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

First 'zero pollution' monitoring and outlook

'Pathways towards cleaner air, water and soil for Europe'

1. INTRODUCTION

Clean air, clean water and clean soil in a resilient and thriving natural environment are fundamental for healthy lives. The isolation forced by the COVID-19 pandemic paradoxically provided new insights into the value of a clean and bio-diverse environment. Today, the Russian war against Ukraine and its resulting energy and economic crisis, the post-COVID recovery efforts, and climate-induced floods, heatwaves and droughts are undoubtedly exacerbating the challenges faced by the EU, including the challenge to reduce pollution.

The mid- and long-term pathway laid out by the European Green Deal and confirmed by the 8th environment action programme (8th EAP) to 2030, which sets out 2050 priority objectives[1], remains valid. It includes, in line with the 2050 climate-neutrality goal, the zero pollution ambition for a toxic-free environment[2]. The EU action plan 'Towards zero pollution for air, water and soil'[3] and the chemicals strategy for sustainability[4] set out a 2050 vision[5], quantified 2030 targets and concrete actions to put the EU on a path to achieving zero pollution as well as its climate and nature restoration goals[6]. The Commission has tabled several relevant proposals, most recently to revise the Ambient Air Quality Directive[7],the Urban Wastewater Treatment Directive[8] and update the list of water pollutants under the Water Framework Directive[9] as well as the proposal for the Euro 7 emission type approval for motor vehicles[10]. The importance of reducing pollution as a means of improving human health is emphasized in Europe's Beating Cancer Plan[11].

This integrated 'zero pollution' monitoring and outlook report is an integral part of the 8th EAP monitoring framework[12] which sets out key indicators per priority objective and other sector-specific monitoring tools, for example for climate change, biodiversity[13] and circular economy[14], to provide a detailed and coherent picture. The overall objective of this report is to present the progress and outlook on the six targets that were adopted in the Zero Pollution Action Plan, by highlighting also the existing gaps. It answers questions like: How polluted is the EU? What are the trends over the past years? Can we achieve the 2030 zero pollution targets?

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1 See Article 2(1) of Decision (EU) 2022/591.
2 See Article 2(2)(d) of Decision (EU) 2022/591.
3 COM(2021) 400.
4 COM(2020) 667.
5 '*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.*'
6 COM(2020) 380.
7 COM(2022) 542.
8 COM(2022) 541.
9 COM(2022) 540.
10 COM(2022) 568.
11 COM(2021) 44.
12 COM(2022) 357.
13 See Knowledge Centre for Biodiversity
14 COM(2018) 29 and SWD(2018) 17 (currently under review).

This will support better governance on pollution by, in particular:

- offering new, relevant insights;
- monitoring whether policy implementation is on track;
- analysing synergies and trade-offs between different EU policies;
- helping translate 'early warnings' into recommendations on pollutants of increasing concern based on the latest research findings.

It also exposes a number of shortcomings and gaps that will be addressed in the coming years. These include difficulties in assessing soil pollution given the lack of an EU legal framework for monitoring and reporting, which will be tackled in upcoming laws on soil health and forest monitoring, as well as the challenge of combining not easily comparable data, stemming from different scientific sources or projects, into an integrated picture. Another challenge is to improve the sharing and use of the latest available data so that they adhere to the FAIR (findable, accessible, interoperable and reusable) principles data[15]. While nearly real-time data are available for air policy, data to assess water and the marine environment are often outdated and incomplete, although more up-to-date data are available at national level[16]. This issue is partially addressed in the latest proposals on the monitoring and reporting of surface and groundwater pollutants but will need to be complemented by future reviews of relevant water and marine laws.

The report is the policy summary of the Monitoring Report which has been compiled by the EEA and integrates the most relevant past and current data across all pollution areas monitored at EU level[17] and the Outlook Report which was coordinated by the Commission's Joint Research Centre[18]. The modelling and foresight results are based on an assessment of the expected pollution-reduction benefits of key - including recently-tabled - EU policy initiatives. Sources of information for this first 'zero pollution' outlook report include the third Clean Air Outlook Report[19], outlook assessments on noise[20], nutrients, consumption & production and key findings of the recent report on foresight on zero pollution[21]. Moreover, the results of EU research programmes has been summarised in a recent report[22] which includes, a number of EU funded projects

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15 See here.

16 In particular the reporting cycles of the Water and Marine Strategy Framework Directives are not adequate for policy making and implementation and are made worse by delays in Members States delivering these reports. By the end of October 2022, more than six months after the deadlines, 14 Member States (BE, BG, CY, DK, EL, ES, HR, IE, LT, MT, PL, PT, RO and SI) have not reported their 3rd River Basin Management Plans under the Water Framework Directive and 12 Member States (BG, CY, DK, EE, EL, ES, HR, IE, LV, LT, MT and SI) have not reported their marine strategies under the Marine Strategy Framework Directive.

17 EEA Zero Pollution Monitoring :https://www.eea.europa.eu/publications/zero-pollution/zero-pollution

18 JRC (2022): 'Zero pollution outlook'

19 COM(2022) 673.

20 EEA (2022): 'Outlook to 2030-can the number of people affected by transport noise be cut by 30%?'.

21 FORENV report 2021

22 'Horizon projects supporting the zero pollution action plan'. Report published by the Commission (DG RTD) in October 2022.

providing valuable support and innovative solutions for the zero pollution knowledge base.

2. ZERO POLLUTION MONITORING

This chapter briefly summarises the findings on zero pollution monitoring. It focuses on progress made so far and the distance towards achieving the 2030 targets.

2.1. Zero pollution & health

The zero pollution & health targets for 2030[23]

Under EU law, Green Deal ambitions and in synergy with other initiatives, by 2030 the EU should reduce by more than **55% the health impacts** (premature deaths) of **air pollution** and by **30% the share of people chronically disturbed by transport noise**.

Tangible progress has been made in reducing by 45% harmful health impacts related to air pollution (such as heart diseases, cancer and respiratory diseases), compared to 2005 levels. By contrast, health harm linked to **noise pollution**, such as risk for cardiovascular diseases, sleep disturbance and annoyance[24], has remained rather stable since 2012.

The overall high rates of compliance with the EU drinking and bathing water pollution standards (>99% and >93% respectively) are encouraging. On the health effects of using chemicals, although the levels of certain chemicals are decreasing, the use of some substitute chemicals that present a similar risk is steadily increasing. Despite the progress made, over 10% of premature deaths in the EU each year are still related to environmental pollution[25]. This is mainly due to high levels of air pollution, but also due to noise pollution and exposure to chemicals which is likely to be underestimated[26]. Pollution is not distributed equally across the EU. Vulnerable people, including children, the elderly and persons suffering from asthma or other respiratory or cardiovascular diseases, are more sensitive to pollution exposure and those in lower socioeconomic groups also tend to be exposed to higher levels of pollution[27].

Pollution legacy, e.g. from contaminated sites, is costly to eliminate because the polluter is often not liable, not known, or not able to pay for remediation. This underlines the importance of avoiding pollution in the first place and substituting chemicals with less hazardous ones. Learning from the past, we must be extra vigilant in tackling pollutants of emerging concern, notably those stemming from pharmaceuticals and antimicrobials, 'forever' chemicals (such as per- and polyfluorinated alkyl substances, PFAS), endocrine

23 See Annex 2 of COM(2021) 400 for details.
24 EEA (2022): 'Health impacts of exposure to noise from transport'.
25 See here.
26 Underestimation as only to a limited number of risk factors are considered and does not, for example address the real health risks related to exposure to chemicals. Work is ongoing in the Horizon Europe partnership for the assessment of risk from chemicals (PARC).
27 EEA Report No 22/2018 and new signal here.

disruptors and microplastics. We must also introduce measures to address the health impacts of mixtures of chemicals and their combined effects, e.g. on indoor air quality[28]

The Commission is addressing these issues across a wide range of initiatives, notably the circular economy action plan (e.g. microplastics), the chemicals strategy for sustainability (e.g. PFAS and the revision of the rules on the classification, labelling and packaging (CLP)[29] of chemicals, as well as the REACH Regulation[30] revision), the Zero Pollution action plan (e.g. indoor air quality and the recent communication on asbestos) and the soil strategy (e.g. the new soil health law, an EU priority list for soil contaminants of emerging concern, improving risk assessment)[31]. It has also been proposed to progressively align EU legal standards for air quality with relevant WHO guidelines in order to better protect people's health and wellbeing (e.g. to further reduce premature deaths).

2.2. Zero pollution & biodiversity

The zero pollution & biodiversity targets for 2030[32]

Under EU law, Green Deal ambitions and in synergy with other initiatives, by 2030 the EU should reduce by **25% the EU ecosystems where air pollution threatens biodiversity** and 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**.

Pollution is one of the five main threats to biodiversity[33]. Planetary boundaries for pollution, i.e. the safe operating space of the Earth, are exceeded for nutrients (in Europe by a factor of two for phosphorus and a factor of 3.3 for nitrogen)[34] and for 'novel entities' (including chemicals and plastics)[35].

So far, compared to the baseline years[36], air pollution, pollution from pesticides and antimicrobials has been reduced by 12% (for the area of ecosystems affected by air pollution), 14% (for the use and risk of chemical pesticides), 26% (for the use of more hazardous pesticides) and 18% (for antimicrobial sales) in relation to the above-mentioned targets. For the 50% nutrient losses target, data are still being collected. A

28 See here.
29 Regulation (EC) No 1272/2008.
30 Regulation (EC) No 1907/2006.
31 COM(2020) 98, COM(2020) 667, COM(2021) 400, COM(2022) 488.
32 See Annex 2 of COM(2021) 400 for details.
33 These five threats are changes in land and sea use; direct exploitation of natural resources; climate change; pollution; and the invasion of alien species (see IPBES).
34 EEA Report No 01/2020
35 Persson et al. (2022): 'Outside the Safe Operating Space of the Planetary Boundary for Novel Entities', Environmental Science & Technology (2022).
36 See Annex 2 of COM(2021) 400 for details.

range of proxy indicators[37] seem to indicate that nutrient losses have remained relatively stable, with no indication of a significant reduction over the last decade.

EU pollution limits to protect biodiversity have been exceeded significantly. Based on 2015 data, 23% of the EU's almost 10 000 groundwater bodies and 59% of the EU's nearly 100 000 surface water bodies still fail to achieve 'good chemical status'. Based on 2018 data, 80% of the EU's sea area does not yet meet 'good environmental status' for contaminants. 13 Member States submitted their 3rd River Basin Management Plan (RBMP) before the end of October 2022. A preliminary analysis indicates a broadly stable situation compared to the 2nd RBMP, in particular, for groundwater chemical status. Surface water ecological status and chemical status is more mixed with some countries showing signs of improvement while others report deteriorating quality. A more comprehensive analysis is ongoing[38].

Scientific evidence points to additional challenges such as a lack of knowledge and data on water, marine and soil pollution. The impact of pollutants on ecosystems increases due to their combined effects. The scale of the impact of underwater noise, microplastics and light pollution[39] on biodiversity is becoming increasingly evident.[40]

The Commission has proposed a number of measures to better protect biodiversity from pollution, mainly as part of its biodiversity and 'farm to fork' strategies (e.g. on pesticides, nutrients and antimicrobials), its Zero Pollution action plan (e.g. on water pollutants, urban wastewater) and its soil strategy (e.g. the upcoming law on soil health)41. It is also adapting legal standards to the latest scientific evidence and addressing emerging pollution, e.g. with the recent proposal on the list of water pollutants and the thresholds for underwater noise under the Marine Strategy Framework Directive. The combined effects of pollutants is being addressed in the revision of the REACH Regulation and other chemicals legislation. The European Food Safety Authority (EFSA) is currently developing methods to assess cumulative effects of pesticides, as set out in a specific Action Plan[42]. Finally, the impacts of light pollution on pollinating insects is being addressed by the Pollinator initiative.

2.3. Zero pollution & circular economy

The zero pollution & circular economy targets for 2030[43]

Under EU law, Green Deal ambitions and in synergy with other initiatives, by 2030 the EU should **reduce by 50% plastic litter at sea**, **by 30% microplastics released into the environment**, **by 50% residual municipal waste** and **significantly total waste generation.**

37 See here.
38 See here.
39 E.g. EEA ETC-HE Report 2022/8: 'Review and Assessment of Available Information on Light Pollution in Europe'
40 See signals here.
41 COM(2020) 380, COM(2020) 381, COM(2021) 400, COM(2022) 488.
42 See here.
43 See Annex 2 of COM(2021) 400 for details.

Progress towards these targets has been slow. For **plastic litter and microplastics**, the collection and analysis of 2015-2020 is still being completed and it is not possible to provide a consolidated, agreed upon, EU-wide trend calculation. However, a preliminary review of the available data indicates that concentrations of plastic litter are declining on most EU coastlines, which is an encouraging sign. Harmonised data will be published in 2023[44]. Also the implementation of the Marine Strategy Framework Directive[45], Single-Use Plastics Directive[46], Port Reception Facilities Directive[47] and initiatives on microplastics[48] will help to develop a better picture for marine litter and assess the microplastics target for the next report in 2024. As regards **waste**, the latest statistics indicate that total waste generation decreased by 4 % between 2010 and 2020[49]. As for **residual municipal waste**, no significant change has been detected since 2016[50]. At the same time, packaging waste has increased over the last 10 years by 19%. Similar to other areas, the implementation deficit of existing measures and the failure to address some pollution sources are the key reasons for the limited progress. Moreover, the presence of hazardous chemicals in products continues to hamper the recycling of materials.

In contrast, air and water pollution from production in the EU is steadily decreasing, with EU emissions decreasing by between 3%[51] and 26%[52] in 2015 depending on the pollutant. The **EU's overall consumption footprint**[53], the material footprint and chemical use by industry and consumers are so far relatively stable with lower numbers in 2020 most likely due to the COVID pandemic. The **material footprint**, i.e. worldwide demand for material extractions triggered by use and investment by businesses, households and governments in European countries, is very high, standing at 13.7 tonnes per person in 2020. Overall, the environmental impacts associated with EU production and consumption are high and not sustainable: they already significantly exceed the EU's share of various planetary boundaries'[54]. It is therefore important to better consider the environmental impacts of the goods we import and the 'export of pollution' outside the EU. This is relevant, for example, for the extraction sector in and outside the EU, considering the importance of critical raw materials to the EU's goal to increase its open

44 JRC (2013): 'Guidance for the Monitoring of Marine Litter'
45 See more details here.
46 Directive (EU) 2019/904.
47 Directive (EU) 2019/883.
48 https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12823-Microplastics-pollution-measures-to-reduce-its-impact-on-the-environment_en
49 Eurostat : Statistics on generation of waste by waste category
50 EEA (2022): 'Reaching 2030's residual municipal waste target — why recycling is not enough'
51 For ammonia emissions to air.
52 For the use of the more hazardous chemical pesticides.
53 The consumption and the domestic footprints are based on a set of 16 life cycle assessment (LCA)-based indicators (also available as a single score) whose purpose is to quantify the environmental impacts of consumption at EU and Member State-level. See details at: JRC (2019) and European Platform on Life Cycle Assessment
54 JRC (2020): 'Environmental sustainability of European production and consumption assessed against planetary boundaries'

strategic autonomy and accelerate the green transition. Another factor to consider is waste shipment[55].

The Commission is already taking steps to make consumption and production systems safer and more sustainable, mainly under the circular economy action plan[56], (e.g. measures on waste shipment, a proposal on eco-design for sustainable products, the revision of the packaging and packaging waste directive)[57] and the Zero Pollution action plan (e.g. measures on industrial emissions) as well as the EU Bioeconomy Strategy[58]. More actions are planned, e.g. the revision of the REACH Regulations or the assessment framework for 'safe and sustainable by design' for chemicals and materials under the chemicals strategy for sustainability as well as the green claims initiative. Further developing EU material and consumption footprint methods and indicators and their comparison to planetary boundaries can also bring better systemic insights.

3. ZERO POLLUTION OUTLOOK AND FORESIGHT

Sources for this chapter include a number of projects and initiatives, including modelling and foresight studies coordinated by the Commission (see below). As far as possible, the modelling scenarios took into account the progress expected if current and proposed EU legislation were to be fully implemented. However, each outlook is based on specific assumptions and limitations documented in the specific publications referenced below. The findings of this exercise are presented as Outlooks for clean air, clean water and marine environments, and clean soil.

3.1. Zero pollution & health

The outlook for 2030 in relation to air and noise pollution was assessed against the likely achievement of the health-related targets (cf. 2.1).

The **3rd Clean Air Outlook**[59] found that, if it would fully implement current and proposed EU legislation, the EU would reduce the number of premature deaths due to air pollution by more than 55% in 2030 as compared to 2005. Indeed, as a result of the revision to the Ambient Air Quality Directive proposed by the Commission[60], it is likely that reductions by over 70%, compared to 2005 levels, can be achieved in 2030. To ensure that the expected projections materialise, it is important to implement existing legislation in full. Equally, it is important that recent policy proposals, in particular on vehicle emission standards (Euro 7), industrial emissions (including extending the scope of the Industrial Emissions Directive to cover large farms, projected to have a significant impact towards reducing ammonia emissions) and initiatives under the Fit for 55 and RePowerEU initiatives are adopted swiftly while maintaining the proposed ambition level.

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55 See here.
56 COM(2020) 98.
57 COM(2021) 709, COM(2022) 142 and COM(2022) 677.
58 COM(2018) 673/2 and SWD(2018) 431/2.
59 COM(2022) 673.
60 Through the proposals to align air quality standards more closely with the WHO guidelines. See COM(2022) 542for details.

On **noise pollution**, although EU has several pieces of specific legislation in place since 2002[61], it seems unlikely at this stage that the zero pollution noise target to reduce the number of people harmed by transport noise by 30% by 2030 (compared to 2017) will be achieved. Current estimates show that the number will not decline by more than 19% by 2030, unless a substantial set of additional measures is taken at national, regional and local level, and unless reinforced EU action across all relevant transport sectors leads to a significant further reduction in noise pollution. The distance to target can be further reduced if Member States strengthen their measures. This would amongst others include stricter noise regulations and enforcement[62] for transport, e.g. improving vehicles and their operations and significantly reducing road traffic and speed limits in cities[63]. The latter is already envisaged by many cities as part of their climate and air quality measures.

3.2. Zero pollution & biodiversity

The outlook for 2030 in relation to nutrient pollution of air, water and marine environment was assessed against the likely achievement of the biodiversity-related targets relevant for nutrient (cf. 2.2). No assessment was carried out for pesticides, antimicrobials or in relation to soil pollution at this stage due to the lack of data and availability of relevant models.

The **3rd Clean Air Outlook** found the situation to be more worrying. Current and proposed EU policies do not appear sufficient to enable the EU to reduce the area of EU ecosystems under threat from air pollution by 25% in 2030 compared to 2005. However, with the implementation of the recently proposed revision of the Ambient Air Quality Directives, this target could be achieved.

The main area of concern remains ammonia emissions from agriculture, where many more reduction efforts are still needed and will largely depend on the uptake and implementation of the new Industrial Emissions Directive as well as on the actual uptake of the pollution-relevant measures proposed by Member States in their common agricultural policy (CAP) strategic plans.

The clean **Water and Marine Outlook**[64] found that the agreed nutrient targets and additional measures proposed at EU level until now may not be enough to eliminate the impacts of nutrient pollution in all parts of the European seas. Similar to the air pollution scenarios, reducing nutrient emissions will strongly depend on the implementation and enforcement of the relevant environmental legislation (i.e. Nitrates Directive, Water Framework Directive and other relevant legislation in the area of water pollution including the revised Industrial Emission and Urban Wastewater Directives). The measures adopted under the new CAP can contribute to this end. The Outlook is

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61 In particular the Environmental Noise Directive 2002/49/EC but also specific source legislation, e.g. for road noise Regulation (EU) No 540/2014, Regulation (EU) 2019/2144, for railway noise Regulation (EU) 1304/2014 or for aircraft noise Regulation (EU) No 598/2014.

62 E.g. see NEMO project.

63 More details will be published in the upcoming Implementation Report on the Environmental Noise Directive.

64 JRC (2022): 'Zero pollution outlook'

supported by an integrated analysis on nutrients (looking at nitrogen and phosphorus pollution), which indicates that progress can be made with the current measures, but Member States will need to take further action if they are to meet the target on nutrient losses to the environment by 2030. At EU level, the **upcoming integrated nutrient management action plan** will explore further policy measures to improve nutrient-use efficiency and reduce losses to the environment as well as novel techniques and the measures necessary to foster recovering and recycling nutrients. Moreover, Horizon Europe, will support systemic approaches to limit nutrient emissions from different sources, and to bring their flows back within safe ecological boundaries, for instance by improving the management of fertilising products in agriculture while considering regional conditions. It will also analyse reducing waste along the food chain, together with societal changes (such as dietary changes, production and consumption changes), can help.

The **Soil Outlook** is at an early stage of development. Work initiated under the EU soil strategy and the EU Soil Observatory (EUSO)[65] includes the development of modelling tools that will enable future pollution trends to be predicted. Moreover, the EU Mission "A Soil Deal for Europe"[66] sets out a trajectory to promoting and restoring soil health, amongst others by expanding and harmonising soil monitoring in Europe.

3.3. Zero pollution & circular economy

The outlook for 2030 in relation to consumption and production looked at plastic pollution and consumption but no assessment was carried out for the related targets (c.f. 2.3).

The Water and Marine Outlook also looked at modelling of **plastics pollution** in the Mediterranean Sea. By 2030, measures included under the single use plastic (SUP) is expected to reduce the total litter in the Mediterranean by only 14% (both floating and beach litter). Strengthening the cross-border dimension of plastics pollution needs to be emphasised in order to achieve the EU target[67]. Another assessment looked at the **impacts of consumption** on freshwater toxicity as part of a wider outlook on the consumption footprint[68]. It predicted that the environmental impacts of EU consumption will continue to increase until 2030 and will continue to transgress the Planetary Boundaries[69], including for freshwater ecotoxicity[70].

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65 See here.

66 See here.

67 This could include citizen science approaches, such as through the EU Mission 'Restore our Ocean and Waters', that supports the EU-wide roll out of the Plastic Pirates initiative to engage and empower young people across Europe to monitor and tackle plastic pollution in rivers, coasts, and seas.

68 Based on the JRC's Consumption and Domestic Footprint, see here. .

69 JRC (2020): 'Environmental sustainability of European production and consumption assessed against planetary boundaries'

70 JRC (2022): 'Consumption Footprint: assessing the environmental impacts of EU consumption, European Commission', JRC126257.

3.4. Zero pollution & foresight

The **foresight** and **horizon scanning**[71] revealed that current societal trends and transformations, e.g. increasing digitalisation and decarbonisation[72] will have impact on pollution. These transformations can bring about benefits for health and the environment, especially if the zero pollution ambition is taken as a guide. E.g., the industrial technology roadmap for circular technologies and business models under preparation recalls research needs to address synergies as well as trade-offs between circularity and the zero pollution. These emerging trends and the ongoing green and digital transition can provide a pathway to a more sustainable Europe, but this will depend on the socioeconomic situation.

4. KEY CONCLUSIONS

This integrated 'zero pollution' monitoring and outlook report underlines once more that the **three concurrent environmental crises - pollution, climate change, biodiversity loss, are deeply intertwined**. Moving to a clean, circular and climate-neutral economic model is becoming increasingly pressing – both for the EU and for the rest of the world.

The **current economic and energy crisis** caused by Russia's war of aggression against Ukraine and **the recovery from the COVID-19 pandemic** are affecting the lives of people across the EU. Certain pollution-reduction and control measures are failing due to supply chain disruptions[73], which will make progress on reducing pollution much harder in the short term. In the medium to longer term, however, we can try to find ways to turn the current challenges into opportunities to tackle pollution. For instance, the collective will to increase the EU's open strategic autonomy by significantly accelerating the deployment of clean renewable energy will also contribute to reducing pollution.

It is clear that **global cooperation** to tackle the planetary crisis is intensifying. The **EU must be part of the global solution**, as its pollution footprint is too high[74]. **Inequalities in pollution** levels are also high, affecting the most vulnerable parts of society. The EU is leading the call for ambitious outcomes in the COP15 negotiations for a global biodiversity strategy and at the March 2023 UN Water Decade conference and is paving the way for a global plastics agreement.

This report marks the starting point on the **'Pathways towards cleaner air, water and soil for Europe'**. The evidence is compelling, and so are the challenges and opportunities. Overall, the levels of pollution are decreasing in several pollution areas,

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71 In contrast to the modelling-based outlooks, foresight is exploring, anticipating and shaping the future using collective intelligence in a structured, and systemic way to anticipate developments. See FORENV report 2021 and synthesis summary as well as COM(2022) 289

72 E.g. pervasive digital tools and lifestyles, transformations in where and how we live and work, new pollution monitoring and data methods, living buildings and a new range of building materials and multi-faceted food system revolutions.

73 E.g. the shortage of supplies of chemicals needed to clean polluted air (e.g. ammonia or urea-based products are used to reduce NOx emissions from diesel-engine vehicles) or water (e.g. iron salts, hydrochloride or sulfuric acid for wastewater treatment).

74 See EEA Report No 1/2020 'Is Europe living within the limits of our planet?'.

e.g. as regards air or pesticides pollution. At the same time, other pollution problems persist, e.g. trends for noise, nutrient pollution or municipal waste generation are rather stable over the past years. The achievement of the 2030 zero pollution targets is not guaranteed for those. Hence, the **green and digital transition needs to accelerate** to enable the EU to achieve these 2030 targets. On its side, the Commission has delivered or advanced on all 33 of the announced actions for 2021-2024[75].

What is most needed now for zero pollution to increasingly become a reality is:

1. the **co-legislators' agreement on key legislative proposals;**
2. the **stepped-up implementation of crucial pieces of EU law** at local, national and cross-border level[76]; and
3. the **promotion of global initiatives, supporting third countries in their efforts**.

In addition, the report has identified a number of shortcomings such as the need for better sharing and using the latest available data. The Commission, together with the European Environment Agency (EEA), will address the identified knowledge and data gaps (e.g. on soil pollution) in order to present an even more comprehensive report by 2024.

5. NEXT STEPS

This first 'zero pollution' monitoring and outlook report provides a starting point for monitoring progress towards the EU's zero pollution ambition. It compiles readily available evidence into the first ever EU-wide, integrated, high-level overview of the main threats from pollution and its sources. It will provide input into the first progress report on the European Green Deal and the 8th environment action programme, due by the end of 2023. It sets out detailed information in most of the pollution-specific sections, e.g. on air, water, marine, chemical and noise pollution. It has also highlighted a number of shortcomings which will be addressed in a targeted manner by 2024.

In particular, the report highlights that there are still significant knowledge and data gaps in some areas, e.g. on soil pollution and emerging issues that need attention. To address the data gap, space data, services and applications provided by the EU earth observation system Copernicus have considerable potential. Ongoing and planned research and innovation will also support the next editions of the report[77]. Other areas for improvement include data availability and timeliness, and the efficiency and effectiveness of pollution knowledge management (e.g. by streamlining reporting, promoting citizen science and making better use of digital tools). Many initiatives are

75 See the Zero Pollution action tracker.

76 Through the Technical Support Instrument (Regulation (EU) 2021/240), the Commission supports Member States, upon request, in designing and implementing reforms across a wide range of policy areas, including tackling air, soil and water pollution as well as fighting biodiversity loss and supporting the transition to a more circular economy.

77 See examples in Horizon Report.

already under way or planned, e.g. as part of the 'one substance, one assessment' approach[78] or the recent proposals on the water pollutant list[79].

The Commission and the EEA will lead the way to ensure that the scope, quality, timeliness and robustness of the 'zero pollution' monitoring and outlook framework will increase with every edition[80]. Moreover, the European Chemicals Agency and the EEA are working together to develop a specific indicator framework on chemicals that will feed into the next report.

A particular effort will also be made on further improving the presentation and visualisation of pollution impacts, including by combining and aggregating the various evidence to better support communication efforts. Moreover, the air, water & marine and, in particular, soil outlook capacities will be strengthened to better support policy making.

These efforts will also help support the nine flagship strands of the Zero Pollution action plan, since better monitoring and outlook helps us to identify health inequalities, improves our understanding of the scale of pollution from products and buildings, and enables a better use of digital solutions for monitoring pollution. A robust 'zero pollution' monitoring and outlook also contributes to global pollution assessment as it enables us to focus on specific cities and regions to determine their progress towards zero pollution.

The Commission invites EU institutions, Member States, businesses, non-governmental organisations, academia and other stakeholders to provide feedback on this first zero pollution monitoring and outlook report[81]. The Commission will also use the Zero Pollution Stakeholder Platform, set up in cooperation with the Committee of the Regions, to help prepare the second Zero Pollution Monitoring and Outlook Report in 2024.

The next version of the report will take stock of the initial progress made and set out a perspective for achieving the 2030 zero pollution targets in line with the 2050 zero pollution vision and thereby provide an input to the midterm review of the 8th EAP monitoring framework due in 2024.

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78 The Commission is planning to streamline the flow of information on chemicals into the relevant EU Agencies and make them available for reuse, including for the indicator framework. (see 'Have your say')

79 COM(2022) 540.

80 See SWD(2021) 141 for some details.

81 Interested parties can also reach out to relevant ongoing Horizon 2020 and Horizon Europe projects that are structured around the nine flagships in the above-mentioned report, so that the new knowledge and results can help in solving the problems of citizens, authorities, and the industry.