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Item 4 of the provisional agenda

Selection of additional indicators from the Indicator

Guidelines for production and online sharing

Proposal for additional core indicators from the ECE Indicator

Guidelines for production and online sharing

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**Annex**

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I. Introduction

1. At its eighth Session (Geneva, May 2014), the ECE Joint Task Force on Environmental Indicators expressed the common ambition of the target countries\(^1\) to gradually produce and share all the environmental indicators from the Indicator Guidelines. In an analysis of the production and sharing of the current set of eight core indicators (ECE/CEP-CES/GE.1/2014/3), considerable achievements by the target countries were observed and it is expected that further progress on the eight selected indicators will be visible by the ninth Session. Consequently, the Joint Task Force decided that the focus in 2015 for production and online sharing should be expanded to incorporate additional indicators from the agreed Indicator Guidelines into the core set. To this end, the Joint Task Force invited the secretariat to prepare a proposal to suggest indicators which could supplement the current eight core indicators.

2. It is important to link this paper with the forthcoming Environment for Europe Ministerial Conference in 2016. Green economy and air quality have been proposed by the Bureau of the Committee on Environmental Policy (CEP) as the themes of the Conference. Therefore, two guiding criteria, in particular, are considered for the identification of areas for further work in this proposal: 1) the suitability of indicators to support analysis in the fields of air quality and green economy and 2) the availability of data in the target countries.

3. Concerning the first criterion, since the topic of air quality is already covered by a number of indicators in the current core set (see Annex), in this proposal the Secretariat aims to include several indicators that could support evaluating progress in the transition to a green economy. The United Nations Environment Programme (UNEP) defines a green economy as an economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities\(^2\). A current report on “Greening the economy in the pan-European region” by ECE and UNEP, proposes three overarching green economy objectives for the region, supported by specific goals (ECE/CEP/2014/5). The first objective concerns conservation and sustainable use of ecosystems, ecosystem services and the natural resource base; the second focuses on sustained and sustainable economic development and sustainable production and consumption patterns enabling an increased share of green GDP in the economy; and the third prioritizes human development and well-being. The indicators proposed in this paper are relevant to all three goals, and are therefore found to be suitable to contribute to the assessment of progress in greening the economy in the pan-European region.

4. The topic of green economy is particularly important also with regard to the decision of the European Neighbourhood and Partnership Instrument (ENPI) SEIS Steering Committee to make the production of Green Growth Indicators a future priority, making use of synergies with the Organisation for Economic Co-operation and Development.

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\(^1\) The target countries of the Joint Task Force on Environmental Indicators are the following: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Georgia, Kazakhstan, Kyrgyzstan, Montenegro, Republic of Moldova, Russian Federation, Serbia, Tajikistan, the former Yugoslav Republic of Macedonia, Turkmenistan, Ukraine and Uzbekistan.

(OECD)\(^3\). For each proposed indicator its relevance for the analysis of green economy and air quality is discussed in the section "Relevance of the indicator".

5. As a second criterion for the selection of suitable indicators, the present paper analyses whether data necessary for production of the indicators are already available for the majority of target countries. The level of availability of data is determined based on past reviews of the respective indicators, which were conducted as part of the Fifth, Sixth and Seventh Session of the Joint Task Force. These reviews were supported by national submissions which included time-series data. The national submissions as well as the papers summarizing the submissions are available online on the webpages of the respective meetings\(^4\).

6. Besides these reviews, sources of data, such as the UNSD Environmental Indicators, the IUCN Red List, the ECE statistics database and the IEA statistics, were taken into account for the assessment of data availability in the present paper. Links to the websites examined are provided as footnotes. By doing this it was ensured that the indicators proposed in this paper would make use of synergies with other reporting processes already in place to minimize the burden to target countries.

7. The proposed indicators are structured along the thematic fields of water, biodiversity, land and soil, agriculture, energy and transport. The expansion of indicator production and sharing should help the target countries to gradually develop and extend their national environmental information system in line with the Shared Environmental Information System (SEIS) principles. The 14 indicators discussed here largely correspond to the international priority data flows proposed by the ECE-Friends of SEIS for implementation in 2015 for use in a possible pan-European assessment cycle in 2016 (see ECE/CEP/2014/8).

8. The Joint Task Force is invited to discuss this proposal and consider agreeing upon additional indicators from the agreed Indicator Guidelines to be the focus of the review of production and sharing during 2015.

II. Proposed additional indicators for the core set

A. Water

1. C1: Renewable freshwater resources

(a) Proposed datasets for the core set

9. The indicator contains the following dataset, which is proposed to be included in the core set:

\(^3\) An overview on the commonalities between the indicators proposed in the present paper and the OECD Green Growth Indicators is provided in the Annex. The 2014 framework for the OECD Green Growth Indicators can be found at http://www.oecd-ilibrary.org/environment/green-growth-indicators-2013_9789264202030-en.

\(^4\) Fifth Session of the Joint Task Force on Environmental indicators:
http://www.unece.org/index.php?id=29173; Sixth Session:
http://www.unece.org/stats/documents/2012.10.environ.html; Seventh Session:
Renewable freshwater resources (Internal flow + Inflow of surface and groundwaters)

(b) Relevance of the indicator

10. Renewable freshwater resources are of major environmental, social and economic importance. They support life, livelihoods, ecosystems and ecosystem services and are essential for agriculture. Pressures on freshwater resources are exerted by overexploitation and by the degradation of environmental capacities through population growth, climate change and other factors. The mapping of renewable freshwater resources against freshwater abstraction (see section below) is central to the evaluation of sustainable freshwater resource management. As an indicator suitable for analyses on the state of the natural resource base, data on renewable freshwater resources are used for the production of indicator 7) Freshwater resources of the set of OECD Green Growth Indicators.

(c) Availability of data in target countries

11. As part of the UNSD/UNEP Questionnaire on Environment Statistics (2013), Table W2 (“Freshwater Abstraction and Use”), countries were invited to provide data on the dataset included in this indicator: in the UNSD Environmental Statistics database (Inland Water Resources)\(^5\) data on Precipitation, Internal flow, Inflow of surface and ground waters and on total renewable freshwater is published for all target countries but Montenegro (last update 2011). Aquastats also collects data on renewable freshwater resources obtained from national sources covering all target countries, with incomplete data for Montenegro\(^6\).

2. C2: Freshwater abstraction

(a) Proposed datasets for the core set

12. The indicator contains the following datasets, which are proposed to be included in the core set:

- Fresh surface water abstracted
- Fresh groundwater abstracted
- Total freshwater abstraction (by water supply industry, households, agriculture forestry and fishing, manufacturing, electric industry, other economic activities).
- Water Exploitation Index (WEI)

(b) Relevance of the indicator

13. In combination with indicator C1 discussed above the indicator “freshwater abstraction” is central to the evaluation of sustainable freshwater resource management. Since water quality is closely linked to water quantity, the relation of freshwater abstraction to the renewal of stocks can help to assess the risk of clean water scarcity in a country. As an indicator suitable for analyses on the state of the natural resource base, data on freshwater abstraction are used for the production of indicator 7) Freshwater resources of the set of OECD Green Growth Indicators.

14. In terms of data production, this indicator also derives its relevance from the synergies with indicator C3 “Total water use”. The data for “Freshwater abstracted”, which

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is calculated in C2, forms the base for the calculation of the “Total freshwater available” which is used for the production of Indicator C3 (see below).

(c) Availability of data in target countries

15. As part of the UNSD/UNEP Questionnaire on Environment Statistics (2013), Table W2 (“Freshwater Abstraction and Use”), countries were invited to provide data on the datasets included in this indicator. In the UNSD Environmental Statistics database (Inland Water Resources) data on fresh surface water abstracted, fresh groundwater abstracted and total freshwater abstracted (by source) can be found for all target countries except Albania, Montenegro, Tajikistan, Turkmenistan and Uzbekistan. While data up to 2009 are published now, more current data is expected upon completion of the analysis of the 2013 UNSD/UNEP Questionnaire.

16. For the calculation of the Water Exploitation Index (WEI) no additional data collection is necessary. It is calculated by dividing total freshwater abstracted (which is part of this indicator) by total renewable freshwater resources (part of indicator C1).

3. C3: Total water use

(a) Proposed datasets for the core set

17. The indicator contains the following datasets, which are proposed to be included in the core set:

- Total freshwater available
- Losses of water during transport
- Total freshwater use (by households, agriculture forestry and fishing, manufacturing, electric industry, other economic activities)
- Total freshwater use by GDP

(b) Relevance of the indicator

18. The availability of water for meeting basic human needs is a prerequisite for life, health and economic and social development. This indicator specifies the availability of freshwater from various sources (freshwater abstracted, desalinated water, reused water, net imports of water) and its use to meet the needs of households, agriculture, industry and other economic activities. Therefore the indicator can support analyses of sustainable use of the natural resource base, sustainable economic development as well as human development and well-being. Grouped under “resource productivity”, data on total freshwater use are used for the production of indicator 4) Water productivity of the set of OECD Green Growth Indicators.

(c) Availability of data in target countries

19. The production of this indicator was reviewed at the Seventh Session of the Joint Task Force (November 2013). All 14 target countries which submitted the questionnaire for the preparation of the review provided at least some data necessary to produce the indicator. Some gaps have been identified by the review: while some countries did not provide data for water use by households, others did not specify water use by economic activities. It was recommended that the countries work on these issues and progress is expected. Other issues

7 http://unstats.un.org/unsd/environment/Time%20series.htm#
pointed out by the review seem to be minor statistical concerns that should be solvable within the short term.

20. Furthermore, the target countries pointed at some lack of clarity and inconsistencies within the definitions and the methodology of the guidelines to this indicator. Therefore, these were thoroughly revised and the production table was simplified, which should facilitate the production of the indicator. As part of the revision the production table was also harmonized with the Questionnaire on Environment Statistics (2013), Table W2 (“Freshwater Abstraction and Use”) of United Nations Statistics Division (UNSD) and United Nations Environment Programme (UNEP). Data on total freshwater use by sector seems not to be published by UNSD/UNEP yet, but data is expected to be published upon completion of the analysis of the 2013 Questionnaire.

4. C5: Water supply industry and population connected to water supply industry

21. It is to be noted that as part of the efforts of the Secretariat of the Joint Task Force to revise the Indicator Guidelines, it has been proposed to merge the two indicators C5 “Public water supply” and C6 “Connection of population to public water supply” to form the new indicator C5 “Water supply industry and population connected to water supply industry”. The target countries will be invited to discuss and endorse this revision at the Ninth Session of the Joint Task Force.

(a) Proposed datasets for the core set

22. The indicator contains the following datasets, which are proposed to be included in the core set:

• Volume of water supplied by water supply industry
• Population connected to water supply industry

(b) Relevance of the indicator

23. Complementing indicator C3 “Total water use”, this indicator examines the availability of water provided by the water supply industry for domestic and industrial needs. By quantifying the share of the population, which is connected to the water supply industry, the indicator adds an important dimension to the canon of the core set: it helps to evaluate policies that govern the provision of clean water to citizens. Thereby, it is related to human development and well-being, a main aspect of green economy.

24. Furthermore this indicator is relevant as the population connected to water supply industry is an important part of indicator C14 “Population connected to wastewater treatment” from the Indicator Guidelines, which could be produced in a next step.

(c) Availability of data in target countries

25. A review of indicator C5 (dataset: volume of water supplied by water supply industry) was discussed at the Seventh Session of the Joint Task Force (November 2013). In the review, 12 of the 14 countries, which handed in a national submission, provided data on indicator C5. Ten of those provided data for at least 10 years. The review of indicator C6 (dataset: population connected to water supply industry), also conducted within the Seventh Session of the Joint Task Force, found that all 14 countries could provide data. Nine of the target countries provided the data for more than a decade.

26. Gaps in the data included one country (Russian Federation) missing out on providing the data on indicator C5 due to ambiguities in the definition of “public water supply”. In response to this point, in the latest revisions of the indicator, it was suggested to use the term “water supply industry” instead. One country (Montenegro) only provided data
for the population connected to water supply in urban areas. Another country (Georgia) stated that it was working to set up a formal process to collect data on water supply.

27. As part of the UNSD/UNEP Questionnaire on Environment Statistics (2013) countries were invited to provide data on the two sets included in this indicator. As part of the UNSD Environmental Indicators (Inland Water Resources) data on the net freshwater supplied by the water supply industry can be found for nine target countries (no data available for Albania, Kazakhstan, Montenegro, Republic of Moldova, Russian Federation, Tajikistan, Turkmenistan, and Uzbekistan). Data on the total population supplied by water supply industry is only published for six target countries (Armenia, Azerbaijan, Georgia, Montenegro, Serbia, and the former Yugoslav Republic of Macedonia). The data published for both datasets is not from recent years (up to 2009), but more current and complete data is expected upon completion of the analysis of the 2013 UNSD/UNEP Questionnaire.

5. C9: Drinking water quality

(a) Proposed datasets for the core set

28. The indicator contains the following datasets, which are proposed to be included in the core set:

- Drinking water quality from water supply industry
- Drinking water quality from open reservoirs
- Drinking water quality from groundwater — springs, wells
- Population connected to water supply industry *(This dataset overlaps with indicator C5)*
- Population using untreated surface water
- Population using untreated groundwater

(b) Relevance of the indicator

29. The indicator provides a measure of the risk of negative impacts of poor drinking water quality on human health and shows the extent to which the drinking water supply conforms to national sanitary requirements and standards. Public health cannot improve without access to an adequate supply of clean drinking water. This is why it was proclaimed as one of the United Nations Millennium Development Goals (MDG) targets: “to decrease by half the proportion of people without sustainable access to safe drinking water.” As an indicator on the environmental dimension of quality of life, data on the share of the population connected to different sources of safe drinking water data are used for the production of indicator 16.2) Population with sustainable access to safe drinking water of the set of OECD Green Growth Indicators.

(c) Availability of data in target countries

30. The production of this indicator was reviewed in preparation of the Sixth Session of the Joint Task Force (October 2012). All 14 countries that sent in the questionnaire for the review provided at least some data on this indicator. Ten countries provided long term data series starting in the year 2000 or earlier, while the remaining four submitted data for 4-7 years. It was found that three countries (Georgia, Serbia and Montenegro) did not provide data on quality of groundwater used as drinking water. Many countries did not include data

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8 http://unstats.un.org/UNSD/environment/Time series.htm#
on water from open reservoirs, some of them stating that this source of water is not used in the country.

31. It was also found that the number of samples of drinking water taken varied considerably between the countries. The section on the number and share of the population connected to each of the three different sources of water was included in this indicator after the review conducted as part of the Sixth Session of the Joint Task Force. Therefore this section was not part of the review. However, the WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation⁹ publishes current estimates on the share of population using different sources of drinking water for all target countries.

B. Biodiversity

1. D4: Threatened and protected species

(a) Proposed datasets for the core set

32. The indicator contains the following datasets, which are proposed to be included in the core set:

- Number of species protected (mammals, birds, fishes, reptiles, amphibians, invertebrates, vascular plants, mosses, lichens, fungi, algae)
- Number of species threatened (mammals, birds, fishes, reptiles, amphibians, invertebrates, vascular plants, mosses, lichens, fungi, algae)

(b) Relevance of the indicator

33. A number of multilateral environmental agreements (MEA) recognize that biodiversity has an intrinsic value and that biodiversity maintenance is essential for human life and sustainable development. Parties to the biodiversity-related MEAs must report on the conservation and sustainable use of biodiversity as an international obligation. The information on trends in the number of protected and threatened species can be a measure of the degree to which a country’s efforts to maintain its flora and fauna are successful. This indicator could supplement indicator D1 “Protected areas”, which is already part of the current set of eight core indicators: adding on the information on the extent of protected areas, indicator D4 sheds light on habitats outside of protected areas and the status of important pan-European species. In support of analyses of the natural asset base of a country, data on threatened species are used for the production of indicator 13) Wildlife resources of the set of OECD Green Growth Indicators.

(c) Availability of data in target countries

34. For many years, the International Union for the Conservation of Nature (IUCN) and other international organizations have been monitoring the extent and pace of biodiversity degradation by assigning species to categories of threat through detailed assessments of information against a set of quantitative criteria. The IUCN Red List of Threatened Species¹⁰ is regularly updated and contains country level data on threatened species (totals by taxonomic group¹¹, and by Red List Category¹²) for all target countries. In the majority

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⁹ http://www.wssinfo.org/documents/?tx_displaycontroller[type]=country_files
¹⁰ http://www.iucnredlist.org/about/summary-statistics#Tables_5_6
¹¹ E.g.: http://cmsdocs.s3.amazonaws.com/summarystats/2014_2_Summary_StatsPage_Documents/2014_2_RL_Stats_Table5.pdf
of countries information on threatened species is collected in “red books”, which include
data on the abundance and state of rare and/or protected species of wild fauna and flora and
conservation measures.

35. Furthermore, all target countries are Parties to the Convention on Biological
Diversity (CBD) and are regularly submitting national reports to the CBD that contain data
on endangered species.\textsuperscript{13}

C. Land and soil

1. E1: Land uptake

(a) Proposed datasets for the core set

36. The indicator contains the following dataset, which is proposed to be included in the
core set:

- Total land uptake (broken down by sectors)

(b) Relevance of the indicator

37. The indicator shows trends in the extent of land uptake from natural and semi-
natural land. Land uptake by transport infrastructure, urban and industrial development and
other purposes has a high impact on the environment due to soil sealing as well as negative
impacts resulting from transport, noise, resource use, waste dumping and pollution.
Agricultural zones and, to a lesser extent, forests and semi-natural and natural areas, are
disappearing in favour of the development of artificial surfaces. This affects biodiversity
since it decreases species’ habitats, and fragments the landscapes that support and connect
them. With all these factors taken into account, this indicator can be an essential tool in
monitoring the transition to a green economy, to result in better planning to control urban
growth and the extension of infrastructures. Contributing in the assessment of the state of
the natural resource base, data on land uptake are used for the production of indicator 11)
\textit{Land resources} of the set of OECD Green Growth Indicators.

(c) Availability of data in target countries

38. A review on this indicator was presented at the Fifth Session of the Joint Task Force
(July 2012). For this indicator 10 of the 15 countries that submitted the questionnaire
provided data. The review, however, found that only four of those countries (Armenia,
Azerbaijan, Belarus and Kazakhstan) provided the full information necessary to produce
this indicator. Of those four, all had provided time series data of five years or more.

39. Many countries have their own classifications on land types and their own
methodologies in building a land cadaster which are not compliant with international
standards. In most countries the data is collected from administrative bodies, and the
questionnaire is filled out by the land agencies. The necessity to invest further work to
harmonize classifications and definitions was noted at the meeting.

40. Time-series data on land use (including the total area of agricultural land and arable
land as well as data on forest areas) are published for most target countries by the Statistics

\textsuperscript{12} E.g.: http://cmsdocs.s3.amazonaws.com/summarystats/2014_2_Summary_StatsPage_Documents/2014_2_
RL_Stats_Table6a.pdf

\textsuperscript{13} http://www.cbd.int/reports/map
Division of the Food and Agriculture Organization of the United Nations (FAOSTAT)\textsuperscript{14}, the World Bank\textsuperscript{15} and as part of the UNSD Environmental Indicators\textsuperscript{16}. This data could support the gradual production of this indicator.

41. With regard to the results of the assessment of data availability it is recognized that there are further efforts needed to reach a consistent and comprehensive production of this indicator throughout the countries of Eastern Europe, Caucasus and Central Asia. Acknowledging its high policy relevance, ways could be explored by ECE and its partners to provide capacity building on the production of this indicator.

D. Agriculture

1. F2: Fertilizer consumption

(a) Proposed datasets for the core set

42. The indicator contains the following datasets, which are proposed to be included in the core set:

- Agricultural area
- Total consumption of mineral fertilizers
- Area treated with mineral fertilizers
- Total consumption of organic fertilizers
- Area treated with organic fertilizers

43. Beyond the parameters named above, the indicator contains a dataset on the “Consumption of fertilizers for a particular type of crop”. It is proposed to give priority to the calculation of the total consumption and the total area treated with organic and mineral fertilizers to have datasets which are comparable between countries. However, the production of data on the use of fertilizers for particular relevant crops is meaningful for more detailed assessments and therefore encouraged.

(b) Relevance of the indicator

44. This indicator makes it possible to assess pressures on the environment that may arise through the use of fertilizers. These pressures include the accumulation of nutrients in the soil, the resulting pollution of surface and groundwater and the movement of nutrients through trophic chains. As a result of these effects, intensive use of certain fertilizers can be a threat to biodiversity and human health. Therefore, this indicator constitutes an instrument for the analysis of green economy policies, which should aim at a sustainable agriculture that can satisfy human needs, while maintaining or enhancing environmental qualities. Aiming to assess the environmental and resource productivity of the economy, data on the consumption of fertilizers are used for the production of indicator 3.4) Nutrient flows and balances of the set of OECD Green Growth Indicators.

\textsuperscript{14} http://faostat3.fao.org/faostat-gateway/go/to/download/E/EL/E
\textsuperscript{15} http://data.worldbank.org/indicator
\textsuperscript{16} http://unstats.un.org/unsd/environment/Time series.htm#
(c) Availability of data in target countries

45. In a review, which was presented at the Fifth Session of the Joint Task Force (July 2012), 13 of 15 target countries that prepared national submissions provided data on this indicator. However, not all countries sent data on the consumption of both mineral and organic fertilizers and only eight countries provided long time-series data (>5 years).

46. To produce this indicator it is proposed to collect data on mineral fertilizer use or, if not available, on fertilizer sales as well as fertilizers’ basic characteristics. In many countries data collection so far seems to be based on fertilizer sales. This can lead to inaccuracy, e.g. when not the mass but the monetary value of fertilizers is reported or when no data on the area treated with fertilizers is available.

47. An assessment of other forums of data sharing shows rather complete and current data (until 2011/2012) on the consumption of nitrogen and phosphate fertilizers for all target countries but the Republic of Moldova and Turkmenistan, published in the databases of FAOSTAT (Agri-Environmental Indicators) and the World Bank.

E. Energy

1. G1: Final energy consumption

(a) Proposed datasets for the core set

48. The indicator contains the following datasets, which are proposed to be included in the core set:

• Total final energy consumption
• Final energy consumption by category (industry, transport, households, commercial and public services, agriculture, forestry and fishery, non-specified, non-energy use).

(b) Relevance of the indicator

49. Trends in final energy consumption provide an indication of progress in increasing energy efficiency, reducing energy consumption and associated environmental impacts by the different end users. In many countries energy consumption is one of the key sources of air pollution and greenhouse gas (GHG) emissions as well as the pollution of water bodies and soil. The indicator can be used to evaluate the success of policies aiming at the reduction of energy consumption and the improvement of energy efficiency. With the aim to assess the environmental and resource productivity of the economy, data on final energy consumption are used for the production of indicator 2.2) Energy intensity by sector of the set of OECD Green Growth Indicators.

(c) Availability of data in target countries

50. In a review of this indicator that was presented for discussion at the Sixth Session of the Joint Task Force (October 2012), all 15 countries that were part of the review had submitted data on this indicator, though at different levels of detail. Georgia provided data for one year, and Ukraine for two years only. Kazakhstan and Kyrgyzstan did not provide data distinguishing the final energy consumption by the categories suggested in the

18 http://data.worldbank.org/indicator/AG.CON.FERT.ZS
Indicator Guidelines. Armenia, Republic of Moldova, Tajikistan and Uzbekistan did not provide data on non-energy use.

51. However, the International Energy Agency (IEA) publishes Energy Balances for all target countries, which contain the data required for the production of this indicator (up to the years 2011/12)\(^\text{19}\). The IEA Energy Balances include total final consumption, the consumption by industry, transport and other sectors, as well as non-energy use. With regard to this source, the availability of data seems to be solid, so that little efforts would be necessary for countries to provide and share these data.

2. **G2: Total energy consumption**

   (a) *Proposed datasets for the core set*

52. The indicator contains the following datasets, which are proposed to be included in the core set:
   
   • Total energy consumption (production, export, import, bins, stock changes)
   
   • Total energy consumption by source (solid fuels, liquid fuels, gaseous fuels, nuclear energy, hydropower, biofuels, other renewables).

   (b) *Relevance of the indicator*

53. Similar to indicator G1, “Final energy consumption”, this indicator can be a tool for monitoring the energy sector. The indicator looks at the consumption of energy generated from different sources – renewables, fossil fuels and nuclear energy. A key step in greening the economy is to increase the use of environmentally friendly sources of energy. Therefore, trends in the total energy consumption by source make it possible to evaluate countries’ efforts to decrease overall energy and fossil fuel consumption. Supporting policy analyses on environmental and resource productivity, data on total energy consumption are used for the production of indicator 2.1) Energy productivity of the set of OECD Green Growth Indicators.

   (c) *Availability of data in target countries*

54. A review was also presented for this indicator at the Sixth Session of the Joint Task Force (October 2012). All 15 countries that participated in the exercise sent data on this indicator. With the exception of the Ukraine, all target countries provided time series data for five years or longer. It was noted that for some sources of energy (e.g. fuel in marine bunkers) countries were developing processes for data collection at the time of the review. Furthermore, the review pointed at contradictions in some datasets, so that further work might have to be invested particularly in terms of data validation.

55. As for indicator G1, the availability of data is more complete in the Energy Balances published by the IEA: for all target countries the total energy consumption (in the terminology of IEA: total primary energy supply) and the total energy consumption by source are published for years up to 2011/12\(^\text{20}\).

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\(^{19}\) http://www.iea.org/statistics/statisticsssearch/

\(^{20}\) http://www.iea.org/statistics/statisticsssearch/
3. **G3: Energy intensity**

(a) **Proposed datasets for the core set**

56. The indicator contains the following dataset, which is proposed to be included in the core set:

- Energy intensity (of final energy consumption/ total energy consumption)

(b) **Relevance of the indicator**

57. Energy intensity is an indicator of sustainable development that is widely used, e.g. by the World Bank and OECD. It characterizes the degree of efficiency in converting energy into Gross Domestic Product (GDP) by relating the “Total final energy consumption” (Part of indicator G1) and/or “Total energy consumption” (G2) to a country’s GDP. Contributing to assess environmental and resource productivity, data on energy supply by GDP are used for the production of indicator 2.1) Energy productivity of the set of OECD Green Growth Indicators.

(c) **Availability of data in target countries**

58. The production of this indicator requires no additional efforts for data collection, when the indicators G1 and G2 are produced. It presents the ratio between the final energy consumption (and/or the total energy consumption) and the GDP, which is a well-established measure available for all countries. For the assessment of the data production for final energy consumption and total energy consumption, please consult the respective sections above.

59. The energy intensity (total primary energy supply/GDP) is an IEA key indicator and published for all target countries21.

4. **G4: Renewable energy consumption**

(a) **Proposed datasets for the core set**

60. The indicator contains the following datasets, which are proposed to be included in the core set:

- Consumption of energy from hydropower (This dataset overlaps with indicator G2)
- Consumption of energy from biomass
- Consumption of energy from biofuels (This dataset overlaps with indicator G2)
- Consumption of energy from wind power
- Consumption of energy from solar power
- Consumption of energy from geothermal energy
- Consumption of energy from other renewables

(b) **Relevance of the indicator**

61. The dependence of the economy on non-renewable energy resources (fossil fuels) is not sustainable in the long run, since natural fossil fuel resources are limited. At the same

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21 http://www.iea.org/statistics/statisticssearch/
time, renewable resources can ensure a continuous energy supply. Renewable energy sources can be considered as the best option for reducing the negative environmental impacts of energy production and consumption. The debate on how to set the course for a sustainable energy supply to cover the needs of the population and economy is highly relevant for policy makers. Therefore, detailed data on the progress in producing more energy from different renewable sources is necessary to support this debate. As a highly relevant indicator of the environmental and resource productivity of the economy, data on renewable energy consumption are used for the production of indicator 2.3) Share of renewable energy sources of the set of OECD Green Growth Indicators.

(c) Availability of data in target countries

62. This indicator looks at the sources of energy production in a more detailed way than indicator G2, “Total energy consumption”, by listing seven sources of renewable energy. All of these sources are part of the IEA energy balances (section “Renewables and Waste”)22. As mentioned above, for all target countries, energy balances are published for years up to 2011/12. The fact that most countries do not provide data on solar power and geothermal energy could be explained by the lack of those sources of energy in the respective countries.

F. Transport

1. H1: Passenger transport demand

(a) Proposed datasets for the core set

63. The indicator contains the following dataset, which is proposed to be included in the core set:

- Passenger transport demand by mode (road, railway, inland waterways, maritime, domestic aviation, underground)

64. It is recognized that some of those modes of transport do not exist in some target countries (e.g. maritime transport, underground transport).

(b) Relevance of the indicator

65. Travel is an essential part of the economic and social development of a country. However, growth of passenger transport demand, especially of road transport and domestic aviation, can have serious impacts on the environment and health, which include rising problems related to air pollution, lack of exercise and noise pollution. Moreover, growing transport demand can lead to extensive land uptake and an increase in traffic accidents.

66. With regard to the “the modal split policy” aiming at the reduction of the environmental impact of passenger transport it is essential to know which modes of transport are used, as the impact of modes of travel in terms of resource consumption, GHG emissions, emissions of pollutants in the atmospheric air, noise, etc. varies significantly. Therefore, this indicator is related to two main aspects of green economy: sustainable economic development and human well-being.

22 http://www.iea.org/statistics/statisticssearch/
(c) Availability of data in target countries

67. Data on passenger transport is collected by the ECE Transport Division and published in the ECE statistical database. Rather current data (until 2010/2011) on road transport by passenger-kilometres is published in the database for 12 target countries (no current data available for Albania, Armenia, Belarus, Turkmenistan, and Uzbekistan). However the distinction between different modes of road travel, particularly between private cars and public road transport, is not yet possible with the data available. Data on road transport by buses are only published in the statistical database for three target countries (Republic of Moldova, Serbia and the former Yugoslav Republic of Macedonia).

68. At the same time, data on railway transport by passenger-kilometres is available for current years (2010/2011) for 13 target countries (no data for Armenia, Belarus, Turkmenistan, and Uzbekistan). For passenger demand in terms of inland water transport, maritime transport, domestic aviation and underground transport (where applicable) no data is collected by ECE.

69. As knowledge on the modal split of passenger transport supported by reliable data has policy relevance in terms of greening the economy, it is suggested to include this indicator in the core set. At the same time, as there seems to be room to improve the production of data, ways could be explored by ECE and its partners to provide capacity building on the production of this indicator.

2. H4: Age of road motor vehicle fleet

70. It is to be noted that as part of the efforts of the Secretariat of the Joint Task Force to revise the Indicator Guidelines it has been proposed to rename this indicator from “Average age of road motor vehicle fleet” to “Age of road motor vehicle fleet”. The target countries will be invited to discuss and endorse this revision at the Ninth Session of the Joint Task Force.

(a) Proposed datasets for the core set

71. The indicator contains the following datasets, which are proposed to be included in the core set:

- Number of road passenger cars (by age groups: <2 years, <5 years, <10 years)
- Number of road motor coaches and buses (by age groups: <2 years, <5 years, <10 years)
- Number of road trolleybuses (by age groups: <2 years, <5 years, <10 years)
- Number of road trucks (by age groups: <2 years, <5 years, <10 years)
- Number of road tractors (by age groups: <2 years, <5 years, <10 years)

(b) Relevance of the indicator

72. Road transport is an important source of emissions of pollutants and GHGs as well as of other negative impacts on human health and the environment. These problems can be aggravated by the high age of vehicles with high fuel consumption and poor environmental standards of vehicles. Newer vehicles are more environmentally friendly consuming less fuels. At the same time the number of road passenger cars, buses and trolleybuses can indicate trends in the modal split between private and public transport, supporting the

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23 http://w3.unece.org/pxweb/
analysis of sustainable economic development. Therefore, this indicator can help to support the policy analysis of both proposed topics for the 2016 Environment for Europe conference: green economy and air quality.

(c) Availability of data in target countries

73. The ECE statistical database on transport\textsuperscript{24} includes rather current data (up to 2010/2011) on the size of the passenger cars fleet for 11 target countries, while there is no current data available for the remaining six countries (Armenia, Belarus, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan). Further, car fleet is only categorized in age groups for five countries (Azerbaijan, Bosnia and Herzegovina, Republic of Moldova, Serbia and the former Yugoslav Republic of Macedonia).

74. Current data on the size of the fleet and the different age groups for motor coaches, buses and trolleybuses as well as on trucks (lorries) are available only for five countries (Azerbaijan, Bosnia and Herzegovina, Republic of Moldova, Serbia and the former Yugoslav Republic of Macedonia) in the statistical database. However, older data (until 2008) is available for ten target countries.

75. A review of this indicator conducted within the scope of the Sixth Session of the Joint Task Force conveyed a similar picture: 12 countries submitted data (no data received from Albania, Armenia, Tajikistan, Turkmenistan, and Uzbekistan), though the provided data was not exhaustive in most cases and a need to improve the production of data on the age of vehicles was identified.

76. It can be concluded that while data on the number of different road vehicles is already available in many target countries, steps should be taken gradually by the countries to improve the reporting on the age of the vehicles.

\textsuperscript{24} http://w3.unece.org/pxweb/database/STAT/40-TRTRANS/02-TRRoadFleet/?lang=1
Annex

Datasets of the current eight core indicators and the proposed 14 additional core indicators and corresponding OECD Green Growth Indicators

Datasets of the current eight core indicators

<table>
<thead>
<tr>
<th>Indicators from the ECE Indicator Guidelines</th>
<th>Datasets</th>
<th>Corresponding OECD Green Growth Indicators</th>
</tr>
</thead>
</table>
| 1. Emissions of pollutants into the atmospheric air (A1) | 1) Emissions of SO₂  
2) Emissions of NOₓ  
3) Emissions of non-methane volatile organic compounds (NMVOCs)  
4) Emissions of ammonia  
5) Emissions of carbon monoxide  
6) Emissions of heavy metals  
7) Emissions of persistent organic pollutants (POPs) | | |
| 2. Ambient air quality in urban areas (A2) | 8) Annual average concentration of sulphur dioxide in capital city and another major city  
9) Annual average concentration of nitrogen dioxide in capital city capital city and another major city  
10) Annual average concentration of ground-level ozone in capital city and another major city | | |
| 3. Consumption of ozone-depleting substances (ODS) (A3) | 11) Total ozone depleting potential (ODP) of ozone depleting substances (ODS) consumed | 1. CO₂ productivity |
| 4. Greenhouse gas (GHG) emissions (B3) | 12) Aggregated GHG emissions including emissions/removals from LULUCF  
13) Aggregated GHG emissions by sectors (energy, industrial processes, solvent and other product use, agriculture, land use and forestry, waste) | |
| 5. BOD₅ and concentration of ammonium in rivers (C10) | 14) Mean concentration of BOD in two major rivers  
15) Mean concentration of ammonium in two major rivers | |
### Indicators from the ECE Indicator Guidelines

<table>
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<tr>
<th>Datasets</th>
<th>Corresponding OECD Green Growth Indicators</th>
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<td>6. Nutrients in freshwater (C11)</td>
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<tr>
<td>16) Mean concentration of phosphates in two major rivers</td>
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<tr>
<td>17) Mean concentration of nitrates in two major rivers</td>
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<tr>
<td>18) Mean concentration of total phosphorus in a major lake</td>
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<tr>
<td>19) Mean concentration of nitrates in a major lake</td>
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<tr>
<td>20) Mean concentration of nitrates in groundwater</td>
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<tr>
<td>7. Protected areas (D1)</td>
<td>21) Total areas under protection (broken down by International Union for Conservation of Nature (IUCN) categories)</td>
</tr>
<tr>
<td>8. Waste generation (I1)</td>
<td>22) Total waste generation</td>
</tr>
<tr>
<td></td>
<td>23) Waste generation by source (agriculture forestry and fishery; mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply; construction; other economic activities; households)</td>
</tr>
</tbody>
</table>

### Datasets of the proposed 14 additional core indicators

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<tr>
<th>Datasets</th>
<th>Corresponding OECD Green Growth Indicators</th>
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<tr>
<td>1. Renewable freshwater resources (C1)</td>
<td>1) Renewable freshwater resources (Internal flow + Inflow of surface and groundwaters)</td>
</tr>
<tr>
<td>2. Freshwater abstraction (C2)</td>
<td>1) Fresh surface water abstracted</td>
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<tr>
<td></td>
<td>2) Fresh groundwater abstracted</td>
</tr>
<tr>
<td></td>
<td>3) Total freshwater abstraction (by water supply industry, households, agriculture forestry and fishing, manufacturing, electric industry, other economic activities).</td>
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<tr>
<td></td>
<td>4) Water Exploitation Index (WEI)</td>
</tr>
<tr>
<td>3. Total water use (C3)</td>
<td>1) Total freshwater available</td>
</tr>
<tr>
<td></td>
<td>2) Losses of water during transport</td>
</tr>
<tr>
<td></td>
<td>3) Total freshwater use (by households, agriculture forestry and fishing, manufacturing, electric</td>
</tr>
<tr>
<td>Indicators from the ECE Indicator Guidelines</td>
<td>Datasets</td>
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<tr>
<td>4. Water supply industry and population connected to water supply industry (C5)</td>
<td>1) Volume of water supplied by water supply industry&lt;br&gt;2) Population connected to water supply industry</td>
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<tr>
<td>5. Drinking water quality (C9)</td>
<td>1) Drinking water quality from water supply industry&lt;br&gt;2) Drinking water quality from open reservoirs&lt;br&gt;3) Drinking water quality from groundwater — springs, wells&lt;br&gt;4) Population connected to water supply industry (This dataset overlaps with indicator C5)&lt;br&gt;5) Population using untreated surface water&lt;br&gt;6) Population using untreated groundwater</td>
</tr>
<tr>
<td>6. Threatened and protected species (D4)</td>
<td>1) Number of species protected (mammals, birds, fishes, reptiles, amphibians, invertebrates, vascular plants, mosses, lichens, fungi, algae)&lt;br&gt;2) Number of species threatened (mammals, birds, fishes, reptiles, amphibians, invertebrates, vascular plants, mosses, lichens, fungi, algae)</td>
</tr>
<tr>
<td>7. Land uptake (E1)</td>
<td>1) Total land uptake (broken down by sectors)</td>
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<tr>
<td>8. Fertilizer consumption (F2)</td>
<td>1) Agricultural area&lt;br&gt;2) Total consumption of mineral fertilizers&lt;br&gt;3) Area treated with mineral fertilizers&lt;br&gt;4) Total consumption of organic fertilizers&lt;br&gt;5) Area treated with organic fertilizers</td>
</tr>
<tr>
<td>9. Final energy consumption (G1)</td>
<td>1) Total final energy consumption&lt;br&gt;2) Final energy consumption by category (industry, transport, households, commercial and public)</td>
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<tr>
<td>Indicators from the ECE Indicator Guidelines</td>
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<td>services, agriculture, forestry and fishery, non-specified, non-energy use)</td>
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<tr>
<td>10. Total energy consumption (G2)</td>
<td>1) Total energy consumption (production, export, import, bins, stock changes) 2) Total energy consumption by source (solid fuels, liquid fuels, gaseous fuels, nuclear energy, hydropower, biofuels, other renewables).</td>
</tr>
<tr>
<td>11. Energy intensity (G3)</td>
<td>1) Energy intensity (of final energy consumption/ total energy consumption)</td>
</tr>
<tr>
<td>12. Renewable energy consumption (G4)</td>
<td>1) Consumption of energy from hydropower (<em>This dataset overlaps with indicator G2</em>) 2) Consumption of energy from biomass 3) Consumption of energy from biofuels (<em>This dataset overlaps with indicator G2</em>) 4) Consumption of energy from wind power 5) Consumption of energy from solar power 6) Consumption of energy from geothermal energy 7) Consumption of energy from other renewables</td>
</tr>
<tr>
<td>13. Passenger transport demand (H1)</td>
<td>1) Passenger transport demand by mode (road, railway, inland waterways, maritime, domestic aviation, underground)</td>
</tr>
<tr>
<td>14. Age of road motor vehicle fleet (H4)</td>
<td>1) Number of road passenger cars (by age groups: &lt;2 years, &lt;5 years, &lt;10 years) 2) Number of road motor coaches and buses (by age groups: &lt;2 years, &lt;5 years, &lt;10 years) 3) Number of road trolleybuses (by age groups: &lt;2 years, &lt;5 years, &lt;10 years) 4) Number of road trucks (by age groups: &lt;2 years, &lt;5 years, &lt;10 years) 5) Number of road tractors (by age groups: &lt;2 years, &lt;5 years, &lt;10 years)</td>
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