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Working Group on Environmental Monitoring and Assessment

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Item 6 of the provisional agenda

Regular pan-European environmental assessment supported by the Shared Environmental Information System

Next pan-European environmental assessment – draft elements*

Note by the secretariat

Summary

The Working Group on Environmental Monitoring and Assessment has been tasked by the Committee on Environmental Policy with leading a process of consultation on the regular pan-European environmental assessment (ECE/CEP/2017/2, annex II, para. 2 (b)) for consideration by the Committee and leading up to the next Environment for Europe Ministerial Conference.

At its twenty-fifth session (Geneva, 13–15 November 2019), the Committee welcomed the information provided by the secretariat and the United Nations Environment Programme (UNEP) on the next pan-European environmental assessment. Furthermore, it requested the secretariat and UNEP, working in close cooperation with the European Environment Agency, to prepare a limited indicator-based and thematic assessment, and to regularly inform the Bureau of progress made (ECE/CEP/2019/15, para. 37 (k)). At its twenty-sixth session (Geneva and online, 9 and 10 November 2020), the Committee rescheduled the next Ministerial Conference, to be held in Nicosia, for 5–7 October 2022 (ECE/CEP/2019/15, para. 19 (a)).

The present document summarizes progress made in preparing the next pan-European environmental assessment.

* An agreement was reached to publish the present document after the standard publication date so as to include the most recent information.



Introduction

A. Mandate

1. The series of assessments of the state of the environment in the pan-European region provide up-to-date and policy-relevant information on interactions between the environment and society. The assessments were a consistent feature of the Environment for Europe process from 1995 to 2016. The 2009 reform of that process identified the pan-European assessment as one of the three substantive documents to be prepared for each ministerial conference, together with up to two theme-specific reports (ECE/CEP/S/152, annex I, para. 12 (a) and (d)).
2. Following the Seventh Environment for Europe Ministerial Conference (Nur-Sultan, 21–23 September 2011), responsibility for drafting the assessment shifted from the European Environment Agency to the United Nations Environment Programme (UNEP) and the United Nations Economic Commission for Europe (ECE).
3. During the Eighth Environment for Europe Ministerial Conference (Batumi, Georgia, 8–10 June 2016), the launch of the European regional assessment of the Global Environment Outlook as the regular pan-European environmental assessment was welcomed (ECE/BATUMI.CONF/2016/2/Add.1, para. 10).
4. Following the Eighth Environment for Europe Ministerial Conference, the ECE Committee on Environmental Policy adopted the revised mandate and terms of reference of the Working Group on Environmental Monitoring and Assessment for the period 2017–2021 (ECE/CEP/2017/2, para. 32 and annex II). The Working Group was tasked by the Committee with leading a process of consultation on the regular pan-European environmental assessment (ECE/CEP/2017/2, annex II, para. 2 (b)) for consideration by the Committee and leading up to the next Environment for Europe Ministerial Conference.
5. At its twenty-fifth session (Geneva, 13–15 November 2019), the Committee on Environmental Policy: welcomed the information provided by the secretariat and UNEP on the next pan-European environmental assessment; selected option 3 from among the options for the next pan-European environmental assessment set out in document ECE/CEP/AC.10/2019/6, subject to availability of resources; requested the secretariat and UNEP, working in close cooperation with the European Environment Agency, to prepare a limited indicator-based and thematic assessment and to regularly inform the Bureau of progress made; and encouraged all member States to provide the necessary funding to enable the preparation of the assessment (ECE/CEP/2019/15, para. 37 (k)).
6. The Committee selected the two following specific themes for the ministerial conference and, consequently, the assessment: (a) greening the economy in the pan-European region: working towards sustainable infrastructure; and (b) applying principles of circular economy to sustainable tourism (ECE/CEP/2019/15, para. 21 (b)). At its twenty-sixth session (Geneva and online, 9 and 10 November 2020), the Committee rescheduled the next Ministerial Conference, to be held in Nicosia, for 5–7 October 2022.

B. Process and progress

7. Austria, Germany, the Netherlands, Norway, Serbia and Switzerland contributed financially to supporting preparation of the next pan-European environmental assessment. With these resources, consultants and institutions have been contracted to prepare thematic sections of the assessment. A critical step in each section's development is selection of suitable indicators on which to base the assessment.
8. The secretariat has provided indicator selections and other draft elements to the Working Group and other experts to seek their views. Initial elements were presented to the Working Group at its twenty-second session (Geneva and online, 27 October 2020). Later,

further elements were posted on the ECE Statistical Division wiki website¹ to allow for their review.

9. Some data series used in the assessment will be revised as data for 2020 become available. Such revision should also provide additional insights into the effects of the coronavirus disease (COVID-19) pandemic situation.

10. The table below illustrates progress made in developing the thematic sections.

Progress in developing thematic sections

<i>Chapter and theme</i>	<i>Consultant identified^a</i>	<i>Consultant contracted</i>	<i>Indicators</i>	<i>Draft section</i>	<i>Contract completed</i>
Chapter III – Environmental state and trends					
A. Air pollution and ozone depletion	Yes	Yes	Agreed	See annex	–
B. Climate change	Yes	Yes	Proposed	–	–
C. Fresh water	–	–	–	–	–
D. Coastal waters, marine ecosystems and oceans	Yes	Being processed	–	–	–
E. Biodiversity and ecosystems	Yes	Yes	Agreed	See annex	–
F. Land and soil	Yes	Yes	–	–	–
G. Chemicals and waste	Yes	Being processed	–	–	–
H. Environmental financing	–	–	–	–	–
Chapter IV – Themes for the Ninth Environment for Europe Ministerial Conference					
A. Greening the economy in the pan-European region: working towards sustainable infrastructure	–	–	–	–	–
B. Applying principles of circular economy to sustainable tourism	Yes	Being processed	–	–	–

^a Consultant or institution.

11. The structure of the assessment is as set out in the Updated draft outline of the next pan-European assessment (ECE/CEP/AC.10/2020/6/Rev.1). The annex to the present document presents the draft assessment as developed so far, primarily sections on biodiversity and ecosystems and on air pollution and ozone depletion (temporarily, sections A and B, respectively, of chap. III). The structure of the annex largely corresponds to that of the final assessment report.

¹ Available at <https://statswiki.unece.org/>. Credentials to access the consultation page are available from the secretariat.

Annex

Draft assessment

Foreword, acknowledgements and key findings and policy messages

1. These sections will be developed later.

I. Setting the scene

A. Regular assessment of the state of the environment and environmental policies in the region

2. This section will begin by looking at the past Environment for Europe Ministerial Conferences and associated pan-European environmental assessments (see figure I below). It will then present the mandate for this assessment and its structure (see figure II below), explain the selection of the themes for the next Conference and describe the use of the Shared Environmental Information System as a basis for this assessment. Finally, it will include text that explores global, regional and subregional policy frameworks. The policies, but also their objectives, goals, targets and indicators, all play a role in driving action by countries.

Figure I
Timeline of state-of-the-environment assessments

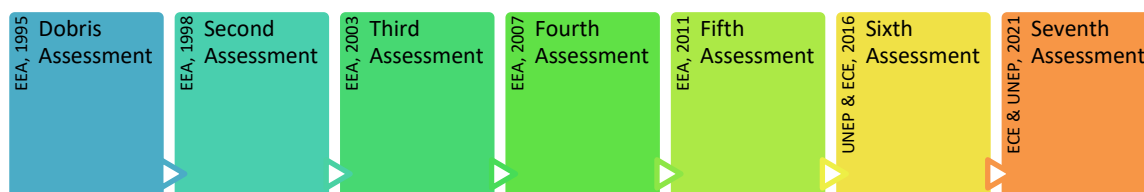
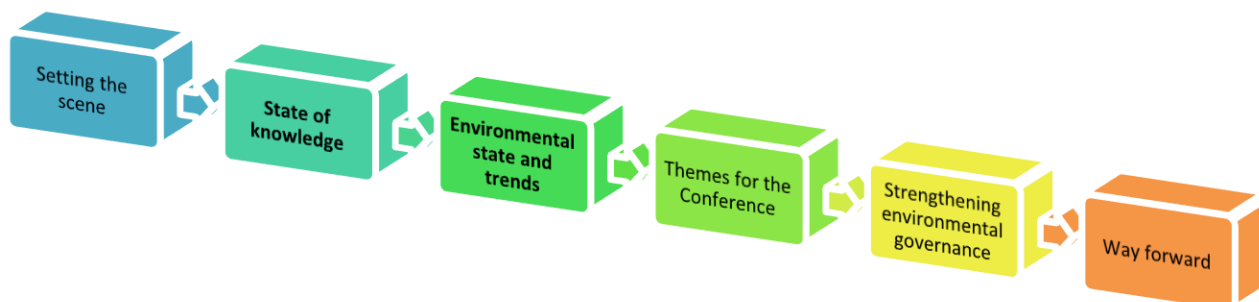


Figure II
Structure of the assessment



B. Regional context and developments as drivers of environmental change

3. The period since 1990 has seen dramatic socioeconomic and political changes in the pan-European region that have increased pressure on the natural environment and are driving environmental change. It is anticipated that this section will look at five clusters of drivers:²

- An urbanizing population
- A more prosperous society
- An increasingly mobile society
- Shifting energy production and use
- A continuing link between development and resource use

4. This section will be revised according to the drivers and pressures identified by the authors of the thematic sections of chapters III and IV. Drivers and pressures will be examined also through the lens of the two conference themes.

II. State of knowledge and the Shared Environmental Information System

5. This chapter will begin with a review of regular national reporting on the state of the environment. A table will provide an overview of whether national state-of-the-environment reports or indicator-based state-of-the-environment reports are produced on a regular basis. The chapter will also include a section providing an overview of progress achieved in establishing a Shared Environmental Information System in Europe and Central Asia, based upon the final review report (ECE/CEP/AC.10/2021/6). The chapter will conclude with a section elaborating on gaps regarding data availability and knowledge and will inform policy decisions. Additionally, it may recommend acceleration of digitalization in the environmental domain and provide a link with the United Nations Economic Commission for Europe publication *Measuring and monitoring progress towards the Sustainable Development Goals*.³

III. Environmental state and trends

Introduction

6. This chapter will discuss the environmental state, trends and policy responses, using the ECE set of environmental indicators,⁴ Sustainable Development Goal indicators and other indicator frameworks as appropriate. The indicators used have been selected based on the following criteria: policy relevance; soundness of the methodology, preferably based on national sources; data availability; and coverage of pressures, state and impacts. The chapter will address eight environmental themes:

- Air pollution and ozone depletion
- Climate change
- Fresh water

² Other clusters of drivers are presented in the European Environment Agency (EEA) publication *Drivers of change of relevance for Europe's environment and sustainability*, Report No. 25/2019 (Luxembourg, Publications Office of the European Union, 2020); and Paul Ekins, Joyeeta Gupta and Pierre Boileau, eds., *Global Environment Outlook: Geo-6 – healthy planet, healthy people* (Cambridge, Cambridge University Press, 2019), chap. 2.

³ United Nations publication (Sales No. 20.II.E.36).

⁴ For a list and guidance on application of United Nations Economic Commission for Europe (ECE) environmental indicators, see <https://unece.org/guidelines-application-environmental-indicators>.

- Coastal waters, marine ecosystems and oceans
- Biodiversity and ecosystems
- Land and soil
- Chemicals and waste
- Environmental financing

7. For each theme, key messages and policy recommendations are presented based on an assessment of the state, trends and outlook towards meeting policy objectives. Links are provided to circular and green economy, sustainable development and the two conference themes.

8. To date, only sections A, on biodiversity and ecosystems, and B, on air pollution and ozone depletion, have been drafted.

A. Biodiversity and ecosystems

1. Key messages and recommendations

9. The key messages on biodiversity and ecosystems are:

(a) Overall forest area in the ECE region has slightly increased over the past 30 years. The relative share of the particularly biodiversity-rich primary forests has declined significantly over the same period. Forest fragmentation remains an important pressure;

(b) Beyond forests, the status of ecosystems remains a cause for concern, with no evidence of a clear positive trend. Only a minority of the habitats assessed at the European Union level have a good conservation status, and the overall picture is likely to be similar beyond the European Union;

(c) The protected area (PA) estate in the pan-European region has almost tripled over the past 30 years, and key policy targets related to PAs have been met in the region;

(d) Land continues to be taken for infrastructure development in the pan-European region, but land take has decreased in most European Environment Agency member countries.

10. The recommendations on biodiversity and ecosystems are that:

(a) ECE member States should ensure that trends in forest area remain positive. They should take additional measures to safeguard the remaining primary forests and their ecological functionality, for example, by promoting management standards aimed at preserving high-conservation value forest and by enhancing forest connectivity;

(b) The extended PA network within the ECE region should be consolidated and improved through investment in management effectiveness, ecological representativeness and connectivity. The whole range of governance types should be used, and other effective area-based conservation measures should be integrated;

(c) Land take should be reduced further and consistently across all ECE countries. The conversion of natural to agricultural ecosystems and the degradation of habitat quality due to biodiversity-unfriendly agricultural practices should also be addressed, for example, through more targeted use of subsidies and other incentives;

(d) There remains a need to mainstream biodiversity conservation across sectors and policies, to eliminate or reform harmful subsidies and incentives, and to develop effective positive incentives for biodiversity conservation and sustainable use.

2. Context

Issues at stake

11. Biodiversity, which encompasses diversity within species, between species and of ecosystems, plays an essential role in maintaining Earth's life-support systems, enabling

nature-based solutions to societal challenges and maintaining quality of life. Ecosystem services are recognized as a basis for sustainable socioeconomic development.

12. The accelerating anthropogenic loss of biodiversity is an increasing concern globally, including in the pan-European region. It reduces ecosystem resilience, including to climate change, undermines provision of ecosystem services, and compromises human well-being and, increasingly, physical health.

13. The pan-European region is characterized by its strong overlap with the Palearctic region and its extensive biomes of boreal coniferous and temperate deciduous forests, temperate grasslands and deserts, Mediterranean forest and Arctic tundra, as well as important marine ecosystems. It comprises the largest continuous forest, grassland and peatland ecosystems globally. These act as critical carbon sinks, provide ecosystem services and underpin the region's economies.

Policy objectives and challenges

14. The global policy framework for biodiversity in a broad sustainable development context is defined by the relevant Sustainable Development Goals, particularly Goals 15 and 14.

15. The countries of the pan-European region cooperate under various multilateral environmental agreements (MEAs). The main MEA on biodiversity is the 1992 Convention on Biological Diversity. Its last Strategic Plan for Biodiversity ran from 2011 to 2020 and was built around the Aichi Biodiversity Targets. Other relevant MEAs are the 1979 Convention on the Conservation of Migratory Species of Wild Animals, the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora, the 1971 Convention on Wetlands of International Importance especially as Waterfowl Habitat and the 1979 Convention on the Conservation of European Wildlife and Natural Habitats.

16. The main policy challenge related to biodiversity is to ensure its effective conservation and sustainable use. This implies addressing the drivers and root causes of pressures on species and terrestrial, marine and other aquatic ecosystems, including oceans, and increasingly requires restoration. Strategies include putting in place ambitious policy mixes (regulatory approaches, economic instruments and voluntary approaches), mainstreaming biodiversity across economic and sectoral policies, eliminating illegal exploitation and trade of biodiversity and eliminating illegal, unreported and unregulated fishing. Enforcement of existing legislation and regulation to end illegal activities is critical in this regard. Biodiversity conservation and restoration also requires reforming and removing environmentally harmful subsidies and strengthening the role of biodiversity-relevant taxes, fees and charges.

3. State, main trends and recent developments

Strategic Plan of the Convention on Biological Diversity has only been partly fulfilled and biodiversity loss continues

17. At the global level, only 6 of the 20 Aichi Biodiversity Targets – as the main concretization of Sustainable Development Goals 14 and 15 – have been partly achieved, and none has been fully achieved, according to *Global Biodiversity Outlook 5*.⁵

18. Global deforestation rates declined between 2010 and 2020, but not sufficiently to halt global forest loss and ensure the remaining forests' ecological integrity. Forest degradation and fragmentation also remain a significant stress. This also contributes to continuing loss of carbon stocks to the atmosphere. For the pan-European region, ECE environmental indicator D-3 on forests and other wooded land shows that efforts to curb deforestation and forest degradation have met with success. This has been accompanied by a relative reduction in primary forest and a relative increase in planted forest.

⁵ Convention on Biological Diversity secretariat (Montreal, 2020).

19. Large, undisturbed ecosystems – both forest and other types, including wetlands – continue to decline globally. Trends in ecosystems and habitats within the pan-European region may be similar: within the European Union, only 15 per cent of habitat assessments have a good conservation status, with 81 per cent having poor or bad conservation status.

20. The conversion of land from natural to non-natural land cover types is one of the pressures contributing to ecosystem loss and degradation. The intensity of this land take has declined in most but not all countries of the pan-European region over the past 20 years, as is also shown by ECE indicator E-1 on land uptake.

21. Species extinction risk is still increasing, although conservation efforts likely prevented an even steeper increase. Twenty-four per cent of species in well-understood taxonomic groups will continue to edge towards extinction unless the drivers of their decline are dramatically reduced. Climate change is emerging as an additional pressure on biodiversity, interacting with pre-existing pressures. Species richness continues to decline in agricultural landscapes and production forests; agricultural practices are among the main drivers of biodiversity loss at the global and pan-European levels. The same trends may be true for the pan-European region; the report *State of nature in the EU: Results from reporting under the nature directives 2013–2018*⁶ noted a deterioration of the average conservation status of bird populations. Species associated with agricultural areas display a particularly negative trend.

Area coverage of protected areas has increased, but their effectiveness in contributing to conservation goals needs to be further enhanced

22. Protected areas remain a key instrument for reducing biodiversity loss. The area of terrestrial and marine PAs has grown significantly in recent years, including in the pan-European region. The latter is also supported by ECE indicator D-1 on terrestrial PAs. Meanwhile, there remains considerable room for improvement of the representativeness, connectivity and management effectiveness of PAs, and for enhanced enforcement of existing PA legislation.

There is a need for a broader policy response to biodiversity loss, reflecting its repercussions for human well-being and sustainable development

23. Biodiversity mainstreaming into policies, poverty reduction and development planning has largely been an insular rather than a systematic effort in most countries over the past 10 years. One positive example has been the rise of environmental-economic accounting in some countries. Overall, little progress has been made over the past decade in eliminating, phasing out or reforming subsidies and other incentives potentially harmful to biodiversity, and in developing positive incentives for biodiversity conservation and sustainable use. This also broadly applies to the pan-European region.

24. Resource mobilization for biodiversity improved in some but, by far, not in all countries between 2010 and 2020. The mobilized resources are still not sufficient to meet financial needs and are still outweighed by financial support for activities harmful to biodiversity. This is also true in the forestry context, including regarding reforestation. In contrast, understanding of funding needs and gaps has improved, at least in some countries.

25. The status and trends of biodiversity and ecosystem services are of fundamental importance for human well-being and sustainable development. Encroachment of human settlements onto natural systems and wildlife trafficking disrupt the self-regulatory capacity of these ecosystems, increase the frequency of human-wildlife contacts and can lead to the spread of infectious diseases. For instance, it is possible that illegal exploitation of pangolins led to the transmission of coronavirus disease (COVID-19) to humans.

Links to conference themes

26. The conference theme “Greening the economy in the pan-European region: working towards sustainable infrastructure” responds to the need to mainstream the environment

⁶ EEA, Report No. 10/2020 (Luxembourg, Publications Office of the European Union, 2020).

including biodiversity and ecosystems across sectors. This conference theme is directly related to indicator E-1 (land take) as increasing the environmental sustainability of infrastructure development relies partly on reducing its spatial footprint.

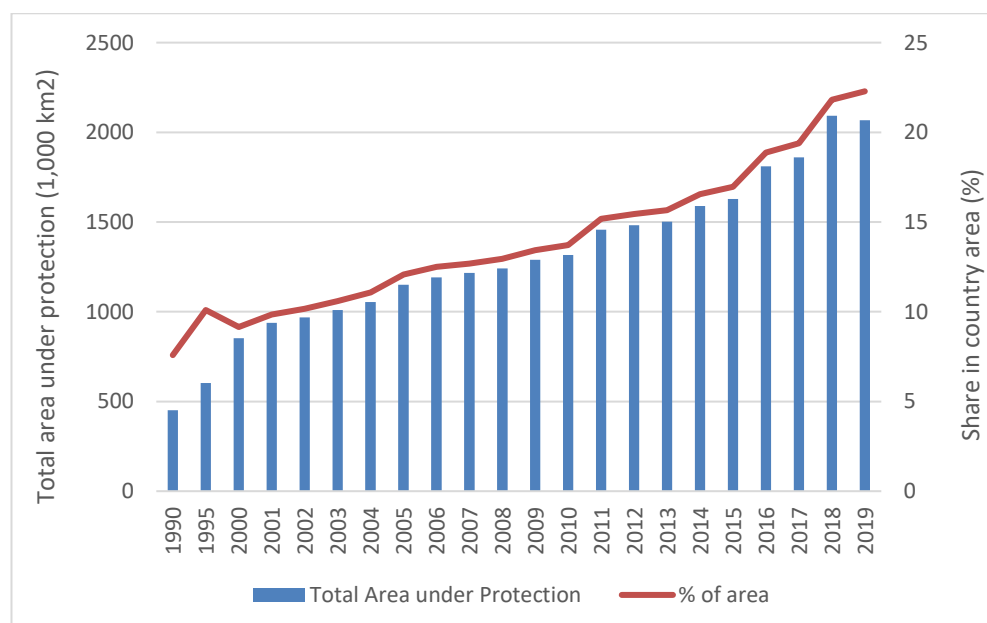
27. Tourism is both dependent on and affects the state of biodiversity in the areas where it occurs. By “Applying principles of circular economy to sustainable tourism”, the ecological footprint of touristic activities in biodiversity-rich touristic areas – including pressures related to waste production, eutrophication and resource overexploitation – is reduced. In turn, this enables the provision of cultural ecosystem services and thereby enhances the human well-being benefits and broader development opportunities of these areas.

4. Indicators

Terrestrial protected areas (United Nations Economic Commission for Europe indicator D-1): overall moderate-to-good status

28. This indicator shows the overall area of nationally designated terrestrial PAs in absolute terms and as a share of the countries’ total areas.⁷ Figure III below gives this information for all ECE countries combined, for the period 1990–2019.

Figure III
Protected areas (1990–2019)



29. The area extent of PAs in the pan-European region has risen strongly over the past 30 years and increased by 60 per cent over the past 10 years. The share of their combined area in relation to the overall area for which data are available stood at over 22 per cent in 2019. This is significantly above the 17 per cent threshold formulated as Aichi Target 11 in the Strategic Plan for Biodiversity under the Convention on Biological Diversity.

30. The indicator measures overall PA area and does not provide information about the degree or effectiveness of protection of biodiversity within the areas in question, or about their overall contribution to reducing global biodiversity loss. To realize the full potential of their now enlarged PA network, ECE member States will have to invest further in: increasing critical habitats’ representation within PAs; linking up individual PAs to form effective and resilient PA networks; and increasing existing PAs’ management effectiveness and equitability. There is further room for improvement by using the full range of PA governance

⁷ The indicator could be calculated for marine protected areas (PAs). However, this would compromise comparability of data from across the ECE region in the case of this assessment.

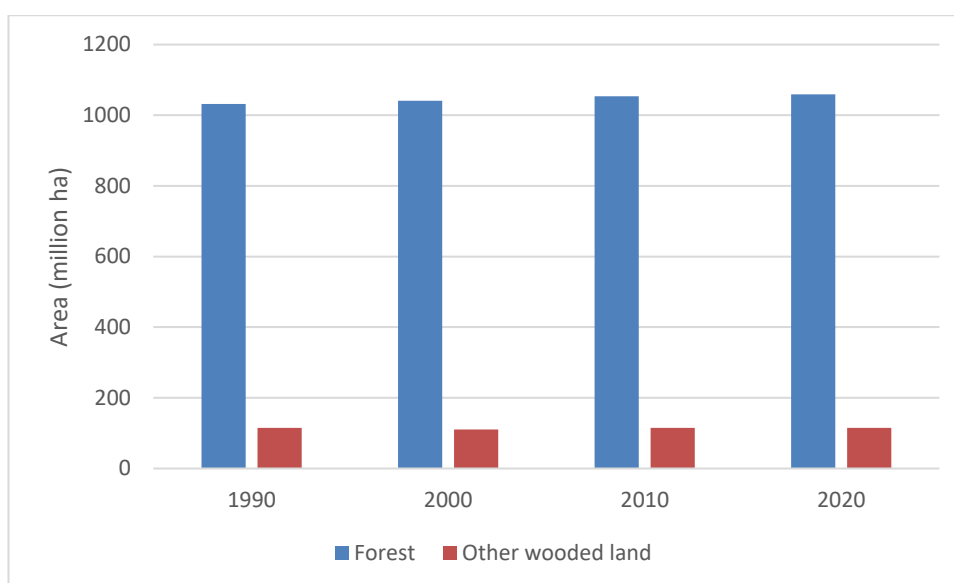
types in the pan-European region, and by recognizing and integrating other effective means of area-based conservation.

31. Data availability for this indicator is very good for European Environment Agency member countries and cooperating countries, and fair-to-good for most other countries.

Forests and other wooded land (United Nations Economic Commission for Europe indicator D-3): overall moderate-to-good status

32. This indicator shows the total area of forests and other wooded land, its ratio to the overall area of the countries, the share of forest areas that are natural and planted, and the contribution of forests designated for production, soil or water protection and the protection of ecosystem services and biodiversity. Figures IV and V below show these statistics for all pan-European countries combined,⁸ for 10-year intervals over the period 1990–2020.

Figure IV
Total area of forest and other wooded land (1990–2020)



33. Looking at the entire pan-European region, the total area of forest has increased slightly (by 2.6 per cent) since 1990, and by 0.5 per cent since 2010. The share of forest area in the combined overall country area has increased by 1 per cent to 39.2 per cent over the past 30 years. Other wooded land has changed little and contributes another 4.3 per cent of total combined country area, as of 2020. This means that, in terms of overall area, the pan-European region has met target 15.1 of the Sustainable Development Goals and Aichi Target 5 in quantitative terms.

34. The picture is less clear for forest quality: the share of primary forests, which tend to be particularly biodiversity-rich, decreased from roughly a third to roughly a quarter over the same period, with a slight flattening of the curve during the 2010–2020 interval. At the same time, planted forests became absolutely and relatively more important, increasing their relative share from 5.7 per cent in 1990 to 7.6 per cent in 2020. ECE member States should continue their efforts to limit the decline and protect the quality of their primary forests.

35. Forest designation has seen a diversification from a narrow focus on production in 1990 to a broader spectrum of designations – including protection of soil, water and biodiversity – over the past 30 years. Forest areas designated to water and soil protection, on the one hand, and biodiversity conservation, on the other hand, more than doubled, from 9.3 to 18.8 per cent and from 1.9 to 4.1 per cent, respectively. This diversification of forest designations can be interpreted as a management response aimed at improving the quality of

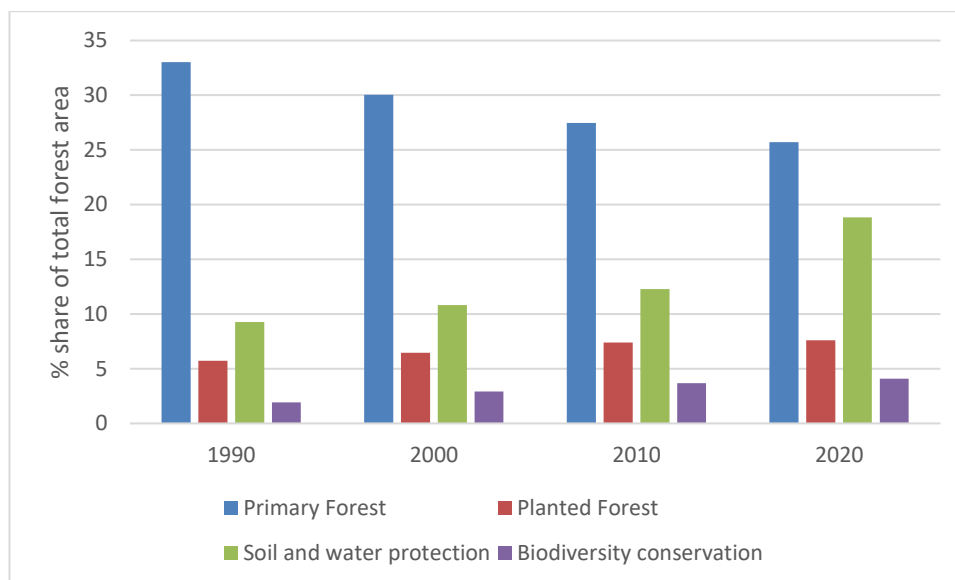
⁸ The Russian Federation alone accounts for 77 per cent of the ECE region's forest area.

existing forests, including from a biodiversity conservation perspective. This trend towards sustainable forest management should continue.

36. The data for this indicator were sourced from Global Forest Resources Assessments of the Food and Agriculture Organization of the United Nations. Data availability for ECE countries from this source is good-to-very-good.

Figure V

Share of primary and planted forest and share of forest area designated for soil and water protection or biodiversity conservation (1990–2020)



Land uptake (United Nations Economic Commission for Europe indicator E-1): overall moderate-to-poor status

37. A modified version of ECE indicator E-1 has been used in this assessment. This version is based on European Environment Agency indicator “Land take in Europe”.

38. Net land take (i.e. net conversion of land from non-artificial to artificial land-use categories) is shown in figure VI below for three six-year intervals (2000–2006, 2006–2012 and 2012–2018). Figure VI also summarizes net land take figures for various subsets of the ECE region.

39. The indicator results are most conclusive for European Environment Agency member countries and cooperating countries, while there are some gaps regarding data completeness and consistency of land take data from other ECE countries (see below).

40. Net land take continues in all subsets of ECE countries. For all European Environment Agency countries combined, about 0.28 per cent of country area was taken up by infrastructure and development between 2000 and 2018. However, the rate of land take has been decreasing: Within the countries member States of the European Union prior to 2004 (European Union-14 + United Kingdom of Great Britain and Northern Ireland), 0.15 per cent of land was taken between 2000 and 2006, but only 0.11 and 0.06 per cent in the two subsequent intervals, respectively. Land take figures for the countries that joined the European Union since 2004 peaked in the 2006–2012 interval (0.11 per cent) and declined thereafter (0.09 per cent for the 2012–2018 interval), possibly reflecting the adoption of European Union policies and standards. However, this trend shows considerable variability across European Environment Agency countries and there were also countries where land take rates continued to increase over the entire 2000–2018 period.

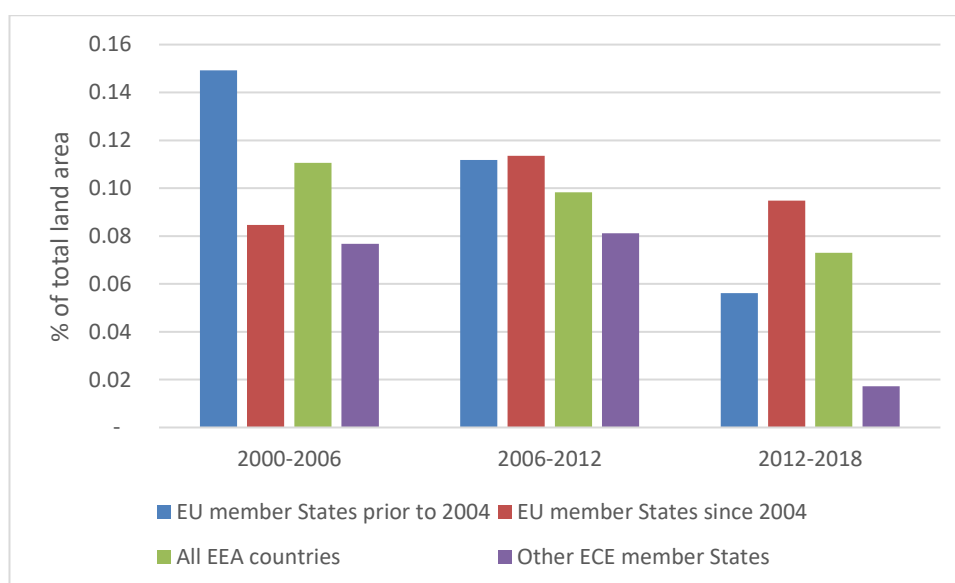
41. Agricultural land is considered a non-artificial land use category for the purpose of this indicator. At the same time, pressures to biodiversity from land-use changes and associated habitat loss or degradation are often associated with conversion to agricultural land or change of agricultural practices, rather than just from agriculture to infrastructure development. This means that indicator E-1 shows only part of the overall relationship

between land-use changes and biodiversity. Efforts to curb land take from agricultural land need to be accompanied by a shift to more sustainable agricultural practices, and agricultural practices that contribute to improving biodiversity need to be identified, acknowledged and rewarded.

42. Land uptake and land take data from non-European Environment Agency countries are difficult to compare to those from European Environment Agency member countries and cooperating countries. This reflects differences in methodology, including the availability of reliable remote-sensing data and consistent criteria to analyse them, the continuity of national monitoring efforts, and apparently also shifts in land classification in the early 2000s. This highlights the need to continue investing in consistent land-cover classifications and monitoring capacity, agree on consistent national information to be fed into the Shared Environmental Information System, and carefully retrofit actual land-cover categories to past data, in order to obtain reliable trend information.

Figure VI

Land take in different subregions across three 6-year time periods (2000–2018)



Abbreviations: EEA, European Environment Agency; EU, European Union.

5. Case studies

Enhancing area-based biodiversity conservation by recognizing other effective area-based conservation measures

43. Other effective area-based conservation measures (OECMs) are areas under management not primarily dedicated to biodiversity conservation, but where management nevertheless contributes to improved biodiversity status. Examples include cultural heritage areas, military training areas and sustainably managed production forests that generate biodiversity benefits. These sites, which occupy a significant share of the area in many countries, went largely unrecognized and attracted only limited resources and efforts to enhance their biodiversity benefits in the past. This started to change with the 2010–2020 Strategic Plan for Biodiversity under the Convention on Biological Diversity and the inclusion of OECMs in Aichi Target 11, but is likely to be further enhanced in the post-2020 global biodiversity framework.

44. OECMs represent a significant but largely untapped opportunity to extend and consolidate area-based conservation networks in the pan-European region. They could contribute greatly to extending overall ecological representation, linking up existing PAs and engaging additional actors to contribute to better biodiversity status.

45. For the European Union and countries with European Union association agreements transposing European Union water legislation into national legislation, the Water Framework

Directive and Floods Directive⁹ – while not primarily aimed at biodiversity conservation – have the potential to result in land and water management that would be in line with OECM criteria. Beyond the European Union, national forest categories of many States of Northern Eurasia, the Caucasus and Central Asia, such as “protective forest” (i.e., forest with the purpose of protecting groundwater reserves or protecting against landslides on slopes), also generate substantial biodiversity benefits and might be recognized as OECMs.

46. ECE member States should systematically explore and use the emerging designation of OECMs to further consolidate their area-based conservation networks.

International cooperation to control pressures from linear infrastructure to migratory mammals in Central Asia

47. Many of the iconic migratory mammals of the Central Asian steppes, such as the Saiga antelope, the Goitered gazelle and the Khulan, are globally threatened, partly owing to significant pressure from habitat fragmentation and degradation along linear infrastructure, for instance roads and railways, pipelines and fences. This is directly relevant to the first conference theme “Greening the economy in the pan-European region: working towards sustainable infrastructure”.

48. To reduce and mitigate these pressures, ECE member States from Central Asia are cooperating on various initiatives under the Convention on the Conservation of Migratory Species of Wild Animals, including the Memorandum of Understanding concerning Conservation, Restoration and Sustainable Use of the Saiga Antelope and the Central Asian Mammals Initiative. These are aimed at removing barriers to migration, developing and supporting regional ecological networks and, ultimately, preserving animal migrations in the Central Asian region as one of the last global “migration hotspots”.

49. The ECE member States in the Central Asian region should continue their cooperation to manage linear infrastructure in such a way that impacts on migratory mammals are minimized.

B. Air pollution and ozone depletion

1. Key messages and recommendations

Key messages

50. Countries in the region are expanding policies to tackle air pollution. The European Commission intends to adopt an action plan “Towards a zero-pollution ambition for air, water and soil – building a healthier planet for healthier people” in 2021.¹⁰ The evaluation and fitness check of existing European Union air quality legislation in 2019¹¹ led to proposals to strengthen provisions on monitoring, modelling and air quality plans to achieve cleaner air. The European Union air quality standards will be revised to align them more closely with the World Health Organization (WHO) Air Quality Guidelines, which are to be updated in 2021. The action plan should generate incentives for air pollution abatement and the improvement of air quality in the European Union and beyond. Within the framework of the national “Ecology” project, the Russian Federation is implementing the “Clean Air” project,¹² which provides for significant reduction of pollutants in 12 large industrial centres by 2024, as well as a radical modernization of the State system for monitoring air pollution in these cities.

51. The health impact of long-time exposure to fine particulate matter with a diameter less than 2.5 µm (PM_{2.5}) in 41 European countries was reduced by 13 per cent in the period 2009–

⁹ Available at, respectively, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060> and <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32007L0060>.

¹⁰ Available at <https://ec.europa.eu/environment/system/files/2020-10/zero-pollution-action-plan-roadmap.pdf>.

¹¹ See https://ec.europa.eu/info/publications/fitness-check-eu-ambient-air-quality-directives_en

¹² Roscongress Foundation project, dated 13 February 2019. Further details will be provided.

2018 and that of nitrogen oxides (NO_x) by 54 per cent. However, the number of premature deaths due to ground-level ozone exposure increased in that period by an estimated 24 per cent, possibly caused by higher mean temperatures.¹³

52. The Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol) has had positive effects on human health, climate change and protection of the food chain by preventing the collapse of the stratospheric ozone layer. The phasing out of hydrochlorofluorocarbons present as coolant in refrigerators and air conditioning systems remains incomplete, especially in countries with economies in transition.

53. Air pollution monitoring has improved in the past decade with better equipment, advanced portable sensors and network strategies leading to greater efficiency and lower costs of ground-level monitoring stations. In the pan-European region, there are still monitoring gaps, especially in the measurement and analysis of fine particulate matter (PM). Real-time air polluting concentrations and air pollution indices are available and are published on maps by different providers. Since 2015, the European Copernicus Atmosphere Monitoring Service has provided continuous satellite data and information on atmospheric composition. The Service tracks air pollution, solar energy, greenhouse gases and climate forcing globally.¹⁴ Public availability of monitoring data has rapidly developed in recent years.¹⁵

Recommendations

54. The strategies and measures to achieve the air quality targets of the European Union zero-pollution action plan must be shared with the non-European Union countries in the region.

55. To achieve target 3.9 of the Sustainable Development Goals, especially for fine particulate matter and ground-level ozone, additional technical and organizational measures must be developed and applied. Key responses are the sharpening and application of best available techniques to prevent emissions of particulate matter, NO_x and hydrocarbons by industry and emission reduction from traffic (by implementing Euro-6 and 7 measures).

56. To accelerate the phasing out of hydrochlorofluorocarbons and to prevent their replacement by hydrofluorocarbons (HFCs) in developing countries, adequate replenishment of the Multilateral Fund for the implementation of the Montreal Protocol is of great importance.

57. The public availability of monitoring data should be further developed in the pan-European region, while investment is needed to fill monitoring gaps in countries with economies in transition.

2. Context

58. Air pollution by human activities is an important cause of illness, premature mortality and environmental damage by its impact on human health and ecosystems.

59. The health impact of long-time exposure to PM_{2.5} in 41 European countries was reduced by 13 per cent in the period 2009–2018 to 417,000 premature deaths (4.8 million years of life lost). For NO_x, the health impact was reduced by 54 per cent to 55,000 premature deaths (624,000 years of life lost) in the same period. However, the number of premature deaths due to ground-level ozone exposure increased in this period by an estimated 24 per cent to 20,600 (247,000 years of life lost), possibly caused by higher mean temperatures.¹⁶

60. Environmental damage caused by air pollution expresses itself particularly in the disturbance of natural ecosystems and the degradation of biodiversity. Excessive deposition

¹³ EEA, *Air Quality in Europe – 2020 report*, Report No. 9/2020 (Luxembourg, Publications Office of the European Union, 2020).

¹⁴ See <http://atmosphere.copernicus.eu>.

¹⁵ For example, Swiss online platform IQ-Air, available at <http://iqair.com>.

¹⁶ EEA, *Air Quality in Europe*.

of reactive nitrogen (NO, NO₂ and ammonia (NH₃)) leads to eutrophication and acidification of soils and water systems, which benefits the growth of nitrogen-loving species and threatens the existence of species that grow in nutrient-poor areas such as moors. The growth of forests and crops is reduced by higher concentrations of ground-level ozone that also influences biodiversity and, together with black carbon (BC), contributes to global warming. PM components like organic carbon, ammonium sulphate and nitrate, meanwhile, have a cooling effect on the atmosphere. Combustion emissions of greenhouse gases, sulfur dioxide (SO₂), NO_x, hydrocarbons and PM often come from the same (powerplant) sources, which makes reduction of combustion emissions and energy saving beneficial for both climate change and air pollution abatement.¹⁷

61. Acidifying and PM components of air pollution damage buildings and cultural heritage through corrosion, etching and blackening of vulnerable materials such as sandstone. A recent Organization for Economic Cooperation and Development study¹⁸ shows that the economic cost of air pollution justifies expensive emission reduction measures in terms of economic dividends, besides the health benefits. The study suggests that much stronger air quality regulations could be warranted as air pollution control policies can significantly contribute to economic growth.

62. Since the rapid growth of industry, energy use, traffic, agriculture and human consumption after the Second World War, specific and large-scale techniques to mitigate corresponding emissions to air have been designed, implemented and improved. Growing awareness of the serious consequences of air pollution has led to comprehensive policy developments at the national and international levels in the past 40–50 years. Policy measures to reduce air pollution have been developed through successful international cooperation, such as European Union directives and guidelines, the ECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters and its Protocol on Pollutant Release and Transfer Registers, the Stockholm Convention on Persistent Organic Pollutants, the ECE Convention on Long-range Transboundary Air Pollution (Air Convention) and its protocols and the Montreal Protocol. At the Eighth Environment for Europe Ministerial Conference (Batumi, Georgia, 8–10 June 2016), the Batumi Action for Cleaner Air was launched under the Air Convention Bureau's leadership, aimed at improving air quality and protecting public health and ecosystems. Twenty-seven countries and various organizations have submitted commitments using a template for harmonization.¹⁹

63. For the pan-European region, the Air Convention, with its 51 Parties, has been an impressive forum, founded on scientific arguments, for actions to deal with the long-term challenges of air pollution. The Convention has produced various protocols that have come into force. The 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone, as amended in 2012, is the leading instrument for the abatement of acidification, eutrophication and ground-level ozone, setting national emission ceilings for SO₂, NO_x, NH₃, volatile organic compounds (VOCs) and PM_{2.5} to be achieved by 2020 and beyond. As BC (soot, a short-lived climate pollutant) is included in the PM fraction, climate co-benefits are also achieved. Other key protocols of the Convention are the Protocol on Heavy Metals and the Protocol on Persistent Organic Pollutants.

64. Emissions of substances such as SO₂, carbon monoxide (CO) and lead (Pb), which were problematic in the second half of the twentieth century, have been reduced worldwide. Others, such as PM, NO_x and NH₃, have increased in many areas. Air quality in the pan-European region remains moderate and unhealthy for sensitive groups in many regions, particularly in urban and industrial areas, despite some sizable reductions in ambient concentrations, and air pollution is still considered as the most important environmental risk to human health. Ambient air concentrations of SO₂, CO and Pb are now generally well below

¹⁷ Ibid.

¹⁸ Antoine Dechezleprêtre, Nicholas Rivers and Balazs Stadler, "The economic cost of air pollution: Evidence from Europe", Organization for Economic Cooperation and Development (OECD) Economics Department Working Papers, No. 1584 (Paris, OECD Publishing, 2019).

¹⁹ See <https://unece.org/baca>.

the limit values for the protection of human health due to the application of stringent emission reduction measures in recent decades. At present, PM, nitrogen dioxide (NO₂) and ground-level ozone (O₃) are the substances that most seriously influence human health, even when concentrations do not exceed current established limit values.

65. The global BreatheLife campaign,²⁰ led by WHO, the United Nations Environment Programme (UNEP) and the Climate and Clean Air Coalition, calls on Governments to commit to achieving the WHO Air Quality Guidelines targets in 2030. The aim is to halve the number of air pollution-related deaths by 2030, while helping to slow the pace of climate change. Within the Coalition, over 70 States have founded a voluntary partnership together with intergovernmental organizations, non-governmental organizations, cities and financial and business institutions, aimed at reducing emissions of short-lived climate pollutants (BC, methane, HFCs and tropospheric ozone).

66. Air pollution in Europe has in general decreased in European Union and European Free Trade Association countries in recent decades and, mainly through economic growth, increased in the countries of the Caucasus, Central Asia and Eastern Europe. Joint efforts of national and regional authorities have not yet led to all desired results as some air quality standards are still exceeded, especially in urban areas. In the Russian Federation, the number of cities with high and very high air pollution decreased by 70 per cent in the period 2010–2019 (based on air pollution indices). The Government of the Russian Federation has instructed the authorities in big cities like Moscow and St. Petersburg to develop a road map to set up restrictions for heavily polluting traffic (under Euro-3).²¹ In other countries of the Caucasus, Central Asia and Eastern Europe, there have been similar developments in the field of fuel quality. In Uzbekistan, over 50 per cent of private cars and trucks use cleaner natural gas as fuel.²²

67. The Second European Union Clean Air Forum (Bratislava, 28 and 29 November 2019) discussed existing difference between the European Union air quality guidelines and their mostly more stringent WHO equivalents and ways to close this gap. European Union legislation, through directives and ordinances, has therefore been established by the Council of the European Union and the European Parliament to achieve levels of air quality that do not give rise to risks for human health and environment. The European Union clean air policy framework to abate air pollution includes three pillars: air quality standards, national emission ceilings for key pollutants and emission limit values for key sources of pollution. The 2019 fitness check of the European Union Ambient Air Quality Directive²³ showed that not all the Directive's targets have been met and that the gap to achieve air quality standards is wide in some cases, thus requiring improvement of existing legislation. In specific cases, stricter emission ceilings in the National Emission Ceilings Directive²⁴ or more stringent emission limit values in the Industrial Emissions Directive²⁵ and for mobile sources could be necessary to meet the policy challenge to achieve all European Union air quality standards as a first step to achieving their WHO equivalents in 2030. The European Green Deal of the European Commission – published in 2019 – announced that, to protect its citizens and ecosystems, the European Union needs to move to a zero pollution ambition and better prevent pollution of air, water, soil and consumer products.²⁶ In 2021, the European Commission plans to adopt a Zero Pollution Action Plan that also supports the post-COVID-19 recovery by promoting a more sustainable relaunch of the economy of the European

²⁰ See <https://breathelife2030.org>.

²¹ Konstantin Fomin, "How Russian cities are cleaning up their air", Greenpeace, 30 April 2019.

²² *Environmental Performance Reviews: Uzbekistan – Third Review* (United Nations publication, Sales No. E.20.II.E.26).

²³ See <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32008L0050&qid=1430905405613>.

²⁴ See https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.344.01.0001.01.ENG&toc=OJ:L:2016:344:TOC.

²⁵ See <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32010L0075>.

²⁶ See <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1588580774040&uri=CELEX:52019DC0640>.

Union. This ambition is connected to other elements of the Green Deal, such as the increased European Union climate ambition for 2030 and 2050.

68. In January 2021, the Secretary-General expressed the need to reach net zero carbon emissions in 2050 and to provide adequate finance for adaptation measures for the impacts of climate change.²⁷ The 2021 United Nations report *Shaping our future together: Listening to people's priorities for the future and their ideas for action – concluding report of the UN75 Office*²⁸ states that environmental protection is top priority regarding human rights, followed by access to health care. The General Assembly adopted resolution 74/212 on the International Day of Clean Air for blue skies (first held on 7 September 2020).²⁹ UNEP, in collaboration with the Climate and Clean Air Coalition and WHO, coordinated activities for the International Day, to raise public awareness, demonstrate the connection with the Sustainable Development Goals and promote and facilitate solutions for air protection.

3. Indicators

69. Figures will be added to this section.

Emission of pollutants into the atmospheric air (United Nations Economic Commission for Europe indicator; pressure indicator)

70. The Centre on Emission Inventories and Projections of the European Monitoring and Evaluation Programme (EMEP) coordinates and evaluates, based on scientific information, the emission inventories of the Parties to the Air Convention. In 2020, 43 out of 51 Parties in the EMEP domain submitted their emission inventories to the Centre. Emissions of the main pollutants into the atmospheric air (SO₂, NO_x, NH₃, non-methane VOCs, PM₁₀, PM_{2.5}, PM_{coarse} and BC) have shown a major decoupling from economic growth and an absolute decrease in the western part of the region (EMEP-West, covering Western, Central and South-Eastern Europe) in the period 2000–2018. These emissions are mostly based on reported data. In the EMEP-East region (the countries of the Caucasus, Central Asia and Eastern Europe and Turkey), emissions have increased since 2000, but these emissions are often based on expert estimates extrapolated from gross domestic product growth trends, due to the lack of plausible reporting. The increase in emissions in this region is mainly determined by emission estimates made for the remaining Asian areas in the EMEP-East domain.

71. In most parts of the region, emissions of SO₂ and NO_x decreased in the period 2000–2018. Emissions of NH₃ also decreased but far less.³⁰

72. The quality of reported emissions differs between countries and the uncertainty of the data is relatively high. A recent development in the estimates and measurements of PM emissions is the treatment of condensable organic chemicals that are included in some inventories but not, or only partially, in others. Experts and modellers are working on a solution towards a harmonized emission methodology.

73. The largest decoupling between economic growth and production and air polluting emissions in recent decades has occurred in the energy-producing sector and manufacturing industry. Emissions from the road and non-road transport sector also decreased considerably by stringent emission standards set at the European Union level and, with some delay, also in the pan-European region, while the agriculture and waste sectors had significantly less reductions in emissions. The residential, commercial and institutional sector did not reduce its emissions very much except for SO₂ emissions.

²⁷ Secretary-General's remarks to Member States on Priorities for 2021, 28 January 2021, available at www.un.org/sg/en/content/sg/statement/2021-01-28/secretary-generals-remarks-member-states-priorities-for-2021-bilingual-delivered-scroll-down-for-all-english-version.

²⁸ (New York, United Nations, 2021).

²⁹ See A/RES/74/212.

³⁰ *Transboundary particulate matter, photo-oxidants, acidifying and eutrophying components: [European Monitoring and Evaluation Programme] Status Report 1/2020* (Norwegian Meteorological Institute, 2020)

Ambient air quality in urban areas (United Nations Economic Commission for Europe indicator; state indicator)

74. Improvements in air quality monitoring and reporting in the past 15–20 years make it possible to assess and report air quality trends in a qualitative, good statistical way. Long-term records of concentrations of the limited number of air polluting substances regulated in the European Union Ambient Air Quality Directive are available for European Union member States and Norway.³¹ Countries in the Caucasus, Central Asia and Eastern Europe perform reporting of air quality by a different method in the form of air pollution indices, in which three different indicators are used to assess air quality. These indicators make it possible to characterize both short-term air pollution and the chronic impact of air pollution on public health and the environment. The assessment of the air quality in the countries of the Caucasus, Central Asia and Eastern Europe also includes specific pollutants for which hygienic standards have been established (more than 700 substances, for 160 of which State regulation measures are applied). The air quality category established by a set of indicators considers the main pollutants for each city, as assessed relative to standards. Assessments for specific pollutants that make the greatest contribution to air pollution levels in cities are regularly published online.³²

75. SO₂ concentrations show the largest decrease of the main pollutants in the pan-European region over the past 20 years, with mean European Union values showing a 70 per cent reduction at traffic monitoring stations and 85 per cent at monitoring stations in urban background and industrial areas. In the past few years, the decrease of SO₂ concentrations has slowed. For ambient NO_x concentrations in Europe,³³ the mean reduction of 25–35 per cent over the past 20 years is similar for all station types, with rural stations having the largest decrease. The phasing out of combustion engines in automobiles is expected to accelerate the decrease of NO_x concentrations in urban and suburban stations in the next 10 years. Annual mean ground-level ozone trends in Europe over the past 20 years did not show significant trends or increased around 20 per cent for traffic stations, with 25 per cent of these sites showing increases of 40 per cent or more, while high ozone peaks have decreased by about 10 per cent except at traffic stations. The increase of mean ozone concentrations is coupled with the reduction of NO_x and VOC emissions. From 2000, annual mean PM₁₀ concentrations in Europe have decreased by 40–50 per cent for all stations, with the largest reduction at industrial monitoring stations, while the reduction of PM_{2.5} was around 30 per cent. Regional differences occur with seasonal peaks of PM concentrations in areas where mostly wood is used for domestic heating, such as South-Eastern Europe, Eastern Europe and Central Asia.

Consumption of ozone-depleting substances (United Nations Economic Commission for Europe indicator; response indicator)

76. Ozone-depleting substances are being phased out, although certain limited essential uses are still allowed, such as laboratory use and firefighting in special cases. Consumption of ozone-depleting substances in the 27 member States of the European Union (production, plus imports, minus exports and destruction) has been negative since 2012, falling from 343,000 ozone-depleting potential tons in 1986.³⁴ In the countries of the Caucasus, Central Asia and Eastern Europe, the consumption of ozone-depleting substances fell from 243 to 34 tons and in the Russian Federation from 684 to 287 tons in the period 2014–2019.³⁵ The replacements of chlorofluorocarbons and hydrochlorofluorocarbons by HFCs has led to the 2016 Kigali Amendment to the Montreal Protocol, describing measures and timetables for reducing HFCs because of the climate effect of these powerful greenhouse gases.

³¹ Augustin Colette and Laurence Rouil, *Air Quality Trends in Europe: 2000–2017: Assessment for surface SO₂, NO₂, Ozone, PM₁₀ and PM_{2.5}*, [European Environment Information and Observation Network] Report ETC/ATNI 2019/16 (Kjeller, Norway, European Topic Centre on Air pollution, transport, noise and industrial pollution, 2020)

³² Russian Federation, Sanitary Rules and Norms, State standards for air pollution.

³³ To be clarified.

³⁴ See https://ec.europa.eu/clima/sites/default/files/ozone/docs/swd_2019_406_en.pdf.

³⁵ See <http://ozone.unep.org>.

4. Case studies

77. Case studies will be added to this section.

IV. Themes for the Ninth Environment for Europe Ministerial Conference

78. This chapter will provide an assessment of the two themes of the Ninth Environment for Europe Ministerial Conference.

A. Greening the economy in region: working towards sustainable infrastructure

79. This section will be developed later.

B. Applying principles of circular economy to sustainable tourism

80. This section is currently being drafted.

V. Strengthening environmental governance

81. This chapter will be developed later to address the topic of environmental governance. It may include consideration of education for sustainable development, providing a link to the Third High-level Meeting of Education and Environment Ministries, to take place within the framework of the Ninth Environment for Europe Ministerial Conference.

VI. Way forward

82. This chapter will be developed later.
