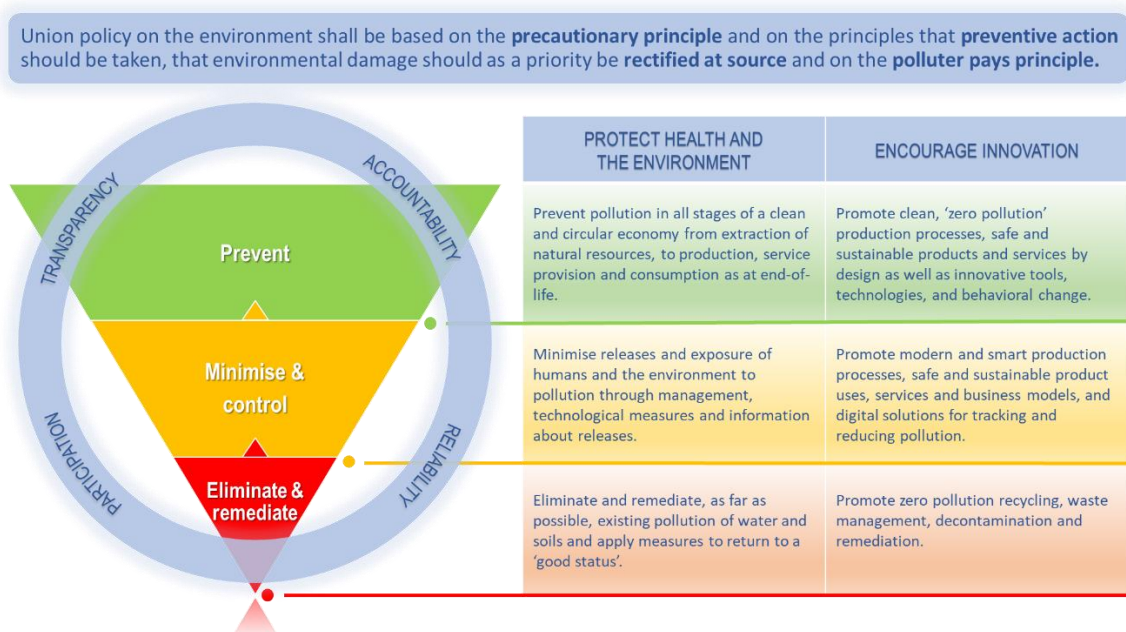


Figure 2: The zero-pollution hierarchy – reversing the pyramid of action, prioritising the approaches for tackling pollution

²¹ Annex VI of the Recovery and Resilience Fund vividly shows these synergies

2.2. Improving our health and well-being

The EU has a robust regulatory framework in place to cap **ambient air pollution**. However, the number of premature deaths and other diseases attributable to air pollution remains high. This can be attributed to the fact that some EU air quality standards are still less stringent than the standards the WHO recommended in 2005, and the way the Ambient Air Quality Directives are implemented has only been partially effective²².

We need better public health protection in line also with Europe's beating cancer plan. To this end, **in 2022 the Commission will propose that the EU's air quality standards be aligned more closely with the upcoming WHO recommendations** and that provisions on monitoring, modelling and air quality plans be strengthened to help local authorities, while improving the overall enforceability of the regulatory framework. In parallel, the Commission will introduce stricter requirements to tackle air pollution at source, such as from agriculture, industry, transport, buildings and energy, including through a number of European Green Deal measures and strategies (such as sustainable and smart mobility, renovation wave, and farm to fork).

In its **Second Clean Air Outlook**, the Commission reports that the measures Member States announced in their **national air pollution control programmes** will not be enough to reach the levels of ammonia emission reductions needed to achieve 2030 objectives: ammonia is a mighty precursor of fine particulate matter (PM_{2.5}), and the most cost-effective measures to cut its emissions all relate to agriculture, in particular to animal feeding practices, manure management and the use of fertilisers²³. In this regard, as announced by the farm to fork strategy, the Commission, in its efforts to build a **sustainable food system** and a more sustainable livestock farming, will facilitate the placing on the market of alternative feed materials and innovative feed additives. The Commission is also assessing whether further legislation is needed to **cap ammonia emissions**. The **review of the Industrial Emissions Directive** aims to curb ammonia emissions from the intensive rearing of livestock. In addition, further measures to reduce ammonia emissions may be needed, inter alia under the common agricultural policy, or by making manure handling binding.

As announced in the sustainable and smart mobility strategy, the Commission will address **air and noise pollution from transport**, including through the new Euro 7 standards for road vehicles and improved emissions testing in roadworthiness checks, in synergy with CO₂ emission performance standards. Based on latest evidence, it will consider the need to limit the emissions of PM_{2.5} and nanoparticles from all types of combustion engines and from brakes in conventional and electric vehicles alike, together with the need to reduce pollutant emissions under a broader set of conditions of use and over the lifetime of vehicles. .

In line with the findings of the 2017 evaluation of the **Environmental Noise Directive**²⁴ and the 2020 evaluation of the **Outdoor Noise Directive**²⁵, the Commission will focus on better tackling noise at source, notably by securing proper implementation on the ground and, where appropriate, improving the EU noise-related regulatory framework on tyres, road vehicles, railways, aircrafts, also at international level. Additionally, the Commission will follow up on the evaluation of the Outdoor Noise Directive to address outdoor equipment. It will review progress²⁶ in 2022 and consider whether there is a need to set noise reduction targets at EU level in the Environmental Noise Directive. Noise action plans required by the Directive should be

²² SWD(2019) 427, WHO (2006). Air quality guidelines – global update 2005. Next update due in 2021; EEA: Air quality in Europe – 2020 report (pp.13-14).

²³ COM(2021) 3.

²⁴ Communication on the Implementation of the Environmental Noise Directive (COM(2017)151).

²⁵ COM(2020)715.

²⁶ Based on noise pollution trends resulting from Member State noise.

better integrated into the sustainable urban mobility plans and benefit from an extension of clean public transport and from more active mobility. Together, the above noise reduction measures may go some way in repairing damage done by chronic noise pollution.

For **air pollution from buildings**, progress has been made on phasing out polluting coal and fuel oil heating, while pollution from biomass burning remains a challenge, notably when using outdated, inefficient installations. The Commission will promote the integration of the zero pollution ambition with clean energy and energy efficiency objectives, such as in the renovation wave and New European Bauhaus initiatives, recovery and reuse of construction waste and when reviewing eco-design and energy labelling requirements for heating appliances, as a priority in particular those for solid fuel heating by the beginning of 2024 at the latest. The EU will also continue to support the transition to cleaner energy and cleaner domestic heating in third countries, notably neighbourhood countries.

On **indoor air quality**, EU policies have addressed several of its determinants, from ambient air to construction materials and consumer products, heating and cooling systems, as well as smoking habits. Occupational safety and health (OSH) legislation has also significantly contributed to progress on the issue, and will continue to do so through the next Strategic Framework on safety and health at work. The renovation wave initiative²⁷ will allow addressing the issue of healthy temperatures and levels of humidity in new buildings and in buildings undergoing major renovations, whilst tackling the issue of decontamination of toxic substances, including asbestos. However, the EU lacks a comprehensive, integrated approach. COVID-19 and the resulting reduced possibilities to go outside have again highlighted the importance of ensuring that at all times the indoor and outdoor air we breathe is clean. With the insulation of buildings improving, ensuring good indoor air quality will become even more important. School buildings also deserve particular attention. The Commission will analyse **knowledge and policy gaps**, in synergy with the New European Bauhaus initiative and considering the results of relevant Horizon Europe projects. On this basis, the Commission will assess **pathways and policy options to improve indoor air quality**, focusing on key determinants and pollution sources and exploring ways to raise greater public awareness and reduce risks.

As from January 2023, the revised **Drinking Water Directive** will provide higher human health protection thanks to more stringent water quality standards, tackling pollutants of concern, such as endocrine disruptors and microplastics, and leading to even cleaner water from the tap for all – and less need for plastic bottles. The Commission will assess by 2023 whether new parameters also need to be addressed in the ongoing review of the **Bathing Water Directive**²⁸. Under the forthcoming review of the **Urban Waste Water Treatment Directive**, the possibility of introducing permanent monitoring of health relevant parameters in wastewaters will be analysed. This could help prepare us for any new epidemic threats²⁹. **Reviewing and, where relevant, modernising other water and marine laws**, notably to make them better fit to reduce chemical contaminants and microplastics, will also help preserve the quality of the water we drink and the seafood we eat. The Commission identified, in the farm to fork strategy, actions which will contribute to moving towards zero-pollution in food systems, such as the new strategic **guidelines for EU aquaculture**. Updating the lists of problematic substances for surface water and groundwater will protect nature and human health from the most relevant substances based on the most up-to-date scientific insights. In parallel, the Commission will continue promoting the creation of **Emission Control Areas across all EU seas**³⁰ to improve the air breathed on ships and in port cities and coastal areas, and the quality of the seas we bathe in.

²⁷ COM(2020) 662 ; Directive 2010/31/EU, see also the Energy Performance of Buildings Directive 2010/31/EU.

²⁸ See 'Have your say' portal.

²⁹ Commission Recommendation EU (C(2021) 1925).

³⁰ https://www.iiasa.ac.at/web/home/research/researchPrograms/air/Shipping_emissions_reductions_main.pdf

For better mental and physical well-being, the Commission will consider promoting **depolluted and re-naturalised sites as potential public green areas** in its upcoming proposal for legally binding EU nature restoration targets, in the new soil strategy and in all urban greening actions, as announced in the EU biodiversity strategy for 2030. In doing so, it will aim at redressing social inequalities to an equitable access to green infrastructure in cities as much as possible. Furthermore, by 2025 the Commission will finalise a **comprehensive review of the majority of EU waste laws** to adapt them to the clean and circular economy principles, whereby waste prevention is scaled up, high quality recycling leads to clean secondary materials cycles and residual waste is minimised.

With the **chemicals strategy for sustainability**, the Commission will better protect human health and the environment from hazardous chemicals. In particular, it will propose measures to phase out the most harmful chemicals - like endocrine disruptors and persistent substances – especially in consumer products and measures to substitute and minimise all substances of concern in the economy and society³¹.

Ongoing **international cooperation** will be intensified with the World Health Organisation (WHO), the OECD, the Convention on Long-Range Transboundary Air Pollution and other key international initiatives and organisations, including sector-specific organisations such as the International Maritime Organisation (IMO) and the International Civil Aviation Organisation (ICAO). As for water and soil pollution from pharmaceuticals, in addition to the EU target on antimicrobial sale reduction, the Commission will encourage international cooperation to address the environmental risks in other countries where pharmaceutical emissions from manufacturing and other sources may contribute, among other things, to the spread of antimicrobial resistance (AMR)³².

Flagship 1: Reducing health inequalities through zero pollution

From 2022 onwards, the Commission will ensure that the newly announced **Cancer Inequalities Registry** and the Atlas of Demography are regularly fed with pollution monitoring and outlook data and that, by 2024, the need to have an Inequalities Register identifying trends, disparities and inequalities across EU regions is also assessed for other pollution-related diseases, to help target interventions at EU, national and local level. This will also enable people to compare how much pollution affects their health across the different regions where they live, study and work.

Flagship 2: Supporting urban zero pollution action

As part of the future Year of Greener Cities³³, the Commission will, in synergy with the proposed³⁴ Horizon Europe Mission for Climate Neutral and Smart Cities, the revision of the Urban Mobility Package, the Covenant of Mayors, and the New European Bauhaus initiative, identify key **urban greening and innovation needs to prevent pollution, including indoors**. By 2024, the Commission will reward the cities reporting the most progress over 2021-2023 in reducing air, water and soil pollution. This will help people benefit from actions against pollution that are tailored to their immediate local surroundings.

³¹ COM(2020)667.

³² COM(2020)761; COM(2019) 128.

³³ Planned for 2022, [depending on the duration of the co-decision procedure](#).

³⁴ https://ec.europa.eu/info/horizon-europe/missions-horizon-europe/assessment-criteria_en.

2.3. Living within our planetary boundaries

To keep our pollution footprint within boundaries that our planet – and thus humankind - can cope with³⁵, we must **implement the existing EU regulatory frameworks protecting air, freshwaters, seas and oceans faster and better**, while urgently working towards a **framework to regularly assess the status of EU soils** and take action at all levels to address soil pollution and degradation.

From an air quality perspective, the Commission will, together with Member States, follow up on National Air Pollution Control Programmes and reduction commitments to ensure that the National Emission Reduction Commitments (NEC) Directive is fully implemented, so that by 2030 the number of land and freshwater ecosystems where **air pollution-related eutrophication threatens biodiversity** is reduced by 25%³⁶.

When it comes to freshwater and marine pollution, achieving ‘good status’ under the **Water Framework Directive** and the **Marine Strategy Framework Directive** would bring the EU close to realising the zero pollution ambition for all aquatic ecosystems.

However, the 2019 evaluation concluded that **the implementation of freshwater legislation remains insufficient**³⁷, due to factors such as lack of investment, limited inclusion of freshwater protection objectives in other policy areas, slow implementation of measures and the need to better address chemical pollution. **Stricter implementation will thus be the focal action.** The Commission will notably aim to ensure that Member States promote sustainable and efficient water consumption, discourage water pollution and present a socially fair water bill to all water users and polluters, including industry, agriculture and household consumers, making best use of the revenues for sustainable investments³⁸. It will also support better monitoring and **reducing pollution from key substances in surface and ground waters.**

The proposed ‘**Mission Healthy Ocean, Seas Coastal and Inland Waters**’, will aim to support innovation and implementation of EU policies and laws, to achieve healthy, pollution-free ocean, seas and waters. The Commission will also adopt an “Inland Navigation Action Plan 2021-2027” (NAIADES III), to support a gradual modal shift towards zero emission inland waterways transport³⁹.

The Commission will **review the Marine Strategy Framework Directive** by 2023, taking into account the state of implementation of EU laws addressing key pollution sources and the need to reduce **plastic and other litter, underwater noise and contaminants**. Building upon the success of the recently agreed EU threshold value on beach litter⁴⁰, the Commission will work with Member States on EU threshold values for maximum levels of underwater noise stemming from maritime transport, construction, dredging and other offshore activities.

The upcoming review of the **Urban Waste Water Treatment Directive**⁴¹ will, in synergy with the **evaluation of the Sewage Sludge Directive**⁴², help to increase the ambition level to remove nutrients from wastewater and make treated water and sludge ready for reuse, supporting more circular, less polluting farming. It will also address emerging pollutants such as microplastics

³⁵ EEA Report No 1/2020: Is Europe living within the limits of our planet?

³⁶ Directive (EU) 2016/2284. Air pollution contributes to eutrophication, by which an excess of nutrient nitrogen is deposited on soils and waters.

³⁷ SWD(2019) 439 and SWD(2020) 259.

³⁸ Directive 2000/60/EC, Article 9.

³⁹ See ‘Have your say’ portal.

⁴⁰ Less than 20 litter items for every 100 metres of coastline – see also <https://ec.europa.eu/jrc/en/news/eu-member-states-agree-threshold-value-keep-europe-s-beaches-clean>

⁴¹ See ‘Have your say’ portal.

⁴² See ‘Have your say’ portal.

and micropollutants, including pharmaceuticals. Steps will be taken towards energy efficiency and carbon neutrality as well as a better application of the ‘polluters pays’ principle. The review will also look at improving access to justice, sanitation for all and information. This review will also support the concrete implementation of the future **integrated nutrient management action plan**, addressing holistically a long-standing environmental challenge, maximising synergies between policies and making best use of the green architecture of the new common agricultural policy, especially via conditionality and eco-schemes. Similarly, as announced in the Farm to Fork and Biodiversity Strategies, **pollution from pesticides in air, water and soil** should be reduced by cutting by 50% by 2030 their overall use and risk, including the most hazardous ones. This will be achieved through enhanced uptake of integrated pest management, the revision of the Directive on Sustainable Use of Pesticides, the promotion of agro-ecological practices, including organic farming, and avoiding the use of chemicals pesticides in sensitive areas. In addition to addressing the risks to human health and the environment, this will also reduce the cost of treating drinking water. Innovative techniques, including biotechnology, could also contribute to reducing dependency on pesticides⁴³.

Furthermore, the proposed ‘**Mission in the area of Soil Health and Food**’, together with the agricultural European Innovation Partnership (EIP AGRI), will promote the wide-spread uptake of practices for pesticide and nutrient reduction by promoting innovations and exchange of knowledge. It will aim to ensuring that, by 2030, 75% of soils are healthy, also thanks to a specific objective on reducing soil pollution and enhancing restoration.

As part of the upcoming **EU soil strategy**, the Commission will develop measures to significantly increase efforts to identify, investigate, assess and remediate contaminated sites, so that by 2050 soil pollution will no longer pose a health or environmental risk. New soil contamination should be prevented as much as possible, but when it occurs despite preventive and other measures, the risks should be immediately addressed. An estimated 2.8 million sites are potentially contaminated across the EU, of which **390 000 are expected to require remediation**. By 2018, only some 65 500 sites were reported to have been remediated⁴⁴. It is crucial that all Member States have a register for (potentially) contaminated sites, step up efforts to remediate such sites and develop clear criteria to prioritise decontamination. The upcoming proposal for legally binding **EU nature restoration targets** will consider addressing the restoration of degraded soil ecosystems. The Commission will also develop an EU priority watch list for soil contaminants as well as guidance, e.g. for a **passport for the safe, sustainable and circular use of excavated soils** based on Member State experiences where they exist. To better understand the issue of diffuse soil pollution in the EU, the Commission will work towards integrating a **zero pollution module** in the future **LUCAS soil survey**⁴⁵. The availability and awareness of public and private funding options for identifying, investigating and remediating contaminated soils will be promoted and facilitated.

Internationally, the EU will support global and regional transboundary water cooperation⁴⁶, and work with major partners bilaterally. It will continue to foster cooperation between relevant **regional fora**, such as in European river basins (Rhine, Danube) and will continue pursuing the global uptake and implementation of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes. It will continue strengthening **International Ocean Governance** and support partner countries to ensure that the oceans are clean, healthy and sustainably managed⁴⁷. The EU will also support the **coordination of**

⁴³ https://ec.europa.eu/food/plant/gmo/modern_biotech/new-genomic-techniques_en

⁴⁴ JRC (2018). Status of local soil contamination in Europe.

⁴⁵ Land Use and Land Coverage Area frame Survey.

⁴⁶ also making use of regional cooperation tools, e.g. EU macro-regional strategies, Interreg programmes

⁴⁷ JOIN(2016) 49.

regional sea basins to jointly measure, assess and tackle different types of pollution. Several regional river and sea basins suffer also from **historical pollution**, partly still linked to World War II⁴⁸, which has accumulated in sediments, posing significant risks for aquatic ecosystems but also to human health, via fish and shellfish. It will also step up its engagement with third countries on tackling marine litter. Furthermore, closer **cooperation in the Mediterranean** region, notably through the Barcelona Convention and its Protocols and the Union for the Mediterranean, will continue to be a priority. The EU is also steering developments in the IMO to regulate **discharges into the sea from ships** equipped with exhaust gas cleaning systems⁴⁹. It will also continue supporting the **Global Soil Partnership** to further prevent pollution and minimise the risks from legacy pollution in soils.

Flagship 3: Promoting zero pollution across regions

By 2024 and in cooperation with the Committee of the Regions, the Commission will present a **Scoreboard of EU regions' green performance**⁵⁰ to measure, in particular the efforts of EU regions to achieve the pollution-relevant targets set under this action plan and other strategies. It will be the basis for rewarding the best performances and grant an **award for the Green Region of the Year**, possibly in the context of REGIOSTARS. Citizens will be able to check progress over time and also create a race to zero pollution with new tourism and business opportunities.

2.4. Towards zero pollution from production and consumption

Steering the EU towards zero pollution requires, in close synergy with the circular economy action plan, more sustainable industrial systems⁵¹, cleaner technologies, less polluting business models and consumption habits, faster implementation of the polluter pays principle, and further application of extended producer responsibility.

The **Industrial Emissions Directive (IED)**⁵² is **the main instrument regulating air, water and soil pollutant emissions** from over 52 000 of the largest EU industrial installations. The IED makes the granting of permits for industrial installations conditional on an installation complying with the best available techniques (BAT). This has steered these industries to progressively reduce emissions and contributed to a level playing field. For example, large combustion plants now emit seven times less air pollutants than they did 20 years ago. However, air emissions from IED installations still account for close to EUR 100 billion per year in damages⁵³. This calls for continued efforts to lower the remaining emissions, including to water and soil – as well as to ensure that relevant operators of large industrial installations and of particularly hazardous establishments **remediate contamination** from their industrial operations or in case of major industrial accidents.

Following the recent IED evaluation⁵⁴, the **Commission will revise EU rules on industrial emissions**⁵⁵, recognising that new technologies or production processes will often enable emissions of both pollutants and greenhouse gases to be reduced, also in sectors currently not

⁴⁸ An ongoing study on underwater, unexploded munitions may provide additional relevant insights and a basis for possible further EU action to assist the Member States concerned.

⁴⁹ Such systems, also called scrubbers, are used to reduce air polluting emissions, but their discharges can harm the marine environment.

⁵⁰ Building on existing platforms, e.g. Quality of life in European cities survey, 2020 or Knowledge Centre for Territorial Policies.

⁵¹ In synergy with the new industrial strategy for Europe.

⁵² Directive 2010/75/EU.

⁵³ SWD(2020) 181.

⁵⁴ Wood (2021): Wider environmental impacts of industry decarbonisation, final study report.

⁵⁵ Directive 2010/75/EU and Regulation (EC) No 166/2006.

covered. The revision will aim to accelerate the uptake of zero-pollution innovation, create a level playing field also for other highly polluting sectors, improve public access to information, participation in decision-making and access to justice and make it easier to compare Member States' performances in tackling industrial emissions. A new Innovation Observatory under the IED will play a key role in monitoring innovations and accelerating the identification of new techniques. Digitisation, data processing and new innovative approaches such as remote sensing, artificial intelligence and machine learning can be used to accelerate and transform the way regulators and industry tackle industrial emissions. Furthermore, to deliver a 'near-zero landfill and water discharge' by 2050, the Horizon Europe 'Processes4Planet partnership', and "Partnership for a Circular Bio-based Europe" and 'Clean Steel Partnership' will explore ways to **foster breakthrough technologies and more systemic solutions**, such as industrial symbiosis and circular supply chains by which wastes or by-products of an industry or small and medium-sized enterprises (SMEs) become the raw material for another. The industrial technology roadmap on circular industries under the 'New ERA' will provide evidence and propose investment agendas⁵⁶

Embracing the zero pollution ambition in **production and consumption** also means that chemicals, materials and products have to be as safe and sustainable as possible by design and during their life cycle⁵⁷, leading to non-toxic material cycles. The Commission has already adopted the new circular economy action plan and the chemicals strategy for sustainability, and announced several other initiatives to tackle these pollution challenges. The **sustainable product policy initiative** will aim to ensure that products placed on the EU market become increasingly sustainable and stand the test of circularity, making both production and consumption more environment-friendly and minimising waste and pollution. The **Product Environmental Footprint (PEF)** and the **Organisation Environmental Footprint (OEF)** methods⁵⁸ support a transparent, robust, systematic, and integrated comparison of products and organisations in the EU market. In addition to several actions to address the identified environmental challenges of pharmaceutical products via the implementation of the pharmaceutical strategy and the EU strategic approach to pharmaceuticals in the environment⁵⁹, specific measures are also envisaged to address microplastics pollution⁶⁰, **persistent organic pollutants (POPs)**⁶¹ in waste and harmful and persistent substances in products such as **per- and polyfluoroalkyl substances (PFAS)** in all non-essential uses⁶². The Commission will also invite public and private operators to make '**zero pollution pledges**'⁶³ to encourage consumers to choose less polluting products and services, such as the EU Ecolabel ones. These pledges will be for brick-and-mortar stores and online marketplaces and will be based on verifiable and transparent claims to which also the future Green Claims initiative will contribute.

Assigning a right price to pollution and creating incentives for alternatives, as required by the polluter pays principle, constitute a key driver to stimulate cleaner production and consumption⁶⁴. Today, despite numerous calls, pollution is still mainly addressed through regulation and its external costs are not fully internalised. There is scope to promote further use

⁵⁶ COM(2020) 628.

⁵⁷ EEA briefing (2021): 'Safe and sustainable by design'; Mapping study for the development of sustainable-by-design criteria (21 April 2021) - <https://op.europa.eu/s/o9e2>

⁵⁸ <https://ec.europa.eu/environment/eussd/smgp/>

⁵⁹ COM(2020) 761, COM(2019) 128.

⁶⁰ See 'Have your say' portal.

⁶¹ See 'Have your say' portal.

⁶² COM(2020) 667.

⁶³ These pledges will be complementary to the Green Consumption Pledge initiative and pledges under the European Climate Pact, and synergies will be sought with both.

⁶⁴ Article 191(2) of the Treaty on the Functioning of the European Union.

of price instruments⁶⁵. To support this process, the Commission will adopt recommendations on how to further **promote relevant instruments and incentives to better implement the polluter pays principle and thus complete the phasing out of ‘pollution for free’**, following up on the upcoming European Court of Auditors report. Meanwhile, it will consider how the revision of the **Energy Taxation Directive** can help ensure that users are encouraged to choose less polluting energy sources.

Alongside worldwide efforts under the Minamata Convention, in 2022 the Commission will revise the **Mercury Regulation**⁶⁶ to phase out the use of dental amalgam and prohibit the manufacture and trade of a number of mercury-added products, including certain lamps. This will be done in synergy with relevant EU instruments, including the **Directive on the Restriction of Hazardous Substances**⁶⁷.

The **Seveso III Directive**⁶⁸ aims to control major accident hazards involving dangerous substances, and thus plays a **key role in steering the highly industrialised EU towards zero pollution from industrial accidents**. Over the last 10 years, for the 12 000 or so EU-based hazardous establishments covered by the Directive, there have been less than 30 major accidents each year in the EU, with increasingly reduced impacts. The Commission will further consolidate its support to Member, e.g. on assessing the risks of establishments and the consequences of accidents. This will also complement the Union Civil Protection Mechanism⁶⁹.

Internationally, the EU will continue supporting work on best available techniques (BAT) across multilateral environmental agreements, such as the **Stockholm and Minamata Conventions**, as well as through the **OECD's BAT project**. It will also actively contribute to the review of the **Kyiv Protocol on Pollutant Release and Transfer Registers (PRTR)** to gather knowledge on levels and trends of industrial emissions. **To further address the EU's external pollution footprint**, the Commission will propose an ambitious review of the **Waste Shipment Regulation** to better monitor waste exports, ensure their sustainable treatment and **restrict exports of waste that have harmful environmental and health impacts** in third countries. For instance, end-of-life vehicles (ELVs), which are hazardous waste and cannot be exported to non-OECD countries, are often labelled as used cars and illegally exported⁷⁰. This leads to serious pollution threats caused by their unsound management⁷¹. The EU will also further partner with key countries to fight waste trafficking and facilitate intra- and inter-regional cooperation.

⁶⁵ In 2019, the share of environmental taxes in total revenues in the EU-27 was lower than 6%, which was less than 2.5% of GDP. 78% of environmental taxes are based on energy taxation, 19% on transport taxes, only 3% on pollution and resources. These numbers have been largely stable over the last two decades.

⁶⁶ Regulation (EU) 2017/852.

⁶⁷ Directive 2011/65/EU

⁶⁸ Directive 2012/18/EU.

⁶⁹ Decision (EU) 2013/1313. “Overview of natural and man-made disaster risks the EU may face” SWD(2020)330. Emergency response services under the Union Civil Protection Mechanism work together to prevent, respond to and remediate pollution from industrial and marine accidents, and other natural or man-made disasters.

⁷⁰ The EU is the biggest exporter of used vehicles worldwide, notably to West Africa and Eastern Europe, the Caucasus and Central Asia. See <https://www.unenvironment.org/news-and-stories/press-release/new-un-report-details-environmental-impacts-export-used-vehicles>

⁷¹ Including unsafe handling of oil, lead-acid batteries and uncontrolled burning of plastics / rubber.

Flagship 4: Facilitating zero pollution choices

From 2022 onwards, the Commission will encourage public and private sector operators to make ‘zero pollution pledges’ to **promote best available, ‘near-zero waste’ options, and in general products and services proven to be less polluting over their whole life cycle**, with a focus on **EU Ecolabel** products and services, including tourist accommodations and less toxic chemicals and materials⁷². This will provide people with more offers and information on cleaner options.

3. CREATING ZERO POLLUTION TRANSFORMATION TOGETHER

3.1. Ensuring stricter implementation and enforcement

According to the **second Environmental Implementation Review**⁷³, the current gaps in implementing EU environmental law cost society a total of around EUR 55 billion annually, with 69% of that cost due to an insufficient implementation of laws on air, noise, water and industrial emissions/accidents⁷⁴.

The Commission will increasingly focus its implementation and **enforcement** efforts on ensuring that all EU pollution prevention laws are effectively complied with and deliver the intended environmental and health benefits. This includes working upstream with Member States to ensure rapid and accurate transposition and promoting all available tools.

To **improve compliance by all relevant national authorities** with EU pollution prevention laws, the Commission will:

- promote enhanced collaboration between national authorities and the **European networks of environmental agencies, inspectors, auditors, police, prosecutors and judges** in the framework of the **Environmental Compliance and Governance Forum**⁷⁵, with a view to developing new joint actions across the compliance chain;
- bring together environmental and other enforcement authorities (e.g. those in charge of EU transport, energy, agriculture, fisheries, maritime surveillance or consumer protection legislation) to exchange best practices and **devise cross-sectorial compliance actions towards zero tolerance for pollution at national and transboundary level**;
- improve the horizontal legal framework by strengthening the **Environmental Crime Directive**⁷⁶;
- evaluate by 2023 the **Environmental Liability Directive’s fitness for purpose (ELD)**⁷⁷, including its pollution-related aspects, and will revise if necessary;
- consider developing **standardised provisions on compliance assurance** for new legislative proposals and monitor the proportionate and dissuasive application of penalty clauses in force;
- encourage the application, across the Member States, of existing **inspections and other compliance checks and penalty clauses** and assess possibilities to improve them, where relevant;
- promote the use of **cutting-edge technologies** to boost national capacities for monitoring and compliance verification.

⁷² In synergy, where relevant, with the European Climate Pact and other relevant initiatives.

⁷³ COM(2019) 149.

⁷⁴ COWI/EUNOMIA (2019): ‘The costs of not implementing EU environmental law’, final study report.

⁷⁵ COM(2018) 10.

⁷⁶ <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12779-Improving-environmental-protection-through-criminal-law>

⁷⁷ Directive 2004/35/EC.

Civil society has an important role as a compliance watchdog. The Commission will evaluate and, where necessary, strengthen the provisions on public participation and access to justice, in line with its **Communication on access to justice in environmental matters**⁷⁸. Whistle-blowers are also protected when they report on breaches of EU law concerning pollution⁷⁹.

The Commission will also give attention to national systems so they enable judges to guarantee the **right of individuals and NGOs to an effective remedy** under EU law, in line with the revised Aarhus Regulation⁸⁰.

Flagship 5: Enforcing zero pollution together

As from 2022, the Commission will bring together environmental and other enforcement authorities (e.g. those in charge of EU transport, energy, agriculture or consumer protection legislation) to kick off the exchange of best practices and encourage Member States to devise **cross-sectorial compliance actions towards zero tolerance for pollution** at national level and transboundary level. People will ultimately benefit from cleaner air, water and soil and less noise, thanks to better enforcement of pollution-related legislation.

3.2. Boosting change across society for zero pollution

The zero pollution ambition requires **collective action and collective change**, as pollution results from multiple activities in most economic sectors, is regulated by international, EU, national, regional and local authorities and ultimately affects all people and the environment across the globe. **Everyone has a role to play.**

For **businesses and governments**, the zero pollution ambition offers an important opportunity to innovate by investing in clean technologies, products and services. **Private investments** are a key lever. In 2019, 51% more green bonds were issued worldwide compared to 2018 (for a total of USD 257.7 billion), mainly due to increased uptake within the EU⁸¹. Implementation of the environmental criteria (water protection, pollution prevention and control, circular economy and biodiversity) under the **Sustainable Taxonomy Regulation**⁸² will be an important opportunity to support this encouraging trend. To help companies and governments measure the economic performance of their business models and projects by reflecting nature's true value, the Commission will continue supporting **standardised natural capital accounting practices** and more stringent environmental reporting, as in the proposal for a **Sustainable Corporate Reporting Directive**⁸³ and, where relevant, promote pollution prevention as part of the sustainability proofing for large projects supported by InvestEU. This should help ensure that air, water and soil-related aspects are adequately reflected in developing standardised practices in business, projects, products and government and are promoted in public-private partnerships⁸⁴.

The EU will continue promoting internationally a green finance agenda to mobilise private capital for environmentally sustainable investments that support the zero pollution objectives, including through the **International Platform on Sustainable Finance**. It will engage with the Member States, the **European Investment Bank and other relevant International Financial**

⁷⁸ COM(2020) 643.

⁷⁹ Directive (EU) 2019/1937.

⁸⁰ COM(2020) 642.

⁸¹ The use of proceeds so far dominantly serve energy, building and transport (over 80%); water's share is 9%, with waste and land use around 6% together. Source: DG ENV, internal analysis last updated in July 2020, based on Climate Bonds Initiative: 2019 Green Bond Market Summary.

⁸² Regulation (EU) 2020/852.

⁸³ COM(2021) 189.

⁸⁴ Actions will be combined with natural capital accounting actions announced in the European Green Deal.

Institutions (IFIs) to mobilise instruments such as the European Fund for Sustainable Development+ to further develop and increase pollution prevention investments⁸⁵. From 2022 onwards, the Commission will ensure that, when **rewarding entrepreneurs** (e.g. through the European Business Awards for the Environment), their zero pollution efforts are duly acknowledged and publicised. This will help such frontrunner companies consolidate their market position, while highlighting their pollution performance for their future customers.

Public funding will also be needed, together with private investment, given that achieving agreed environmental objectives will require investing across the EU an additional EUR 100-150 billion every year until 2030, a significant share of which for pollution prevention and control investments⁸⁶. The upcoming review of the economic governance framework will include a reference to green public investment in the context of the quality of public finance. The **2021-2027 multiannual financial framework and NextGenerationEU** will also offer financial support for pollution reduction and control through cohesion policy, the national plans under the Recovery and Resilience Facility and other relevant national strategies, such as the national strategic plans under the common agricultural policy, which can encourage the implementation of beneficial agricultural practices. The Commission will continue working with Member States to further develop and improve the **national advisory services for farmers** to build capacity for less polluting practices, notably to reduce ammonia and nitrates emissions. **National recovery and resilience plans** are a tool to address challenges and reap the benefits of the green and digital transitions, which can include pollution prevention and reduction, particularly those identified in country-specific recommendations. In line with the Recovery and Resilience Facility Regulation, the Commission will assess the plans against, among others, the targets of twin digital and green transition. Funding under Cohesion Policy will substantially contribute to achieving the zero pollution objective through investments in, inter alia, energy efficiency, renewable energy, waste water treatment, waste management, air quality measures, sustainable urban transport and green infrastructure. This will support action at national, regional and local level alike. The Commission also stands ready to support Member States through the **Technical Support Instrument** to provide technical support to pollution-related reforms in EU Member States, which can be funded by national means or EU funds. The Commission is also developing a Long Term Vision for Rural Areas, that has the ambition to contribute with concrete actions also to emission cuts.

Horizon Europe will support **targeted research and innovation relevant to the zero pollution ambition** as one of its priorities. Major strategic initiatives are the missions⁸⁷ and partnerships⁸⁸ such as the proposed missions for ‘Healthy oceans, seas, coastal and inland waters’⁸⁹ and ‘Soil Health and Food’⁹⁰ and the mission for ‘Climate-neutral and smart cities’ and the partnerships on risks from chemicals (PARC), transforming the European process industry (‘Processes4Planet’), water security for the planet (‘Water4All’), on ‘Zero emission waterborne transport’ (ZEWI) or ‘towards zero-emission road transport’ (2ZERO). Moreover, Horizon Europe will continue supporting research on pollutants and types of pollution of emerging concern such as **light pollution** and its impacts on biodiversity, or pollution with **nanoparticles**.

⁸⁵ Building notably on the successful experiences under the Neighbourhood Investment Platform, the Western Balkans Investment Framework, the Mediterranean Hotspot Investment Programme, the Northern Dimension Environmental Partnership or the Clean Oceans’ Initiative.

⁸⁶ COM(2020) 21, SWD(2020) 98.

⁸⁷ https://ec.europa.eu/info/horizon-europe/missions-horizon-europe_en

⁸⁸ https://ec.europa.eu/info/horizon-europe/european-partnerships-horizon-europe_en

⁸⁹ E.g. this ocean mission will address plastic litter, microplastics, chemicals, nutrients, underwater noise.

⁹⁰ E.g. this mission will address soil pollution in rural and urban areas, restoration of contaminated sites, and promote the wide-spread uptake of practices for pesticide and nutrient reduction

Significant innovative potential is increasingly emerging from **digital solutions to reduce pollution** which often also benefit other Green Deal objectives⁹¹. They can accelerate the zero pollution transition but require timely decisions to make the best use of the opportunities while mitigating the risks. For example, developing targeted **digital tools to help farmers reduce their environmental footprint** thanks to easily visualised requirements under EU laws could significantly reduce the polluting impacts of some of their activities. More generally, to improve the availability of data from the public and private sector and help businesses, policymakers, researchers and citizens better understand and visualise pollution, **data of relevance for the zero pollution ambition**⁹² will be shared openly as part of the Green Deal Dataspace⁹³. The **Earth Observation Programme Copernicus** will be a major building block for the **EUs Destination Earth initiative**, providing large amounts of Earth Observation and monitoring data and information. The Commission has also announced a **‘GreenData4All’ initiative**⁹⁴ to modernise, actively disseminate and share public and privately held data in support of the Green Deal objectives, building on progress made under the INSPIRE Directive⁹⁵ and including the Directive on public access to environmental information⁹⁶. Moreover, through smart cities and communities under the Digital Europe Programme, for example, the Commission will invest in the piloting and rollout of digital solutions for zero pollution as well as the development of **local digital twins** – virtual models of cities – which will help cities tackle complex environmental and planning challenges⁹⁷.

Complementing the efforts under the European Climate Pact⁹⁸, the Commission will offer people new possibilities to learn about pollution and take action. Dedicated information material and apps will be developed, starting with the **Air Quality Index App**⁹⁹, making the available real-time, comparable EU-wide data easier to access, and the **consumer footprint calculator**¹⁰⁰, which will allow people to assess their own consumption footprints. Dedicated ‘zero pollution’ communication activities with partner organisations will include educational kits, the promotion of dedicated zero pollution activities for the general public, students and vulnerable groups.

Clearly, the zero pollution transformation needs not only funding and technologies but also skilled people to make best use of both. And this holds true not just for digital skills. The Commission will implement the **Skills Agenda**¹⁰¹, amongst others by supporting the development of a **core green skills set for the labour market** to guide training across the economy with a view to creating a generation of climate, environment, and health conscious professionals and green economic operators. In addition, the Commission will ensure a wide uptake of tailored **EU training modules for healthcare and other social care sector workers** to improve their capacity to deal with environmental risks, while also ensuring a wide EU uptake of regularly updated best practices to make tangible progress in identifying and reducing exposure to environmental risks in vulnerable groups.

⁹¹ SWD(2021) 141; note that e.g. The Copernicus services already provide data and information on air quality, freshwaters, seas and soils.

⁹² Building on already existing platforms and initiatives such as the European Marine Observation and Data Network (EMODnet), the Information Platform on Chemical Monitoring (IPChem), as well as the Copernicus In Situ Dashboard and Maritime Surveillance Service

⁹³ COM(2020) 66

⁹⁴ As set out in the European data strategy, see ‘Have your say’ portal.

⁹⁵ Directive 2007/2/EC.

⁹⁶ Directive 2003/4/EC.

⁹⁷ See SWD(2021) 141.

⁹⁸ COM(2020) 788, e.g. ‘online, interactive citizen dialogues will invite attendees to contribute as to what a zero emissions and zero pollution Europe means for their community and everyday lives’.

⁹⁹ using ‘up-to-date’ air quality data officially reported, complemented where necessary by modelled air quality data from the Copernicus Atmosphere Monitoring Service (CAMS).

¹⁰⁰ Tool scheduled to be available by Q2-2021 at <https://eplca.jrc.ec.europa.eu/ConsumerFootprint.html>

¹⁰¹ COM(2020) 274

To help ensure that the green transition and sustainability become part of the education curriculum, at the end of 2021 the Commission will propose a Council Recommendation on **education for environmental sustainability** and a **European Competence Framework for Climate Change and Sustainable Development**. Launched in December 2020, the **Education for Climate Coalition** will support innovative solutions with teachers and students, including on green skills development. The **Erasmus+ programme** will strengthen the green dimension in education and training as well as increase the number of mobility opportunities in green forward-looking fields of study, such as Urban Planning, Sustainability & Innovation or Science, Technology, Engineering and Maths (STEM).

Cities and regions are at the forefront of implementing pollution-relevant laws, policies and programmes. Many cities are taking increased action already, with frontrunners engaged in the **European Green Capital** and **Green Leaf** networks. Nevertheless, numerous cities still struggle to address pollution sufficiently. For instance, EU air quality standards are still breached in more than 100 cities in the EU. The Commission will continue to encourage, motivate and work with cities, under the recent **Green City Accord**, in particular, so that they commit to step up their local action on air, noise, water, nature and biodiversity, the circular economy and waste¹⁰². The proposed Horizon Europe **Cities Mission** will, through a demand-driven and cross-sectoral approach aligned with the zero pollution ambition, support 100 cities in their transition towards climate neutrality by 2030, to inspire other European cities to be climate neutral by 2050 and contribute substantially to reducing urban pollution.

Flagship 6: Showcasing zero pollution solutions for buildings

From 2022 onwards, the Commission will showcase from the renovation wave strategy and New European Bauhaus initiative **how building projects and the use of Local Digital Twins can also contribute to zero pollution objectives** by applying principles based on ‘beautiful, sustainable, together’. These results will also contribute to the implementation of the Energy Efficiency Directive, with improved housing and less pollution from, in and around buildings, along with money saving.

Flagship 7: Living Labs for green digital solutions and smart zero pollution

In 2021, the Commission will, together with partners, launch Living Labs¹⁰³ for green digital solutions and smart zero pollution to engage with regional and local authorities (for example through the Living-in.eu community) and other stakeholders to help **develop local actions for green and digital transformation**¹⁰⁴ which contribute to the European Digital Green Coalition¹⁰⁵ and the European Climate Pact. By 2023, the Living Lab members will develop recommendations on using for a climate and environment-friendly use of digital solutions to accelerate zero pollution efforts, with a particular focus on citizen engagement.

¹⁰² https://ec.europa.eu/environment/topics/urban-environment/green-city-accord_en

¹⁰³ Building on experiences at EU (e.g. European Network of Living Labs) or Member State level (e.g. German Digital Policy Agenda for the Environment); Living Labs aim to integrate research and innovation processes in real life communities and settings. They operate as intermediaries among citizens, research organisations, companies, cities and regions for joint value co-creation, rapid prototyping or validation to scale up innovation and businesses.

¹⁰⁴ See Environment Council Conclusions 2020: ‘Digitalisation for the benefit of the Environment’.

¹⁰⁵ <https://ec.europa.eu/digital-single-market/en/news/companies-take-action-support-green-and-digital-transformation-eu>

3.3. Promoting worldwide change for zero pollution

Pollution does not stop at borders. The EU will thus promote the zero pollution ambition for a toxic-free environment in its external action, including its Green Deal diplomacy and investments, providing expertise and financial resources to scale up international partnerships and action in and with third countries.

In line with the most recent policy and regional strategies¹⁰⁶, the EU will closely cooperate with **enlargement partners and our closest neighbours** in the South and the East, as well as the UK and EFTA partners, on pollution challenges not least for the ratification and effective implementation of relevant multilateral agreements on pollution. Cooperation with non-EU Nordic countries, the US, Canada and Russia will also be important, including continued collaboration in relevant international fora, to better protect the Arctic region's fragile environment from pollution-related damage. In particular, the EU will advance **international cooperation on black carbon**¹⁰⁷ **policies** to reduce the climate change impacts and improve air quality.

The EU will also engage with **major international partners**, particularly among the G20 and its vast network of bilateral trade agreements, to advance a global zero pollution agenda, with an emphasis on health and pollution prevention, and work towards creating market opportunities for green technologies, goods, services and investments. It will also promote the zero pollution ambition through development and investment policies evaluate pollution-related impacts in trade policy initiatives and free trade agreements, and strengthen implementation and enforcement of Trade and Sustainable Development chapters.

At the **multilateral level**, the EU will:

- continue supporting international action for zero pollution and implementation of the polluter pays principle¹⁰⁸, in line with the SDGs and following up on resolutions by the United Nations Environment Assembly¹⁰⁹, notably the implementation plan “Towards a pollution-free planet”¹¹⁰ and Mission Innovation¹¹¹;
- continue leading on the work for an ambitious post-2020 international framework for the sound management of chemicals and waste;
- enhance actions under the Basel, Rotterdam, Stockholm and Minamata Conventions on waste electric and electronic equipment, hazardous chemicals, persistent organic pollutants and mercury;
- promote a global agreement on plastics¹¹².

The EU will also aim to ensure that pollution is effectively tackled as part of an ambitious **post-2020 global framework on biodiversity** at the 15th Conference of the Parties to the Convention on Biological Diversity.

The Commission will encourage partner countries to improve their policy and regulatory frameworks and put in place the **right incentives to reduce pollution**, notably through the use of green budgeting and environmental taxes¹¹³. Furthermore, the upcoming initiative on

¹⁰⁶ See COM(2020) 641, SWD(2020) 223, JOIN(2020) 7, JOIN(2021) 2.

¹⁰⁷ Black carbon—commonly known as soot—is a tiny particle formed by the incomplete burning of fossil fuels, blended and synthetic fuels, and biomass.

¹⁰⁸ COM(2020) 313.

¹⁰⁹ Resolutions on e.g. air, water and soil pollution; chemicals and waste; marine litter; single use plastics

¹¹⁰ <https://www.unenvironment.org/ietc/resources/publication/towards-pollution-free-planet>

¹¹¹ <http://mission-innovation.net/>

¹¹² cf COM(2020) 98.

¹¹³ In many developing countries, increasing the amount of revenues raised through taxation of pollution can reduce state dependence on aid and debt financing, and help mobilising domestic resources for public services. As

sustainable corporate governance will introduce **due diligence duties** across economic value chains, including as regards environmental impacts related to business operations. .

The Commission will step up the integration of the zero pollution ambition in EU external action programmes supporting the transition to low emissions and circular economies, sustainable urban development, clean energy and clean cooking solutions, water and sanitation, climate and environment action, health, sustainable mobility and agriculture. The Commission will also enhance its cooperation with international partners to ensure the safety of products exported to EU's online and offline markets for consumers.

The Commission will explore ways to include **a stronger health and pollution agenda internationally**, including by paying closer attention to environmental determinants of non-communicable diseases in EU-funded health programmes. Furthermore, the Commission will work with the Tripartite Plus organisations (WHO, FAO, OIE, UNEP) to reach a renewed global and effective One Health consensus on environmental pollution.

The Commission will support **global action on the export of end-of-life vehicles (ELVs)** and used vehicles and encourage the adoption of stronger rules on the imports of the most polluting used vehicles, notably in Africa. In line with the EU's international commitments, it will also propose new rules on exports of ELVs, notably to better distinguish used cars from ELVs and explore linking used vehicle exports to compliance with EU requirements, e.g. on, roadworthiness and emissions.

Waste electrical and electronic equipment (WEEE) and waste batteries are among the fastest growing waste streams, notably in developing countries. The Commission will support initiatives, notably through the Basel Convention, to better monitor international trade for these waste streams and improve their management. In particular, the increased use of cars, solar power and ICT technology has vastly expanded the use of **lead acid batteries** in developing countries. Their often informal recycling exposes people, to harmful lead pollution with a major impact on children and their development. The Commission will explore a **global initiative** with international partners to end informal recycling of used lead acid batteries.

Flagship 8: Minimising the EU's external pollution footprint

As of 2021, the Commission will promote global zero pollution in all relevant international fora and work with the EU Member States and stakeholders to significantly reduce the EU's external pollution footprint, notably by proposing, in line with EU international commitments, to **restrict the export of certain products which are no longer allowed in the EU market, and wastes** that have harmful environmental impacts in third countries. This will ultimately reduce EU global pollution footprint and benefit third-country citizens' health and environment.

3.4. Tracking progress, anticipating trends and mainstreaming zero pollution

To integrate the monitoring of different types of pollution and assess their health, environmental, economic and social impacts, the Commission, in partnership with relevant EU agencies¹¹⁴, will develop an integrated **Zero Pollution Monitoring and Outlook Framework**¹¹⁵ as part of the wider 8th Environment Action Programme (EAP) monitoring. Results of relevant innovative

environmental taxes are harder to evade than, for instance, corporate or personal income taxes, they can also strengthen state accountability, improve tax morale and enhance fiscal governance, see <https://www.oecd.org/environment/tools-evaluation/environmentaltaxation.htm>

¹¹⁴ In particular, the European Environment Agency (EEA), the European Chemicals Agency (ECHA), the European Food Safety Agency (EFSA) and the European Maritime Safety Agency (EMSA).

¹¹⁵ SWD(2021) 140.

research, such as on human biomonitoring¹¹⁶, exposome¹¹⁷, soil health¹¹⁸ or pollinators¹¹⁹ will need to be better taken on board to provide long-term data collection and contribute to the outlook efforts. To complement the Zero Pollution Monitoring and Outlook with a focus on health impacts, the EEA will develop a ‘**European Environment and Health Atlas**’ which can also subsequently feed into the ‘European Climate and Health Observatory’¹²⁰.

The Zero Pollution Monitoring and Outlook Framework

Integrated monitoring of pollution will substantially support better governance on zero pollution by offering new insights into overall pollution levels and impacts and by monitoring whether policy implementation is on track to achieve agreed objectives at EU and national level, also as part of the regular Environment Implementation Reviews and of the 8th EAP monitoring. The **Zero Pollution Outlook** will analyse synergies and trade-offs between different EU policies, help translate ‘early warnings’ into recommendations on pollutants of increasing concern based on the latest research findings (e.g. on ultrafine particles or light pollution). The first Zero Pollution Monitoring and Outlook Report is planned for 2022.

Building on the monitoring and outlook, the Commission, in cooperation with the Committee of the Regions, will set up a **new Zero Pollution Stakeholder Platform** to bring together stakeholders and experts of different policy areas (e.g. health, agriculture, research and innovation, transport, digitalisation and the environment) to effectively mainstream the zero pollution agenda, help create co-ownership, promote collaboration and foster integrated solutions and actions that maximise synergies with decarbonisation and post-COVID 19 recovery efforts.

It will develop and share good practices on cross-cutting topics such as financing for zero pollution innovation and jobs, boosting sustainable production and consumption as well as creating thematic hubs such as a Green Digital Solutions Hub, a Clean Air Tech Hub and a Soil Pollution Hub. The Zero Pollution Stakeholder Platform will also establish synergies with other relevant initiatives, such as the European Climate Pact. This regular and interactive dialogue and collaboration with Member States, businesses, non-governmental organisations, academia and other stakeholders will also help prepare the second Zero Pollution Monitoring and Outlook Report by 2024.

Flagship 9: Consolidating the EU’s Knowledge Centres for Zero Pollution

From 2021 onwards, the Commission will consolidate the roles of the European Environment Agency (EEA)¹²¹ and the Commission’s Joint Research Centre (JRC)¹²² as the EU’s **Knowledge Centres of Excellence** for Zero Pollution Monitoring and Outlook, and bring together relevant players in the Zero Pollution Stakeholder Platform to exchange also on best available data **and inform the public, in particular through the upcoming Air Quality Index App.**

¹¹⁶ <https://www.hbm4eu.eu/>

¹¹⁷ <https://www.humanexposome.eu/>

¹¹⁸ Land use and land cover survey.

¹¹⁹ EU Pollinator Information Hive as part of the EU Pollinators Initiative, COM(2018) 395.

¹²⁰ <https://climate-adapt.eea.europa.eu/observatory>

¹²¹ In close collaboration with the European Chemicals Agency (ECHA), the European Maritime Safety Agency (EMSA), the European Food Safety Agency (EFSA) and other relevant agencies.

¹²² In close collaboration with other Commission departments, in particular Eurostat.

4. CONCLUSIONS

This action plan comes at a time when the EU has set itself the target of achieving climate neutrality by 2050 and has embraced with renewed determination the need to move towards a clean and circular economic model based on restored and healthy natural ecosystems, a halt to any further biodiversity loss and a healthy, toxic-free environment for all its citizens. It sets out the vision of a pollution-free world and combines all the ongoing and planned efforts in an integrated strategy that puts pollution prevention first. As many work strands are ongoing or only starting to deliver results, by 2025 the Commission will take stock of the degree of implementation of this action plan, building on the second Zero Pollution Monitoring and Outlook Report. It will identify whether further action is needed to address emerging concerns and review the targets, flagships and actions identified so far, so that this decade sets the EU on the pathway to zero pollution as a key component of the European Green Deal goals.