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### Joint Task Force on Environmental Indicators

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## Updated analysis on the production and sharing of United Nations Economic Commission for Europe core environmental indicators by countries of South-Eastern and Eastern Europe, Caucasus and Central Asia

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## I. Introduction

1. The Joint Task Force on Environmental Indicators agreed at its seventh session (Geneva, 5-7 November 2013) to review in detail the production and sharing of a set of ECE core environmental indicators from the revised Guidelines for the Application of Environmental Indicators in Eastern Europe, Caucasus and Central Asia (Indicator Guidelines).
2. The Joint Task Force requested that the review be supported by an analytical paper prepared by the secretariat and presenting the status and analysis of production and sharing of each of the core indicators in each of the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia (target countries) to be presented at the Eighth Session (Geneva, 13 - 15 May 2014).
3. At its Eighth Session the Joint Task Force took note of the analytical paper (CEP-CES/GE.1/2014/3) and endorsed a set of 14 tailor-made recommendations on the production and sharing of indicators (CEP-CES/GE.1/2014/4), which were based on the findings of the analytical paper.
4. The Joint Task Force at its eighth session requested to update the analytical paper for the Ninth Session to note progress made between May 2014 and October 2014 in implementing the recommendations. This paper contains the updated analysis. The group agreed that the updated analysis should be based only on the eight core indicators available on national webpages. The target countries were invited to submit links to those webpages to the Secretariat. Thirteen target countries responded to the invitation: Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Georgia, Kazakhstan, Kyrgyzstan, Montenegro, Republic of Moldova, Russian Federation, Serbia, the former Yugoslav Republic of Macedonia and Ukraine.
5. The paper is structured into two main parts. Part one – production of environmental indicators – presents the analysis of countries' performance in producing the indicators according to the methodologies stipulated in the Indicator Guidelines. Part two – online sharing of environmental indicators – analyses whether the information on the indicators as published on the national websites presented in a clear and informative manner. The paper closes with general conclusions.

## II. Production of eight core indicators

6. For this review of the production of the core indicators the websites of the relevant agencies with published indicators are examined to assess whether there is an optimal level of production for each of the eight core indicators with regards to data structure and format and the availability of the necessary time series. All links that were taken into account for this review are listed in Annex II. The data structure, format and times series are applied as specified by the Indicator Guidelines (<http://www.unece.org/env/indicators.html>).
7. The optimal level of structure is reached when all parameters are correctly used to produce the required datasets and sub-indicators (see Annex I). The optimal level of format is reached if all datasets for the respective indicator are provided in the required unit of measurement. It was agreed at the Eighth Session of the Joint Task Force that data for 2013 should be produced gradually (recommendation 6). Therefore, the optimal level on time series is reached if the data are provided for the years 1990, 1995, and 2000-2013.
8. The review of production for each of the eight core indicators is provided in chapters A-H.

9. The following categories are used for the evaluation of the structure and the format of indicator production:

- (a) Fully met – the provided data fully or almost fully meet the requirements specified by the Indicator Guidelines;
- (b) Partially met – the provided data do not fully meet the requirements of the Indicator Guidelines;
- (c) Not met - the provided data do not meet the requirements of the Indicator Guidelines, or they cannot be found following the provided links;
- (d) No data – data have not been provided.

10. The analysis should help each country to understand the existing challenges to reach the optimal level of production of the indicators and allow the identification of concrete actions needed to reach the optimal level.

## **A Emission of pollutants into the atmospheric air (A1)**

11. This core indicator provides a measure of the pressure on environment in terms of total emissions of pollutants into the atmospheric air from stationary and mobile sources, which are regulated in the Protocols of the ECE Convention on Long-range Transboundary Air Pollution.

12. The current analysis considers data on sulphur dioxide (SO<sub>2</sub>) emission per capita (sub-indicator 1.1) and per unit of country area (km<sup>2</sup>) (sub-indicator 1.2), as well as nitrogen oxides (NO<sub>x</sub>) emissions per capita (sub-indicator 1.3) and per unit of country area (km<sup>2</sup>) (sub-indicator 1.4).

### **1. Optimal level of indicator production**

#### *Structure*

13. For the optimal production of indicator A1, the calculation of total emissions of pollutants should include data from stationary and mobile sources for the following air pollutants:

- (a) Sulphur dioxide (SO<sub>2</sub>),
- (b) Nitrogen oxides (NO<sub>x</sub>), shown as nitrogen dioxide (NO<sub>2</sub>).

14. Also, as agreed at the Eighth Session of the Joint Task Force and noted in recommendation 2, countries should gradually produce data on the following parameters:

- (a) Non methane volatile organic compounds (NMVOCs)
- (b) Ammonia (NH<sub>3</sub>)
- (c) Carbon monoxide (CO)
- (d) Hydrocarbons (CH)
- (e) Persistent organic pollutants (POPs)
- (f) Heavy metals
- (g) Particulate matter (PM10 and/or PM2.5 and/or total suspended particulates (TSP)).

15. The countries' achievements in producing these additional parameters are summarized in table 2. For the review of these additional parameters, data on the websites

submitted by the countries for the preparation of this document as well as information from a review on this indicator that was presented at the Fifth Session of the Joint Task Force were taken into account.

16. For the calculation of sub-indicators 1.1, 1.2, 1.3, 1.4, the following parameters are to be used:

- (a) Population of a country;
- (b) Area of a country.

*Format*

17. Pollutants: the parameters are given in thousands of tons, tons, or kilograms of the respective pollutant; area of a country – in km<sup>2</sup>; population – in millions of people.

*Time series*

18. Data are to be provided for the years 1990 (if applicable), 1995 (if applicable) and 2000-2013.

## 2. Analysis of indicator production in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia

Table 1

### Production of indicator A1 in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia (SO<sub>2</sub> and NO<sub>x</sub>)

<i>Country</i>	<i>Structure</i>	<i>Format</i>	<i>Time series</i>
Armenia	Fully met (stationary and mobile sources)	Fully met	1990; 1995; 2000-2012
Azerbaijan	Partially met (stationary and mobile sources)	Fully met	1995; 2000-2013
Belarus	Partially met (stationary and mobile sources)	Partially met	2005-2013
Bosnia and Herzegovina	No data		
Georgia	Fully met (stationary and mobile sources)	Fully met	2000-2012
Kazakhstan	Partially met (stationary sources)	Fully met	1990; 1995; 2000-2013
Kyrgyzstan	Partially met (stationary sources)	Fully met	2006-2011
Montenegro	Partially met (stationary and mobile sources)	Partially met	1990-2010
Republic of Moldova	Partially met (stationary and mobile sources)	Partially met	2001-2013

<i>Country</i>	<i>Structure</i>	<i>Format</i>	<i>Time series</i>
Russian Federation	Fully met (stationary and mobile sources)	Fully met	2000-2013
Serbia	Partially met (stationary and mobile sources)	Partially met	2012-2013
Tajikistan	No data		
The former Yugoslav Republic of Macedonia	Partially met	Partially met	2002-2010
Turkmenistan	No data		
Ukraine	Partially met (stationary and mobile sources)	Partially met	1990-2012
Uzbekistan	No data		

Table 2

**Production of additional parameters for indicator A1 in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia**

<i>Country</i>	<i>NMVOCs</i>	<i>NH<sub>3</sub></i>	<i>CO</i>	<i>CH</i>	<i>POPs</i>	<i>Heavy metals</i>	<i>PM</i>
Armenia	X	X	X	X		X (Pb, Hg, As, Ni)	X
Azerbaijan	X	X	X	X			
Belarus	X	X	X	X	X	X (Pb, Cd, Hg, As)	X
Bosnia and Herzegovina							
Georgia	X		X				
Kazakhstan	X	X	X	X	X	X (Pb, Cd, Hg, Cu, As)	X
Kyrgyzstan	X	X	X	X			
Montenegro							X
Republic of Moldova	X	X	X	X	X	X	
Russian Federation	X	X	X	X	X	X (Pb, Cd, Hg, Ni, As)	X

<i>Country</i>	<i>NMVOCs</i>	<i>NH<sub>3</sub></i>	<i>CO</i>	<i>CH</i>	<i>POPs</i>	<i>Heavy metals</i>	<i>PM</i>
Serbia			X			X	X
Tajikistan							
The former Yugoslav Republic of Macedonia	X		X	X			X
Turkmenistan							
Ukraine	X	X	X		X (IIAY)	X (Pb, Cd, Hg)	X
Uzbekistan							

### *Structure*

19. Armenia, Georgia, and the Russian Federation provide data which fully meet the requirements of the Indicator Guidelines. They publish the total of emissions, distinguishing stationary and mobile sources, as well as values for SO<sub>2</sub> and NO<sub>x</sub> emissions from stationary and mobile sources per capita and per country area.

20. Azerbaijan provides NO<sub>x</sub> emission data both for stationary and mobile sources and SO<sub>2</sub> emission data for stationary sources only. The NO<sub>x</sub> emission data from stationary and mobile sources per capita and per country area were also presented. At the same time, there are no SO<sub>2</sub> emission data per capita and per country area, however, such data for stationary sources are published.

21. The Russian Federation data contains information about the amount of emissions from stationary and mobile sources (total, per capita and per country area).

22. Kyrgyzstan's data contain all parameters (total, per capita and per country area) for emissions from stationary sources. Moreover, there are NO<sub>x</sub> and SO<sub>2</sub> emission data available for mobile sources, although the data is not presented per capita and per country area.

23. Kazakhstan has calculated all four sub-indicators, however only for emissions from stationary sources.

24. Belarus has provided total data of SO<sub>2</sub> and NO<sub>2</sub> emissions, as well as data of such emissions separately for stationary and mobile sources and data on emissions of each of these substances per capita. However, no data on the emissions of SO<sub>2</sub> and NO<sub>2</sub> per country area are published.

25. The Republic of Moldova, Serbia, the former Yugoslav Republic of Macedonia and Ukraine provided data on SO<sub>2</sub> and NO<sub>x</sub> emissions from stationary and mobile sources, but do not present these data per capita and per country area.

26. Montenegro did not provide data on SO<sub>2</sub> and NO<sub>x</sub> per country area and capita. Furthermore, it is not specified if data on emission are from mobile or stationary sources. However, for 2010 data are broken down by sectors (e.g. energy production and distribution, road transport, etc.).

27. Bosnia and Herzegovina, Tajikistan, Turkmenistan and Uzbekistan have not provided data on this indicator.

In terms of the additional parameters that should be produced gradually for this indicator, the analysis shows that data on a number of further pollutants are already available in all target countries that submitted a link on this indicator.

*Format*

28. All countries providing data measure the indicators in units according to the required data format. However, Belarus does not have emission data per country area (km<sup>2</sup>), and Montenegro, Serbia, Republic of Moldova, the former Yugoslav Republic of Macedonia and Ukraine have not presented the emission data per capita (kg/capita) and per country area (km<sup>2</sup>).

*Time series*

29. The most complete time series of data on the emission of pollutants into the atmospheric air are provided by Azerbaijan and Kazakhstan, (1990, 1995, 2000-2013), Armenia (1990; 1995; 2000–2012), Ukraine (1990-2012), Montenegro (1990-2010), Azerbaijan (1995-2012), Georgia and the Russian Federation (2000-2013). Belarus has presented the data on emissions per capita in cities for the period of 1995, 2000-2013, and general emissions for 2005-2012. The former Yugoslav Republic of Macedonia publishes data for the years 2002-2010<sup>1</sup>, Armenia, Kyrgyzstan and the Republic of Moldova presented emissions from the middle of the 2000s and now have data series for 7-8 years. Serbia presents data for 2012-2013 only.

## **B Ambient air quality in urban areas (A2)**

30. This core indicator is an indicator of the state of environment and on impact of air pollution on the population in urban areas.

31. The analysis shows the annual mean concentration of nitrogen dioxide (NO<sub>2</sub>) in urban areas (sub-indicator 2.1).

### **1. Optimal level of indicator production**

*Structure*

32. For the optimal production of indicator A2, concentrations of NO<sub>2</sub> in urban areas are to be provided. As a minimal requirement, the average annual concentration of NO<sub>x</sub> and/or number of days with exceeded daily limit value for NO<sub>x</sub> in the capital city should be provided.

33. Also, as agreed at the Eighth Session of the Joint Task Force and noted in recommendation 2, countries should gradually produce data on the following parameters:

- (a) Sulphur dioxide (SO<sub>2</sub>)
- (b) Ground-level ozone (O<sub>3</sub>).

34. The countries' achievements in producing these additional parameters are summarized in table 4. For the review of these additional parameters, data on the websites submitted by the countries for the preparation of this document as well as information from a review on this indicator that was presented at the Fourth Session of the Joint Task Force were taken into account.

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<sup>1</sup> Please note that for several indicators, the former Yugoslav Republic of Macedonia has provided more recent data inserted in Excel files in May and October 2014. It is expected that the relevant webpages will be updated soon so that current data will be available online.

*Format*

35. For this indicator the following units of measurement are to be used: concentration of pollutants in micrograms ( $\mu\text{g}$ ) per  $\text{m}^3$  of ambient air, and/or number of days with exceeded daily limit value for the pollutant.

*Time series*

36. Data are to be provided for the years 1990 (if applicable), 1995 (if applicable) and 2000-2013.

**2. Analysis of indicator production in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia.**

Table 3

**Production of indicator A2 in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia**

<i>Country</i>	<i>Structure</i>	<i>Format</i>	<i>Time series</i>
Armenia	Fully met (3 cities)	Fully met	1990; 1995; 2000-2013
Azerbaijan	Fully met (7 cities)	Fully met	2003-2012
Belarus	Fully met (12 cities)	Fully met	2005-2013
Bosnia and Herzegovina	Fully met (1 city)	Fully met	1990; 1995; 2000--2012
Georgia	Fully met (1 city)	Fully met	1995; 2000; 2006; 2008-2012
Kazakhstan	Fully met (1 city)	Fully met	2000-2013
Kyrgyzstan	Fully met (1 city)	Fully met	2006-2011
Montenegro	Fully met (2 cities)	Fully met	2009-2012
Republic of Moldova	Fully met (3 cities)	Fully met	1995; 2000-2013
The Russian Federation	Partially met	Partially met	2011
Serbia	Fully met (4 cities)	Fully met	2010-2012
Tajikistan	No data		
The former Yugoslav Republic of Macedonia	Fully met	Fully met	2004-2011
Turkmenistan	No data		
Ukraine	No data		
Uzbekistan	No data		

Table 4  
**Production of additional parameters for indicator A2 in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia**

<i>Country</i>	<i>SO<sub>2</sub></i>	<i>O<sub>3</sub></i>
Armenia	<i>X</i>	<i>X</i>
Azerbaijan	<i>X</i>	
Belarus	<i>X</i>	
Bosnia and Herzegovina	<i>X</i>	
Georgia	<i>X</i>	
Kazakhstan	<i>X</i>	
Kyrgyzstan	<i>X</i>	
Montenegro	<i>X</i>	<i>X</i>
Republic of Moldova	<i>X</i>	
Russian Federation	<i>X</i>	
Serbia	<i>X</i>	<i>X</i>
Tajikistan		
The former Yugoslav Republic of Macedonia	<i>X</i>	<i>X</i>
Turkmenistan		
Ukraine	<i>X</i>	
Uzbekistan		

*Structure*

37. The following countries provide data which fully meet the requirements of the Indicator Guidelines: Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Serbia and the former Yugoslav Republic of Macedonia.

38. Armenia publishes the average concentration of NO<sub>2</sub> for 3 cities and, Kazakhstan for one city. Both countries have also published the maximum average daily concentration. Belarus publishes the - annual concentration of NO<sub>2</sub> as well as the number of days with exceeded daily limit values for the pollutant for 12 cities. Georgia has provided the average annual concentration of NO<sub>2</sub> for one city and for the last 3 years the maximum average daily concentration and days with exceeded daily limit values). Azerbaijan publishes data on average concentrations of NO<sub>2</sub> for seven cities, Kyrgyzstan for five cities, Serbia for four cities, Republic of Moldova, for three cities, Montenegro for two cities, and Bosnia and Herzegovina, Georgia and Kazakhstan for one city.

39. The former Yugoslav Republic of Macedonia does not distinguish between different cities, showing the share of the total population exposed to exceeded daily limit values of pollutants and the average annual concentration of NO<sub>2</sub> for all stations in urban areas.

40. For the Russian Federation data on average annual concentration of NO<sub>2</sub> in the most polluted cities are shown not in absolute values, but in comparison with the set standard of

Maximum Permissible Concentration (MPC) and expressed in terms of exceeding these standards (for example, 2 MPC).

41. In terms of the additional parameters that should gradually be produced for this indicator the analysis shows that all target countries that submitted a link on this indicator also publish data on SO<sub>2</sub> and four countries (Armenia, Montenegro, Serbia, and the former Yugoslav Republic of Macedonia) publish data on O<sub>3</sub>.

42. Tajikistan, Ukraine and Uzbekistan have not provided data on this indicator.

#### *Format*

43. All countries, which provided data on this indicator, except the Russian Federation, use units of measurement according to the required data format (NO<sub>2</sub> – in micrograms per m<sup>3</sup> of air), and/or number of days with exceeded daily limit value for the pollutant. The Russian Federation has used multiples of MPC (Maximum Permissible Concentration) as a unit of measurement.

#### *Time series*

44. The longest time series of data is provided by Armenia (1990, 1995; 2000–2013), Bosnia and Herzegovina (1995; 2000-2012), the Republic of Moldova (1995; 2000-2013), as well as by Kazakhstan (2000-2013). Azerbaijan publishes data for 200–2013. Belarus publishes data for 2005-2012, the former Yugoslav Republic of Macedonia for 2004-2011, Kyrgyzstan for 2006-2011, Montenegro for 2009-2012 and Serbia for 2010-2012. In Georgia there were no measurements of NO<sub>2</sub> concentrations between 2000 and 2006.

45. The Russian Federation, which provides data only for 2011, publishes an annual review of air quality and pollution in the country. However, those reviews do not include time series data.

## **C Consumption of ozone-depleting substances (A3)**

46. This core indicator is an indicator of environmental pressure. It shows the amount of ozone-depleting substances (ODS), consumed in a country. ODS are regulated by the Vienna Convention for the Protection of the Ozone Layer, its Montreal Protocol on Substances that Deplete the Ozone Layer as well as by Montreal Protocol Amendments enacted in London, Copenhagen, Beijing and Montreal.

47. The total consumption of ODS is defined as the production of ODS plus imports minus exports of ODS (sub-indicator 3.1).

### **1. Optimal level of indicator production**

#### *Structure*

48. For the optimal production of indicator A3, calculation of ODS consumption should include the amount of ODS consumed in the country, which comprises the total consumption of chlorofluorocarbons (CFCs), halons, carbon tetrachloride, 1,1,1-trichloroethane (methyl chloroform) hydrochlorofluorocarbons (HCFCs), and methyl bromide.

#### *Format*

49. For this indicator the following units of measurement are used: tons of ODS weighted by their ozone depleting potential (ODP).

*Time series*

50. Data are to be provided for the years 1990 (if applicable), 1995 (if applicable) and 2000-2013.

**2. Analysis of indicator production in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia**

Table 5

**Production of indicator A3 in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia**

<i>Country</i>	<i>Structure</i>	<i>Format</i>	<i>Time series</i>
Armenia	Fully met	Fully met	1995; 2000-2013
Azerbaijan	Fully met	Fully met	2006-2013
Belarus	Fully met	Fully met	2009-2013
Bosnia and Herzegovina	Fully met	Fully met	1990; 1995; 2000-2011
Georgia	Fully met	Fully met	1995; 2000-2012
Kazakhstan	Fully met	Fully met	1990; 1995; 2000 -2013
Kyrgyzstan	Fully met	Fully met	2005-2011
Montenegro	Fully met	Fully met	1995; 2000; 2004-2012
Republic of Moldova	Fully met	Fully met	1995; 2000-2013
The Russian Federation	Partially met	Partially met	2010-2012
Serbia	Fully met	Fully met	1995; 2000-2012
Tajikistan	No data		
The former Yugoslav Republic of Macedonia	Fully met	Fully met	2000-2011
Turkmenistan	No data		
Ukraine	No data		
Uzbekistan	No data		

*Structure*

51. Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Georgia, Kazakhstan, Kyrgyzstan, Montenegro, the Republic of Moldova, Serbia and the former Yugoslav Republic of Macedonia provide data which fully meet the requirements of the Indicator Guidelines.

52. Armenia currently consumes only HCFCs. Kazakhstan provided data for CFCs, HCFCs, methylbromide and brominechloromethane. Georgia, Kyrgyzstan and the former

Yugoslav Republic of Macedonia provided data for different CFCs, HCFCs, as well as methyl bromide. Montenegro publishes data on CFCs, tetrachloromethane and HCFCs consumption. Serbia shows data for the consumption of halons, carbon tetrachloride, 1,1,1-trichloroethane (methyl chloroform), HCFCs, and methyl bromide. At the same time, the Republic of Moldova provided data on CFCs and HCFCs consumption only. Azerbaijan showed only the total amount of ODS in the country without distinguishing different substances and without reference their ODP.

53. Belarus shows the consumption of HCFCs, including their ODP, as well as a maximum level for the country's consumption of ODP.

54. The Russian Federation has shown data of production, export and import of ODS, but not the total consumption.

55. Tajikistan, Turkmenistan, Ukraine and Uzbekistan have not provided data on this indicator.

#### *Format*

56. All countries, which provide data, with the exception of the Russian Federation, measure the indicators in units according to the required data format. The Russian Federation provides data on production, export and import of ODS in metric tons.

#### *Time series*

57. The longest time series of data is provided by Kazakhstan (1990, 1995 and 2000-2013), Armenia and Republic of Moldova (1995, 2000-2013), Bosnia and Herzegovina (1990, 1995 and 2000-2011). Serbia provided data for the years 1995; 2000-2012, Montenegro for 1995; 2000; 2004-2012, Azerbaijan for 2006-2013, Kyrgyzstan for 2005-2011, Belarus for 2009-2013 and the Russian Federation for 2010-2012.

58. Data of ODS consumption for all the analysed countries between 1990 and 2013 are available on the website of the Vienna Convention for the Protection of the Ozone Layer ([http://ozone.unep.org/en/ods\\_data\\_access\\_centre/](http://ozone.unep.org/en/ods_data_access_centre/)).

## **D Greenhouse gas emissions (B3)**

59. This core indicator is a measure of anthropogenic emissions of greenhouse gases (GHGs) included in Annex A to the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC).

60. The indicator should show the total emissions of GHGs as well as emissions per capita (sub-indicator 4.1) and per GDP (sub-indicator 4.2).

### **1. Optimal level of indicator production**

#### *Structure*

61. To reach the optimal level of the production of indicator B3, the following parameters should be included in the calculation of the total GHG emissions: carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF<sub>6</sub>), as well as emissions/removals by sources and sinks through land use, land use change and forestry (LULUCF).

62. In addition, for the determination of the Sub-indicators 4.1 and 4.2 the following parameters should be included:

- (a) Population of the country

## (b) GDP

*Format*

63. The following units of measurement should be applied:

- (a) GHGs: parameters presented in tones of CO<sub>2</sub> equivalent or millions of tons of CO<sub>2</sub> equivalent;
- (b) Population: presented in million people;
- (c) GDP: presented in international dollars in purchasing power parity (PPP);
- (d) Emissions per GDP: in tones of CO<sub>2</sub> equivalent / 1000 dollars.

*Time series*

64. Data are to be provided for the years 1990 (if applicable), 1995 (if applicable) and 2000-2013.

**2. Analysis of indicator production in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia**

Table 6

**Production of indicator B3 in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia**

<i>Country</i>	<i>Structure</i>	<i>Format</i>	<i>Time series</i>
Armenia	Fully met	Partially met	1990; 1995; 2000-2010
Azerbaijan	Fully met	Partially met	2000-2013
Belarus	Partially met	Partially met	2005-2012
Bosnia and Herzegovina	Fully met	Fully met	1990-2001
Georgia	Partially met	Fully met	1990; 1995; 2000-2011
Kazakhstan	Fully met	Fully met	1990; 1995; 2000 -2012
Kyrgyzstan	Fully met	Fully met	2000-2005
Montenegro	Fully met	Fully met	1990-2010
Republic of Moldova	Fully met	Fully met	1990-2010
The Russian Federation	Fully met	Fully met	1990; 2000; 2005; 2007-2011
Serbia	Partially met	Partially met	1990, 1998
Tajikistan	No data		
The former Yugoslav Republic of Macedonia	Fully met	Fully met	1990; 1995; 2000-2009
Turkmenistan	No data		
Ukraine	Partially met	Partially met	2004-2012
Uzbekistan	No data		

*Structure*

65. Kazakhstan's data fully met the requirements of the Indicator Guidelines. The data contains all required parameters (CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, HFC, PFC, SF<sub>6</sub>, LULUCF), as well as emissions distinguished by economic sectors (energy, industry, agriculture).

66. The Russian Federation and the Republic of Moldova have emission data on all GHGs, also provided as an equivalent of CO<sub>2</sub>. Complete data on emissions of CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, and LULUCF is provided by Azerbaijan, Bosnia and Herzegovina, and The former Yugoslav Republic of Macedonia. Georgia, Montenegro and Serbia also provide data based on the calculation of the three main GHGs, but emissions/removals through LULUCF are not provided. Data on total GHG emissions in CO<sub>2</sub> equivalent are provided by Belarus, Kyrgyzstan, and Ukraine.

67. The respective webpage of Armenia shows the emissions of CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub> (the last two as CO<sub>2</sub> equivalent) without specifying LULUCF.

68. All above mentioned countries have also shown data on GHG emissions per capita and GDP with the exception of Serbia, Ukraine and the Republic of Moldova.

69. Tajikistan, Turkmenistan and Uzbekistan have not provided data on this indicator.

*Format*

70. The majority of countries which provide data have measured the indicators in units according to the required data format. GHGs are either calculated in CO<sub>2</sub> equivalent using appropriate recalculation factors or provided as CO<sub>2</sub> equivalent.

71. Azerbaijan and Belarus show emissions per unit of GDP in tons of CO<sub>2</sub> per national currency, and not per international dollars (PPP).

72. Serbia and Ukraine have not included the GDP and the country's population in the analysis.

*Time series*

73. Georgia, Kazakhstan, the Russian Federation provided the most complete time series from 1990 until 2011-2012.

74. Montenegro has provided data for the years 1990-2010, the former Yugoslav Republic of Macedonia for 1990, 1995, and 2000-2009, Armenia for 1990, 1995, 2000-2010, (1990, 2000 and 2010 and Azerbaijan for the years 2000-2013. Moreover, Ukraine publishes data for 2004-2012, Bosnia and Herzegovina for 1990-2001, Belarus for 2005-2012, and Kyrgyzstan for 2000-2005. Serbia has provided data for 2 years: 1990 and 1998.

75. Belarus, the Russian Federation and Ukraine are listed in Annex 1 to the UNFCCC. These countries have agreed to follow special obligations for the limitation of GHG emissions. Each country has prepared five national communications on climate change and more communications are currently prepared. Other countries, which are not included in Annex 1 to the UNFCCC, mainly are in the process of preparing their third national communication, which will include more recent data on GHGs. Serbia is currently preparing its second national communication. The current national communications to the UNFCCC for all target countries are available online at the website of the UNFCCC ([http://unfccc.int/national\\_reports/items/1408.php](http://unfccc.int/national_reports/items/1408.php)).

## E Biochemical oxygen demand and concentration of ammonium in rivers (C10)

76. This core indicator provides a measure of the state of rivers in terms of biochemical oxygen demand (BOD) and ammonium (NH<sub>4</sub>).

77. The analysis shows the production of data on average annual BOD in major rivers (sub-indicator 5.1) and NH<sub>4</sub> concentration in major rivers (sub-indicator 5.2).

### 1. Optimal level of indicator production

#### *Structure*

78. To reach the optimal level of production of the indicator C10, river water samples from at least one river with a minimum of three sampling points (upstream and downstream) need to be taken and analysed for the concentrations of BOD and ammonium.

#### *Format*

79. To produce the indicator the following units of measurements are to be used:

(a) The annual average BOD after five days of incubation (BOD<sub>5</sub>) expressed in mg of O<sub>2</sub>/litre.

(b) Average annual ammonium concentration, which is measured in mg/litre.

#### *Time series*

80. Data are to be provided for the years 1990 (if applicable), 1995 (if applicable) and 2000-2013.

### 2. Analysis of indicator production in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia

Table 7

#### **Production of indicator C10 in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia**

<i>Country</i>	<i>Structure</i>	<i>Format</i>	<i>Time series</i>
Armenia	Fully met (8 rivers)	Fully met	1990; 1995; 2000-2013
Azerbaijan	Fully met (2 rivers)	Fully met	2000-2013
Belarus	Fully met (10 rivers)	Fully met	2005-2012
Bosnia and Herzegovina	Fully met (3 rivers)	Fully met	2006-2012
Georgia	Fully met (1 river)	Fully met	1990; 1995; 2000-2012
Kazakhstan	Fully met (1 river)	Fully met	1990; 2000-2013
Kyrgyzstan	Fully met (2 rivers)	Fully met	2013-2014
Montenegro	Fully met (13 rivers)	Fully met	2009-2012
Republic of Moldova	Fully met (2 rivers)	Fully met	1995; 2000-2013

<i>Country</i>	<i>Structure</i>	<i>Format</i>	<i>Time series</i>
The Russian Federation	Fully met (5 rivers)	Fully met	2010-2012
Serbia	Fully met (4 rivers)	Fully met	2003-2012
Tajikistan	No data		
The former Yugoslav Republic of Macedonia	Fully met (3 rivers)	Fully met	2002-2011
Turkmenistan	No data		
Ukraine	No data		
Uzbekistan	No data		

#### *Structure*

81. The following countries have provided data which fully meet the requirements of the Indicator Guidelines: Armenia (1 river), Azerbaijan (1 river), Belarus (10 rivers), Georgia (1 river), Kazakhstan (1 river), Kyrgyzstan (1 river), Montenegro (13 rivers), Serbia (4 rivers), the former Yugoslav Republic of Macedonia (3 rivers), the Russian Federation (5 rivers). Additionally to these ten countries that had shared data on this indicator before May 2014, now also Bosnia and Herzegovina (3 rivers) and the Republic of Moldova (2 rivers) submitted links to data published online, which are fully meeting the requirements of the Indicators Guidelines.

82. For each river, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Georgia, Kazakhstan, Kyrgyzstan, Montenegro, Republic of Moldova, Serbia, The former Yugoslav Republic of Macedonia and the Russian Federation have shown the measurements of BOD<sub>5</sub> and NH<sub>4</sub> concentrations at least from three stations.

83. Tajikistan, Turkmenistan, Ukraine and Uzbekistan have not provided data on this indicator.

84. In line with recommendation 3, the data provided by Armenia, Azerbaijan, Bosnia and Herzegovina and Georgia, contain maximum, minimum and average concentrations for each sampling point. Kazakhstan publishes data on mean annual values in each sampling point.

85. Azerbaijan, Belarus and Georgia provide averaged annual data of the indicator and, the Russian Federation have provided average and maximum concentrations.

86. Kyrgyzstan published data for each season, but does not calculate annual average concentrations.

#### *Format*

87. All countries providing data, measure the indicators in units according to the required data format.

#### *Time series*

88. Full data of average annual BOD<sub>5</sub> and NH<sub>4</sub> concentrations in rivers for the years 1990, 1995, 2000-2012 is provided by Armenia, as well as by Georgia and Kazakhstan

(1990, 2000-2013), the Republic of Moldova (1995; 2000-2013) and Azerbaijan (2000-2013).

89. Serbia publishes data for 2003-2012, the former Yugoslav Republic of Macedonia for 2002-2011, Belarus for 2005-2012, Bosnia and Herzegovina for 2006-2012, Montenegro for 2009-2012 and Kyrgyzstan for 2013-2014.

90. The Russian Federation provides data for 2010-2012 and publishes annual reviews of surface water quality in Russia. However, those reviews do not include long time series data.

## **F. Nutrients in freshwater (C11)**

91. This indicator helps to assess the condition of water bodies by measuring nutrient concentrations in rivers, lakes, reservoirs, as well as in groundwater.

92. The indicator should include data on average annual concentrations of nitrates ( $\text{NO}_3$ ) in major water bodies (lakes, reservoirs) (sub-indicator 6.1) and the average annual total phosphorus ( $\text{P}_{\text{total}}$ ) in major water bodies (lakes, reservoirs) (sub-indicator 6.2).

### **1. Optimal level of indicator production**

#### *Structure*

93. In order to achieve the optimal production of the indicator C11, the following measurements are to be taken: water samples should be taken in lakes and/or reservoirs and concentrations of  $\text{NO}_3$  and  $\text{P}_{\text{total}}$  should be provided. In order to calculate the average concentration, data of all samples taken should be used.

94. Also, as agreed at the Eighth Session of the Joint Task Force and noted in recommendation 2, countries should gradually produce data on phosphates and nitrates in rivers and on nitrates in groundwater. The countries' achievements in producing these additional datasets are summarized in table 9. For the review of these additional parameters, data on the websites submitted by the countries for the preparation of this document as well as information from a review on this indicator that was presented at the Third Session of the Joint Task Force were taken into account.

#### *Format*

95. The following units of measurements are to be used for this indicator:

(a) Concentrations of nitrates in fresh water samples (lakes, rivers, groundwater) are measured in mg of  $\text{NO}_3$ /litre;

(b) Concentrations of total phosphorus in samples taken in lakes and concentrations of phosphates in samples taken in rivers are measured in mg of P/litre.

#### *Time series*

96. Data are to be provided for the years 1990 (if applicable), 1995 (if applicable) and 2000-2013.

2. Analysis of indicator production in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia

Table 8  
Production of indicator C11 in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia (nutrients in lakes)

<i>Country</i>	<i>Structure</i>	<i>Format</i>	<i>Time series</i>
Armenia	Fully met (1 lake)	Fully met	2000; 2002; 2004-2013
Azerbaijan	Fully met (6 lakes)	Fully met	2005-2013
Belarus	Partially met	Fully met	2005-2013 (total phosphorus)
Bosnia and Herzegovina	Fully met (3 lakes)	Fully met	2002-2008 (1 lake); 2011-2012 (2 additional lakes)
Georgia	Fully met (1 lake)	Fully met	1990; 2000; 2001; 2005; 2007-2012
Kazakhstan	Fully met (1 lake and 1 reservoir)	Fully met	1990; 2000; 2002-2004; 2006-2013
Kyrgyzstan	Partially met	Partially met	2013-2014 (nitrates)
Montenegro	Fully met (1 lake)	Fully met	2008-2013
Republic of Moldova	Fully met (3 lakes)	Fully met	1995; 2000-2013
The Russian Federation	Partially met	Partially met	2010-2012
Serbia	Not met	Not met	—
Tajikistan	No data		
The former Yugoslav Republic of Macedonia	Fully met (2 lakes)	Fully met	2001-2010 (total phosphorus); 2000-2006 (nitrates)
Turkmenistan	No data		
Ukraine	No data		
Uzbekistan	No data		

Table 9  
**Production of additional parameters for indicator C11 in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia (nutrients in rivers and groundwater)**

<i>Country</i>	<i>Phosphates in rivers</i>	<i>Nitrates in rivers</i>	<i>Nitrates in groundwater</i>
Armenia	X	X	X
Azerbaijan		X	X
Belarus	X	X	X
Bosnia and Herzegovina	X	X	X
Georgia	X	X	
Kazakhstan		X	
Kyrgyzstan	X	X	X
Montenegro	X	X	X
Republic of Moldova	X	X	X
Russian Federation	X	X	X
Serbia	X	X	X
Tajikistan			
The former Yugoslav Republic of Macedonia	X	X	
Turkmenistan			
Ukraine			
Uzbekistan			

#### *Structure*

97. In the analysis of the submissions in May 2014 only two countries (Serbia and the former Yugoslav Republic of Macedonia) fully met the requirements of the Indicator Guidelines for this indicator. For the analysis in May 2014, Serbia had submitted data on total phosphorus and nitrates for one lake and one reservoir in an Excel sheet, but has not provided a link to this data published online.

98. However, for the current analysis seven additional countries provide data on the indicators that fully meet the requirements: Azerbaijan publishes data on average annual concentration of nitrate and phosphorus in six lakes, Bosnia and Herzegovina and the Republic of Moldova on three lakes, Kazakhstan in one lake and one reservoir, Armenia, Georgia and Montenegro on one lake.

99. Submissions from Belarus, Kyrgyzstan and the Russian Federation partially contain the information required by the Indicator Guidelines: Belarus has shown data on the content of phosphate ion (in phosphorus equivalent) in 18 lakes and Kyrgyzstan publishes data on nitrates in one reservoir. The Russian Federation has published reviews of the Russian surface water quality, showing nitrates concentration in a number of large reservoirs.

100. In terms of the additional datasets that should gradually be produced for this indicator the analysis shows that data on nitrates in rivers are already published by all countries that submitted links, and data on phosphates in rivers and nitrates in groundwater are published by the majority of the countries.

101. Tajikistan, Turkmenistan, Ukraine and Uzbekistan have not provided data on this indicator.

*Format*

102. Armenia, Georgia and Kazakhstan publish their data in the required format showing the frequency of sampling and the number of samples.

103. In line with recommendation 3, the data provided by Armenia and Bosnia and Herzegovina contain maximum, minimum and average concentrations for each sampling point.

104. The Republic of Moldova provided the data in the required units of measurement, specifying the number of samples taken. Montenegro and the former Yugoslav Republic of Macedonia has applied the required units of measurement without specifying the sampling period and the number of samples

105. Azerbaijan showed only average concentrations of nitrates and phosphorus without specifying sampling frequency and the number of samples.

106. Belarus showed only average annual concentrations of phosphates, which are converted into total phosphorus, without specifying sampling frequency and the number of samples.

107. All other countries which provide data measure the indicators in units according to the required data format”.

*Time series*

108. Kazakhstan has shown data for 1990; 2000; 2002-2004; 2006-2013, Georgia for 1990; 2000; 2001; 2005; 2007-2012, and Armenia for 2000; 2002; 2004-2013.

109. The Republic of Moldova provides data for 1995; 2000-2013, while the former Yugoslav Republic of Macedonia provides data on total phosphorus concentration for 2001-2010, and nitrate content for 2000-2006. Azerbaijan and Belarus publish data for 2005-2012, Bosnia and Herzegovina for 2002-2008 and 2011-2012, Montenegro for 2008-2013 and Kyrgyzstan for 2013-2014.

110. The Russian Federation provides data for 2010-2012 and publishes annual reviews of surface water quality. However, those reviews do not include long time series data.

## **G Protected areas (D1)**

111. This core indicator is a response indicator, which shows the areas of land, water surfaces and adjacent air layer protected in compliance with the national legislation.

112. The indicator should include data on total area of protected areas in a country in km<sup>2</sup> and as a percentage of the total country area (sub-indicator 7.1).

### **1. Optimal level of indicator production**

*Structure*

113. In order to reach the optimal level of production for indicator D1, data on the total protected areas in km<sup>2</sup> and as a percentage of the total country area are necessary. Additionally, the indicator can be further broken down by the categories of natural areas as classified by the International Union for Conservation of Nature (IUCN), and for the national categories of protected areas to demonstrate their respective extent and share in the total area of a country.

*Format*

114. The indicator is calculated as the total area of a country's protected areas in hectares (ha) or km<sup>2</sup>. Total country areas should be provided in hectares or km<sup>2</sup> and protected areas relative to the country's total area should be expressed as a percentage.

*Time series*

115. Data are to be provided for the years 1990 (if applicable), 1995 (if applicable) and 2000-2013.

## 2. Analysis of indicator production in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia

Table 10

### Production of indicator D1 in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia

<i>Country</i>	<i>Structure</i>	<i>Format</i>	<i>Time series</i>
Armenia	Fully met	Fully met	1990; 1995; 2000-2013
Azerbaijan	Fully met	Fully met	1990; 1995; 2000- 2013
Belarus	Partially met	Fully met	2005-2013
Bosnia and Herzegovina	Fully met	Fully met	1990; 1995; 2000-2012
Georgia	Fully met	Fully met	1995; 2000-2012
Kazakhstan	Fully met	Fully met	1990; 1995; 2000-2013
Kyrgyzstan	Partially met	Fully met	No time series
Montenegro	Fully met	Fully met	1990-2012
Republic of Moldova	Partially met	Fully met	2012
The Russian Federation	Partially met	Fully met	1992-2012
Serbia	Fully met	Fully met	1990; 1995; 2000-2010
Tajikistan	No data		
The former Yugoslav Republic of Macedonia	Fully met	Fully met	2002-2008
Turkmenistan	No data		
Ukraine	No data		
Uzbekistan	No data		

*Structure*

116. Armenia, Azerbaijan, Bosnia and Herzegovina, Georgia, Kazakhstan, Montenegro, Serbia and the former Yugoslav Republic of Macedonia provide data which fully meet the requirements of the Indicator Guidelines. These countries publish data on both total area of protected areas and their percentage relative to the country's total area. Besides, Armenia, Georgia, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia and Serbia provide data distinguishing the IUCN categories of protected areas.

117. Kyrgyzstan, Republic of Moldova, and the Russian Federation have shown the total area of protected areas, their number and the category of each protected area, but do not calculate the share of protected areas in the country's total area.

118. The Russian Federation only publishes the area of protected areas on the federal level.

119. Belarus has posted on its website information about the percentage of protected areas in the total area of the country.

120. Tajikistan, Turkmenistan and Uzbekistan have not provided data on this indicator.

*Format*

121. Serbia provides data on the protected areas both in hectares and thousands of km<sup>2</sup>. Armenia, Belarus, Kyrgyzstan, Montenegro, Republic of Moldova, Russian Federation and the former Yugoslav Republic of Macedonia measure the protected areas in hectares. Azerbaijan, Bosnia and Herzegovina, and Georgia use thousands of km<sup>2</sup> and Azerbaijan and Kazakhstan use km<sup>2</sup> as a unit of measurement for this indicator.

*Time series*

122. Armenia, Azerbaijan and Kazakhstan publish data on the total area of protected areas for the years 1990, 1995, 2000-2013. Bosnia and Herzegovina, Montenegro, and Georgia provide data for 1990, 1995, 2000-2012. Serbia publishes data for the years 1990-2010. However, more recent data that was submitted in an Excel sheet for the analysis in May 2014 is not published under the link that was given.

123. The Russian Federation shows information for 1992-2013, Belarus for 2005-2013, the former Yugoslav Republic of Macedonia for 2002-2008, and the Republic of Moldova only for 2012.

124. Kyrgyzstan has not provided time series data for this indicator.

**H. Waste generation (I1)**

125. This core indicator shows the total amount of all generated wastes in the country.

126. The analysis contains data on annual waste generation per capita (sub-indicator 8.1).

**1. Optimal level of indicator production***Structure*

127. In order to reach the optimal production of indicator I1, the calculation should include the amount of waste generated per capita. This can be expressed as waste collected by municipalities and/or as total waste generated by source.

128. For the calculation of sub-indicator 8.1, also the following parameter has to be considered: population of the country.

129. This analysis considers only one parameter of the indicator I1, in accordance with the requirements of the project on establishing a joint system of environmental indicators, in order to set up a regular process of reporting on those indicators.

*Format*

130. The parameter is to be provided in thousands of metric tons of generated wastes; population is measured in millions of people.

*Time series*

131. Data are to be provided for the years 1990 (if applicable), 1995 (if applicable) and 2000-2013.

**2. Analysis of indicator production in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia.**

Table 11

**Production of indicator I1 in the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia**

<i>Country</i>	<i>Structure</i>	<i>Format</i>	<i>Time series</i>
Armenia	Fully met	Fully met	2000-2013
Azerbaijan	Fully met	Fully met	2000-2013
Belarus	Partially met	Fully met	2005-2012
Bosnia and Herzegovina	Fully met	Fully met	2008-2011
Georgia	No data		
Kazakhstan	Fully met	Fully met	2005-2012
Kyrgyzstan	Fully met	Fully met	2005-2011
Montenegro	Fully met	Fully met	2009-2012
Republic of Moldova	Partially met	Partially met	2001-2013
The Russian Federation	Partially met	Partially met	2005-2012
Serbia	Fully met	Fully met	2006-2010
Tajikistan	No data		
The former Yugoslav Republic of Macedonia	Fully met	Fully met	2003-2011
Turkmenistan	No data		
Ukraine	Partially met	Partially met	1994-2012
Uzbekistan	No data		

*Structure*

132. Azerbaijan, Bosnia and Herzegovina, Kazakhstan, Montenegro, Serbia, the former Yugoslav Republic of Macedonia and Kyrgyzstan provide data which fully meet the requirements of the Indicator Guidelines, including information on total and per capita waste generation, expressed as waste collected by municipalities.

133. Armenia on its website has posted information about the formation of municipal waste per capita over the years, not showing the total amount of municipal waste generated.

134. The Republic of Moldova and Ukraine publish data on waste generation, not distinguishing the generation of municipal waste, and have not calculated the value per capita.

135. Belarus and the Russian Federation have shown only waste removal from households and other users, with the special purpose vehicles, to waste disposal places as municipal waste generation.

136. Georgia, Tajikistan, Turkmenistan and Uzbekistan have not provided data on this indicator.

*Format*

137. All countries providing data on waste generation, except for the Russian Federation, measure their quantity in accordance with the required data format (1000 tons/year).

138. Armenia, Azerbaijan, Bosnia and Herzegovina, Kazakhstan, Montenegro, Serbia, the former Yugoslav Republic of Macedonia and Kyrgyzstan show the data per capita in kg/capita.

139. The Russian Federation measures municipal waste removal to disposal places in 1000 m<sup>3</sup>, which does not meet the requirements of the Indicator Guidelines. At the same time the Russian Federation reported that work is currently underway to convert the data on waste from 1000 m<sup>3</sup> to 1000 tons/year.

140. Kyrgyzstan measures the quantity of wastes in 1000 m<sup>3</sup> until 2009. After that it started using 1000 tons/year as a unit of measurement, and data prior to 2009 have been recalculated.

141. Belarus, the Republic of Moldova, and Ukraine have not calculated the amount of generated wastes per capita in kg/capita.

*Time series*

142. Armenia and Azerbaijan publish data for 2000-2012, the Republic of Moldova for 2001-2013, and the former Yugoslav Republic of Macedonia for 2003-2011.

143. Kazakhstan and the Russian Federation publish data for the years 2005-2012, Kyrgyzstan for 2005-2011, Serbia for 2006-2010, Bosnia and Herzegovina for 2008-2011, and Montenegro provided data for 2009-2012. Ukraine has shown data for the years 1994-2012.

### **III. Online sharing of the eight core indicators**

144. The scope of an environmental indicator goes beyond the mere production of data. An indicator based on sufficient time series data can show key trends, help to describe causes and effects of environmental conditions, allow comparison between countries, and make it possible to assess the efficiency of environmental policies.

145. To make these important tools directly and easily accessible to a broad range of users, including policy makers as well as the local and international public, it is essential that the responsible national authorities create and maintain websites to share their environmental indicators.

## **A Optimal levels of online sharing**

146. For this review of sharing of the core indicators the online availability, content, and the languages of the websites to which links were submitted are analysed. The analysis is made against what is considered an optimal level of on-line presentation and sharing of the indicators, with reference, where relevant, to the principles set for the Shared Environmental Information System (SEIS).

147. Links that were provided by the countries referring to (real-time) databases have not been considered in this analysis. All links that were taken into account for this review are listed in Annex II.

### **1. Online availability**

148. In an optimal case, each of the eight core indicators should be available on the website of an agency, which is given the responsibility to produce the indicator and to manage the data. This corresponds to the first SEIS principle stating that data should be managed as close as possible to a source of its production. Therefore, when countries have reporting obligations due to international treaties, the information should not only be published by the respective secretariats or conventions, but also on the websites of the national agencies responsible for reporting.

149. Moreover, the webpage with an indicator or set of indicators should be easily accessible from the main agency's website, through a menu bar or a dedicated icon.

150. In the analysis an indicator is rated as "easily accessible" if it is directly reachable via a clearly recognizable menu bar, a submenu, or an icon from the main page, and considered "not easily accessible" if the links to indicators on the main page are difficult to find, or access is only possible via a number of clicks. For reasons of clarity, the information should be preferably presented on one page per indicator or thematic area (e.g. water or air pollution) and in an interactive file format that permits easy navigation between indicators or indicator content. The main agency's website should include a search function to facilitate the access to specific indicators requested by users.

### **2. Content**

151. The website with an indicator/set of indicators should be presented in a clear and comprehensive way. It should provide clear and brief information on the content of the indicator presented (at least containing information on data structure and format, as well as on methodology) and a brief interpretation of the data.

152. To allow further access to more detailed background information, links on – at least – more detailed references to methodology, sources of data, and data validation procedures should be provided.

153. Moreover, the website should indicate when the content was changed.

### **3. Languages**

154. The webpage(s) presenting the indicators should be available in local languages to be utilizable for the local public and policy makers and in a second language (English or

Russian) so that it can be used by the international community and public of neighbouring countries.

155. Taken into account for the analysis of the available languages are the websites which contain information on the indicators, not the main pages of the relevant agencies.

## B. Analysis of online sharing of indicators in South-Eastern and Eastern Europe, Caucasus and Central Asia countries

Table 12  
Analysis of online sharing of indicators

Country	Online availability						Content			Languages		
	Number of indicators online on websites of national agencies	Accessibility from main page of national agencies	One web page per indicator or thematic area	Indicators presented in interactive file format	Indicators presented as PDF or Excel files	Search function available	Information on content provided on website	Links with further reading provided	Indication when content was changed	National language	Russian	English
<b>Armenia</b>	8	Easily accessible: 8/8	Yes	8/8	0/8	Yes	Full information provided: 7/8 Incomplete information provided: 1/8	Links provided: 8/8	No	8/8	0/8	8/8
<b>Azerbaijan</b>	8	Easily accessible: 8/8	Yes	0/8	8/8	Yes	Full information provided: 7/8 Incomplete information provided: 1/8	No links provided: 8/8	No	8/8	0/8	8/8
<b>Belarus</b>	8	Easily accessible : 8/8	Yes	3/8	5/8	Yes	Full information provided: 3/8 Incomplete information provided: 5/8	Links provided: 3/8 No links provided: 5/8	No	8/8	8/8	0/8
<b>Bosnia and Herzegovina</b>	7	Easily accessible: 1/7 Not easily accessible: 6/7	Yes	0/7	7/7	Yes	Full information provided: 7/7	Links provided: 4/7 No links provided: 3/7	No	7/7	0/7	6/7

Country	Online availability						Content			Languages		
	Number of indicators online on websites of national agencies	Accessibility from main page of national agencies	One web page per indicator or thematic area	Indicators presented in interactive file format	Indicators presented as PDF or Excel files	Search function available	Information on content provided on website	Links with further reading provided	Indication when content was changed	National language	Russian	English
<b>Georgia</b>	7	Easily accessible: 7/7	Yes	0/7	7/7	Yes	Full information provided: 6/7 Incomplete information provided: 1/7	No links provided: 7/7	No	0/7	0/7	7/7
<b>Kazakhstan</b>	8	Easily accessible: 8/8	Yes	0/8	8/8	Yes	Full information provided: 8/8	Links provided: 8/8	No	8/8	8/8	8/8
<b>Kyrgyzstan</b>	8	Easily accessible: 8/8	No	2/8	5/8	Yes	Full information provided: 6/8 Incomplete information provided: 2/8	No links provided: 6/8 Links Provided: 2/8	No	8/8	8/8	0/8
<b>Montenegro</b>	8	Not easily accessible: 8/8	No	0/8	8/8	Yes	Full information provided: 8/8	No links provided: 8/8	No	8/8	0/7	7/8
<b>Republic of Moldova</b>	8	Easily accessible: 7/8 Not easily accessible: 1/8	Yes	2/8	6/8	Yes	Full information provided: 1/8 Incomplete information provided: 7/8	Links provided: 1/8 No links provided: 7/8	Yes (Government Open Data Portal)	5/8	4/8	3/8

Country	Online availability						Content			Languages		
	Number of indicators online on websites of national agencies	Accessibility from main page of national agencies	One web page per indicator or thematic area	Indicators presented in interactive file format	Indicators presented as PDF or Excel files	Search function available	Information on content provided on website	Links with further reading provided	Indication when content was changed	National language	Russian	English
<b>Russian Federation</b>	8	Easily accessible: 4/8 Not easily accessible: 4/8	No	5/8	3/8	Yes	Full information provided: 3/8 Incomplete information provided: 5/8	Links provided: 8/8	No	8/8	8/8	0/8
<b>Serbia</b>	7	Easily accessible: 7/7	Yes	5/7	2/7	Yes	Full information provided: 5/7 Incomplete information provided: 2/7	Links provided: 4/7 No links provided: 3/7	No	6/7	0/7	2/7
<b>Tajikistan</b>	<i>No links provided</i>											
<b>The former Yugoslav Republic of Macedonia</b>	8	Easily accessible: 8/8	Yes	0/8	8/8	Yes	Full information provided: 8/8	No links provided: 8/8	No	8/8	0/8	8/8
<b>Turkmenistan</b>	<i>No links provided</i>											
<b>Ukraine</b>	3	Easily accessible: 3/3	Yes	0/3	3/3	Yes	Incomplete information provided : 3/3	No links provided : 3/3	No	3/3	3/3	3/3
<b>Uzbekistan</b>	<i>No links provided</i>											

*Note:* As a given country's indicators might be published on diverse websites with different patterns of online availability, content and languages, for each category of analysis it is stated for how many of the indicators published on national websites. For example, if a country publishes 6 indicators and 4 of them are available in English, the respective field states 4/6. For more information on the approach of the assessment and the rating please refer to section 3.1 (Optimal levels of online sharing). The links and the content on the respective pages were assessed in October 2014. It should be noted, that the websites might have been changed since the assessment.

## 1. Online availability

### *Number of online indicators on websites of national agencies*

156. According to the provided information, Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, the former Yugoslav Republic of Macedonia, Montenegro, the Republic of Moldova and the Russian Federation share the information on all eight core indicators on national websites. For the last analysis in May 2014, only three countries (Belarus, the former Yugoslav Republic of Macedonia, and the Russian Federation) submitted links to all eight core indicators.

157. After submitting links to four core indicators in May 2014, the Republic of Moldova submitted links to four additional indicators in October 2014, so that now also data on all eight core indicators is shared. The country has launched a new government data portal, which categorizes datasets in groups (e.g. "Environment") and facilitates the navigation between related datasets.

158. The Russian Federation publishes datasets on eight key indicators on websites of different ministries and departments.

159. Armenia, Azerbaijan, Georgia and Kazakhstan have launched websites called "Joint system of environmental indicators" on which relevant datasets are published.

160. Seven indicators are shared by Serbia. Even though the country also publishes data on "nutrients in freshwater" (C11), this indicator is not considered for the analysis of online sharing as it does not contain information on the required datasets on lakes.

161. Seven indicators in the required format are shared by Georgia (all except I1).

162. After submitting links to four webpages presenting indicators for the analysis in May 2014, Bosnia and Herzegovina now shares seven core indicators online (all except A1).

163. Ukraine did not submit additional links compared to the links for three indicators provided in May 2014.

164. Tajikistan, Turkmenistan and Uzbekistan have not provided information about indicators shared on national websites.

### *Accessibility from main page of national agencies*

165. For Armenia Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Serbia, the former Yugoslav Republic of Macedonia, and Ukraine all shared indicators are easily accessible through the main webpages of the organizations responsible for the indicators' production, mainly through a menu bar entitled "Indicators" or "Environmental indicators".

166. Armenia, Belarus, Georgia, Kazakhstan, the former Yugoslav Republic of Macedonia improved the accessibility of their indicators since May 2014, by listing all available indicators on a webpage, which is directly linked from the main page of the responsible ministry.

167. From the different webpages maintained by the Republic of Moldova, seven indicators are easily accessible, while the publication on indicator D1 is difficult to find. The access to this data could be improved by including it into the overview on "Geography and environment" on the website of the responsible National Bureau of Statistics.

168. In case of Bosnia and Herzegovina only the indicator A2 is easily accessible from the main page of the Federal Hydrometeorological Institute, while the documents covering the six other published indicators cannot be found from the main page of the Agency for

Statistics, with its section on “Agriculture, environment and regional statistics” still incomplete. However, the agency has announced that the webpages will be updated soon.

169. In the Russian Federation it is not difficult to find four out of eight indicators (A1, A3, B3, and D1). At the same time it is difficult, with many clicks necessary, to access the other four core indicators of the Russian Federation (A2, C10, C11, and I1).

170. The eight indicators made available by Montenegro are not easily accessible.

*Presentation of indicators on individual webpages or by thematic area*

171. Azerbaijan, Kazakhstan, the Republic of Moldova, Serbia, and Ukraine share their indicators on individual websites.

172. Armenia publishes all environmental indicators in a separate section of the website of the National Statistical Service of the Republic of Armenia and dedicates an individual webpage to each indicator. Azerbaijan has placed all eight indicators on individual webpages in the section "Baselines Shared Environmental Information System". Belarus presents all its indicators on individual webpages on a webpage named “Baseline indicators of the Joint Environmental Information System”. Georgia publishes individual sheets on the core indicators- on a website of the Ministry of Environment and Natural Resources, entitled "Environmental performance". And for Kazakhstan the datasets are made available on individual sheets on the website of the Committee on Statistics, entitled "Environmental indicators for monitoring and evaluation of the environment".

173. In the Russian Federation the data for these indicators can be found on the pages of the National Report on the State and the Environmental Protection of the Russian Federation, which is also published on the website of Ministry of Natural Resources and Environment. Further indicators are published on the individual websites of other organizations (Roshydromet, Rosstat).

174. The links submitted by Bosnia and Herzegovina for the indicators A3, B3 and I1 lead to a Bulletin on environmental statistics, while the information on the other indicators is presented in individual documents.

175. In the former Yugoslav Republic of Macedonia the indicators are presented in thematic areas (e.g., water, air pollution, waste).

176. Kyrgyzstan and Montenegro presented all their indicators in single documents – reports on the state of the environment, which are published on the national websites of these countries.

*Formats of indicator presentation*

177. Armenia presents all eight indicators in an interactive format.

178. Serbia produces seven indicators. Five of them are interactively accessible and include maps and graphs. Two more indicators (A1 and I1) are presented in a PDF report.

179. Belarus and the Republic of Moldova use an interactive format for three out of eight indicators and two out of eight indicators respectively. Kyrgyzstan uses an interactive format for two out of eight indicators and the Russian Federation for five out of eight indicators. At the same time, the other countries publish all indicators in PDF or Excel format.

*Search function*

180. All websites of the relevant agencies contain a search function.

## 2. Content

### *Information on content and links provided on websites*

181. Montenegro and the former Yugoslav Republic of Macedonia provided nearly complete background information on all indicators on the respective webpages, including information about the data structure and format, as well as the methodology and a brief interpretation of data. In their Indicator-based State of the Environment Report Montenegro publishes the links to indicators of the European Environment Agency (EEA) and the links to detailed indicators description on the website of the national Environmental Protection Agency (EPA), which are not working yet. The former Yugoslav Republic of Macedonia provides no links to additional information.

182. Information on indicators of Armenia are published with information on methodologies applied, which matches with the Indicator Guidelines

183. Bosnia and Herzegovina provided brief background information for indicators A2, A3, B3, and I1, including information on international policy targets and links which mainly lead to international conventions and frameworks. Indicators C10, C11 and D1 are also published with some background information and data are presented in graphs, but no links are provided.

184. Background information is also available on the webpages published by Belarus, which includes evaluation criteria, methods of calculation, and schematic maps of monitoring sites for all eight indicators. At the same time, Belarus provided the information, which is close to fully meeting the requirements, only for three indicators (A2, A3, and C10).

185. The Russian Federation publishes information on sources of data, present data in graphs and charts, and past information on environmental targets set by the country for most indicators.

186. For Georgia and Kazakhstan basic information on the indicators is published in the Excel tables. In the case of Kazakhstan, each figure is accompanied by information on methodology, a brief interpretation (which includes data presentation in charts and graphs, as well as a glossary) and also links to guidelines on sources of information. Georgia does not publish any links on the webpages with information on indicators.

187. Azerbaijan publishes tables without any background information or references.

188. Serbia publishes the information, including maps and graphs for five indicators. Links to detailed descriptions of the indicators by EEA (only in English) are provided for all four indicators on its indicator platform, while there are no links provided for the indicators A1, D1 and I1

189. Kyrgyzstan shares complete background information for six out of eight indicators. There is no complete background information for two indicators (C11 and D1). Kyrgyzstan's data are provided in tables, being part of the published national report on the state of environment. These data also do not contain any additional information and links to further reading.

190. Ukraine publishes only data series without providing background information and links.

191. The Republic of Moldova only publishes background information and links within its report on GHG emissions, not providing any information on content nor links on its other webpages.

*Specification of the time of the last update*

192. On almost none of the websites a clear indication when content was updated can be found. The only exception is the newly created Government “Open Data Portal” by the Republic of Moldova: For each datasets in the Portal it is possible to access a menu bar entitled “Activity stream”, leading to information when a dataset was created and modified.

**3. Languages**

193. Kazakhstan and Ukraine publish the information on indicators on websites in their national language, Russian and English. Armenia, Azerbaijan, and the former Yugoslav Republic of Macedonia publish all their indicators in national languages and in English. Serbia publishes six out of seven indicators in national language and four in English.

194. Of the seven indicators published by Bosnia and Herzegovina, six are available in both national language and English, while indicator A2 is only available in the national language. The indicators published by Georgia are presented in English only. Montenegro publishes all eight indicators its national language, and all but one (C11) are also available in English. Of its eight indicators, the Republic of Moldova publishes only five in the national language, while data on three indicators are only available in Russian. Moreover, three indicators are available in English.

195. Belarus and the Russian Federation presented the data only in Russian, which is the national language. Indicators by Kazakhstan and Kyrgyzstan are available only in Russian, which is the official language, along with the national languages in these countries.

196. The menu of websites of some countries (Belarus, the former Yugoslav Republic of Macedonia, Kazakhstan, Kyrgyzstan, the Russian Federation) have links to switch from the national language to English. However this function does not seem to work fully yet, which makes environmental indicators difficult to access for international users.

**IV. Conclusions**

197. This updated analysis on the production and online sharing of the eight core ECE environmental indicators has highlighted achievements by many of the target countries but also areas in which further improvements are necessary.

198. The present paper is the second analysis of this kind. Different from the analysis that was presented at the Eighth Session of the Joint Task Force in May 2014, for this paper only indicators that are published online were taken into account. The updated analysis confirms the positive picture on progress in the production of the eight core indicators drawn by the last analysis and some progress is noted in the sharing of indicators.

199. The detailed analysis in this paper examined the webpages provided keeping in mind the optimal level of production for each of the eight core indicators with regard to data structure, data format and the availability of time series.

200. With regard to the structure of produced indicators, the majority of the target countries publish all or most required parameters for the core indicators, while only a few countries could not provide some required parameters (i.e. the required sub-indicators and underpinning datasets) for some indicators. Most of these issues would be easily solved by relating parameters to statistical measures such as GDP, country area or population, which are available for each country. However, in a few other cases further work is needed on unifying the methodologies for data production to be able to fully meet the Guidelines. Taking into account the 13 countries that provided data on the eight core indicators, the

requirements of the Guidelines were – on average - fully met in 67.3% of the cases and partially met in 25.0% of the cases<sup>2</sup>.

201. The previous analysis in May 2014 showed gaps for many countries in the provision of data on total phosphorus and nitrates in lakes for the indicator “Nutrients in freshwater” (C11). Additional information provided for this analysis now show more complete data on this indicator with eight countries fully meeting the requirements of the Guidelines.

202. The Joint Task Force decided at its Eighth Session to gradually produce additional parameters for the indicators A1, A2, and C11 and this paper analyses progress in this regard. For the two indicators on air pollution (A1, A2), it was found that all target countries already produce data on a number of additional pollutants. Also for the indicator on “Nutrients in freshwater” (C11), the majority of countries already produce data on phosphorous and nitrates in rivers and groundwater.

203. Concerning data format, the findings have confirmed that the indicators are provided predominately in the units of measurement required by the Indicator Guidelines. However, for a few countries the analysis finds inconsistencies with the requirements for some indicators.

204. The time series produced, which should cover the years 1990, 1995, and 2000-2013, were also analysed. The analysis shows that for majority of cases a sufficiently long time series of data are available. In line with recommendation 6 endorsed at the Eighth Session of the Joint Task Force, a significant number of countries already publish data for 2013 for many indicators. However, in a few cases the analysis reveals that data for recent years shared with the Secretariat of the Joint Task Force in Excel sheets before May 2014 is not yet included online.

205. With regard to the online sharing of indicators, this analysis finds that the number of indicators published online has significantly increased: for the analysis conducted in May 2014 twelve of the target countries provided links for a total of 73 indicators (average: 6.1 indicators per country). For the present analysis, 13 countries provided a total of 96 indicators (average: 7.4 indicators per country). Nine of the target countries produce and share data on all eight core indicators, while for the other countries providing links some gaps are identified.

206. It was found, however, that a number of target countries do not publish data on the indicators “Consumption of ozone-depleting substances” (A3) and “Greenhouse gas emissions” (B3) on national websites, but submitted links to websites of international conventions. When countries have reporting obligations due to international treaties, the reported data will be published by the respective secretariats of conventions, which allows the sub-regional or global presentation of data in a coherent manner. Taking into account the first principle of the Shared Environmental Information System (SEIS) stating that data should be managed as close as possible to its source, we recommend that data should also be published on the websites of the national agencies that produce them.

207. The analysis also found that the majority of webpages presenting indicators are easily accessible from the respective national agency’s main/home webpages. Those countries websites where indicators are hard to find might be the result of work-in-progress for those websites.

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<sup>2</sup> Considering that the 13 countries were reviewed in their performance on eight core indicators we look at 104 cases. Out of these in 70 cases the Guidelines were “fully met” and in 26 cases they were “partially met”.

208. All but a few target countries publish their indicators on individual webpages (one indicator per page) or structured by thematic area.

209. The vast majority of the online indicators are presented in PDF or Excel format, while – so far – only some countries have introduced a more interactive file format. However, some progress has been noted in this field since the last analysis in May 2014, e.g. on websites provided by Armenia, Kyrgyzstan, and the Russian Federation.

210. The analysis of the content of indicator webpages shows that some countries present basic background information on methodology as well as information on policy targets and a brief analysis of the data and others present data without providing the necessary contextual information. A few countries also provide useful links referencing more detailed background information. Moreover, it was found that only a new website launched by the Republic of Moldova contains information on the time of the last update of content.

211. This analytical paper also assessed the languages in which information on indicators is published. It was found that almost all countries present their indicators on the webpages in the national or official language and a second language (Russian or English). For some country websites the option to switch to a second language is not yet working.

212. Our conclusion is that the analysis demonstrates the promising steps taken by many target countries to publish environmental indicators online in an appealing way and to embed it into contextual information. And, therefore, the aim to produce the eight core indicators according to the required structure and format is achieved or nearly achieved for the majority of the target countries analysed. With this good news, the next natural step would be to consider broadening the focus on the production and sharing of more than the current eight core indicators to be prepared for a potential pan-European assessment in 2015/2016. To assist in this effort, a proposal to include additional indicators from the Indicator Guidelines into the core set is to be discussed at the Ninth Session of the Joint Task Force (ECE/CEP-CES/GE.1/2014/7).

## Annex I: United Nations Economic Commission for Europe Core Environmental Indicators

<i>Indicators from the Indicator Guidelines</i>	<i>Sub-indicator</i>	<i>Dataset</i>
1. Emissions of pollutants into the atmospheric air (A1)	1.1. Emissions of sulphur dioxide per capita (1)	(1) Emissions of SO <sub>2</sub>
	1.2. Emissions of sulphur dioxide per square kilometre (2)	
	1.3. Emissions of nitrogen oxides per capita (3)	(2) Emissions of NO <sub>x</sub>
	1.4. Emissions of nitrogen oxides per square kilometre (4)	
2. Ambient air quality in urban areas (A2)	2.1. Annual mean concentration of nitrogen dioxide in the major city (5)	(3) Mean concentration of NO <sub>2</sub>
3. Consumption of ozone-depleting substances (ODS) (A3)	3.1. Aggregated consumption of ODS (6)	(4) Consumption of ODS
4. Greenhouse gas (GHG) emissions (B3)	4.1 Emissions of carbon dioxide per capita (7)	(5) GHG emissions
	4.2. Emissions of carbon dioxide per unit of GDP (8)	
5. BOD5 and concentration of ammonium in rivers (C10)	5.1. BOD 5 concentration in the major rivers (3 sampling points – upstream, downstream, intermediate) (9)	(6) BOD <sub>5</sub> concentration in the rivers
	5.2. Ammonium concentration in the major rivers (3 sampling points – upstream, downstream, intermediate) (10)	(7) Ammonium concentration in the rivers
6. Nutrients in freshwater (C11)	6.1. Nitrates concentration in major water bodies (lakes, reservoirs) (11)	(8) Nitrates concentration in the major water bodies

<i>Indicators from the Indicator Guidelines</i>	<i>Sub-indicator</i>	<i>Dataset</i>
	6.2. Total phosphorus concentration in major water bodies (lakes, reservoirs) (12)	(9) Total phosphorus concentration in the major water bodies
7. Protected areas (D1)	7.1. Share of total protected areas in the country area (13)	(10) Areas under protection in total and broken down by regimes of protection
8. Waste generation (I1)	8.1. Annual generation of waste per capita (14)	(11) Annual waste generation

## Annex II: Overview of links to the national websites, provided by countries

Country	Agency	1. Emissions of pollutants into the atmospheric air (A1)	2. Ambient air quality in urban areas (A2)	3. Consumption of ozone-depleting substances (ODS) (A3)	4. Greenhouse gas (GHG) emissions (B3)	5. BOD 5 and concentration of ammonium in rivers (C10)	6. Nutrients in freshwater (C11)	7. Protected areas (D1)	8. Waste generation (I1)
<b>Armenia</b>	National Statistical Service of the Republic of Armenia	<a href="http://armstatbank.am/">http://armstatbank.am/</a>							
<b>Azerbaijan</b>	The State Statistical Committee of the Republic of Azerbaijan	<a href="http://www.stat.gov.az/source/environment/index.php">www.stat.gov.az/source/environment/index.php</a>							
<b>Belarus</b>	National Statistical Committee of the Republic of Belarus	<a href="http://belstat.gov.by/ofitsialnaya-statistika/otrasli-statistiki/okruzhayuschaya-sreda/sovместnaya-sistema-ekologicheskoi-informatsii2">http://belstat.gov.by/ofitsialnaya-statistika/otrasli-statistiki/okruzhayuschaya-sreda/sovместnaya-sistema-ekologicheskoi-informatsii2</a>							
<b>Bosnia and Herzegovina</b>	Federal Hydrometeorological Institute		<a href="http://www.fhm.zbih.gov.ba/bilten/2013-bilten.pdf">http://www.fhm.zbih.gov.ba/bilten/2013-bilten.pdf</a>						
	Agency for Statistics			<a href="http://www.bhas.ba/tematskibilteni/Okolis%20bos%20-%20konacan%201.pdf">http://www.bhas.ba/tematskibilteni/Okolis%20bos%20-%20konacan%201.pdf</a>	<a href="http://www.bhas.ba/index.php?option=com_content&amp;view=article&amp;id=226&amp;Itemid=0&amp;lang=en">http://www.bhas.ba/index.php?option=com_content&amp;view=article&amp;id=226&amp;Itemid=0&amp;lang=en</a>	<a href="http://www.bhas.ba/index.php?option=com_content&amp;view=article&amp;id=226&amp;Itemid=0&amp;lang=en">http://www.bhas.ba/index.php?option=com_content&amp;view=article&amp;id=226&amp;Itemid=0&amp;lang=en</a>	<a href="http://www.bhas.ba/tematskibilteni/Okolis%20bos%20-%20konacan%201.pdf">http://www.bhas.ba/tematskibilteni/Okolis%20bos%20-%20konacan%201.pdf</a>		
<b>Georgia</b>	Ministry of Environment and Natural Resources Protection	<a href="http://moe.gov.ge/index.php?lang_id=ENG&amp;sec_id=242&amp;info_id=2864">http://moe.gov.ge/index.php?lang_id=ENG&amp;sec_id=242&amp;info_id=2864</a>							

Country	Agency	1. Emissions of pollutants into the atmospheric air (A1)	2. Ambient air quality in urban areas (A2)	3. Consumption of ozone-depleting substances (ODS) (A3)	4. Greenhouse gas (GHG) emissions (B3)	5. BOD 5 and concentration of ammonium in rivers (C10)	6. Nutrients in freshwater (C11)	7. Protected areas (D1)	8. Waste generation (I1)
<b>Kazakhstan</b>	Agency of statistics of the Republic of Kazakhstan	<a href="http://stat.gov.kz/faces/homePage/ecolog?_afriLoop=2472405389346701#%40%3F_adf.ctrl-state%3Dyiuam2jg7_118">http://stat.gov.kz/faces/homePage/ecolog?_afriLoop=2472405389346701#%40%3F_adf.ctrl-state%3Dyiuam2jg7_118</a>							
<b>Kyrgyzstan</b>	State Agency on Environment Protection and Forestry	<a href="http://nature.kg/index.php?option=com_content&amp;view=category&amp;layout=blog&amp;id=33&amp;Itemid=70&amp;lang=ru">http://nature.kg/index.php?option=com_content&amp;view=category&amp;layout=blog&amp;id=33&amp;Itemid=70&amp;lang=ru</a>							
	Kyrgyzhydro met					<a href="http://meteo.kg/environment_water.php">http://meteo.kg/environment_water.php</a>			
<b>Montenegro</b>	Environmental Protection Agency of Montenegro (EPA)	<a href="http://www.epa.org.me/index.php/component/content/article/87-azzs/388-izvjestaj-o-stanju-zivotne-sredine-na-bazi-indikatora">http://www.epa.org.me/index.php/component/content/article/87-azzs/388-izvjestaj-o-stanju-zivotne-sredine-na-bazi-indikatora</a>				<a href="http://www.epa.org.me/index.php/dokumenti/izvjestaji">http://www.epa.org.me/index.php/dokumenti/izvjestaji</a>	<a href="http://www.epa.org.me/index.php/component/content/article/87-azzs/388-izvjestaj-o-stanju-zivotne-sredine-na-bazi-indikatora">http://www.epa.org.me/index.php/component/content/article/87-azzs/388-izvjestaj-o-stanju-zivotne-sredine-na-bazi-indikatora</a>		
	Statistical Office of Montenegro (MONSTAT)								<a href="http://www.monstat.org/eng/page.php?id=512&amp;pageid=64">http://www.monstat.org/eng/page.php?id=512&amp;pageid=64</a>
<b>Republic of Moldova</b>	National Bureau of Statistics of the Republic	<a href="http://statbank.statistica.md/public/Database/EN/01%20GEO/GE">http://statbank.statistica.md/public/Database/EN/01%20GEO/GE</a>						<a href="http://www.statistica.md/public/files/publicatii_electroni">http://www.statistica.md/public/files/publicatii_electroni</a>	<a href="http://statbank.statistica.md/public/Database/EN/01%20GEO/">http://statbank.statistica.md/public/Database/EN/01%20GEO/</a>

Country	Agency	1. Emissions of pollutants into the atmospheric air (A1)	2. Ambient air quality in urban areas (A2)	3. Consumption of ozone-depleting substances (ODS) (A3)	4. Greenhouse gas (GHG) emissions (B3)	5. BOD 5 and concentration of ammonium in rivers (C10)	6. Nutrients in freshwater (C11)	7. Protected areas (D1)	8. Waste generation (I1)
	of Moldova (NBS)	<a href="http://O03/GEO03.asp">O03/GEO03.asp</a>						ce/Mediu/Resurse_naturale_2013.pdf	<a href="http://GEO04/GEO04.asp">GEO04/GEO04.asp</a>
	Climate Change Office (CCO)				<a href="http://www.clima.md/doc.php?l=ro&amp;idc=82&amp;id=3471">http://www.clima.md/doc.php?l=ro&amp;idc=82&amp;id=3471</a>				
	Open government data portal	<a href="http://date.gov.md/ckan/en/dataset/11449-volumul-de-emisii-a-poluantilor-in-aerul-atmosferic-de-la-sursele-stationare">http://date.gov.md/ckan/en/dataset/11449-volumul-de-emisii-a-poluantilor-in-aerul-atmosferic-de-la-sursele-stationare</a>	<a href="http://date.gov.md/ckan/en/dataset/11688-calitatea-aerului-atmosferic-in-localitatile-urbane">http://date.gov.md/ckan/en/dataset/11688-calitatea-aerului-atmosferic-in-localitatile-urbane</a>	<a href="http://date.gov.md/ckan/en/dataset/11693-consumul-de-substante-care-distruge-stratul-de-ozon">http://date.gov.md/ckan/en/dataset/11693-consumul-de-substante-care-distruge-stratul-de-ozon</a>		<a href="http://date.gov.md/ckan/en/dataset/11686-consumul-biochimic-de-oxigen-la-5-zile">http://date.gov.md/ckan/en/dataset/11686-consumul-biochimic-de-oxigen-la-5-zile</a>	<a href="http://date.gov.md/ckan/en/dataset/11684-date-privind-nutrientii-in-ape-dulci">http://date.gov.md/ckan/en/dataset/11684-date-privind-nutrientii-in-ape-dulci</a>		
<b>Russian Federation</b>	Federal State Statistics Service	<a href="http://www.gks.ru/wps/wcm/connect/rosstat/main/rosstat/ru/statistics/environment/#">http://www.gks.ru/wps/wcm/connect/rosstat/main/rosstat/ru/statistics/environment/#</a>							<a href="http://www.gks.ru/wps/wcm/connect/rosstat/main/rosstat/ru/statistics/publications/catalog/doc_1138698314188">http://www.gks.ru/wps/wcm/connect/rosstat/main/rosstat/ru/statistics/publications/catalog/doc_1138698314188</a>
	Ministry of Natural Resources and Environment of the Russian Federation	<a href="http://www.mnr.gov.ru/upload/iblock/cef/gosdoklad%20za%202012%20god.pdf">http://www.mnr.gov.ru/upload/iblock/cef/gosdoklad%20za%202012%20god.pdf</a>							
	Main Geophysical Observatory named after A.I.		<a href="http://www.voeikovmgo.ru/images/stories/publications/ejegodnik_zagr_atm_2011">http://www.voeikovmgo.ru/images/stories/publications/ejegodnik_zagr_atm_2011</a>						

Country	Agency	1. Emissions of pollutants into the atmospheric air (A1)	2. Ambient air quality in urban areas (A2)	3. Consumption of ozone-depleting substances (ODS) (A3)	4. Greenhouse gas (GHG) emissions (B3)	5. BOD 5 and concentration of ammonium in rivers (C10)	6. Nutrients in freshwater (C11)	7. Protected areas (D1)	8. Waste generation (I1)
	Voelikova Federal service for Hydrometeorology and environmental monitoring		<a href="#">color.pdf</a>			<a href="http://www.ghi.aanet.ru/node/10">http://www.ghi.aanet.ru/node/10</a> <a href="http://www.ghi.aanet.ru/node/9">http://www.ghi.aanet.ru/node/9</a>	<a href="http://www.ghi.aanet.ru/node/10">http://www.ghi.aanet.ru/node/10</a> <a href="http://www.ghi.aanet.ru/node/9">http://www.ghi.aanet.ru/node/9</a>		
<b>Serbia</b>	Environmental Protection Agency (SEPA)	<a href="http://www.sepa.gov.rs/index.php?menu=202&amp;iid=203&amp;akcija=ShowXlinked">http://www.sepa.gov.rs/index.php?menu=202&amp;iid=203&amp;akcija=ShowXlinked</a>	<a href="http://indikator.sepa.gov.rs/pretraga/indikatori/allfind/92bce6ebff2a41a2bbce8d97cdd5b73b">http://indikator.sepa.gov.rs/pretraga/indikatori/allfind/92bce6ebff2a41a2bbce8d97cdd5b73b</a>	<a href="http://indikator.sepa.gov.rs/pretrazivanje-indikatora/indikatorilat/allfindu/8bfea7520d994b9f9111d02afa3dbf7b">http://indikator.sepa.gov.rs/pretrazivanje-indikatora/indikatorilat/allfindu/8bfea7520d994b9f9111d02afa3dbf7b</a>	<a href="http://unfccc.int/essential_backgroud/library/items/3599.php?symbol=j&amp;symbol=%20SRB/COM/1%20E#beg">http://unfccc.int/essential_backgroud/library/items/3599.php?symbol=j&amp;symbol=%20SRB/COM/1%20E#beg</a>	<a href="http://indikator.sepa.gov.rs/pretraga/indikatori/allfind/14e3c0ae18d44660982472556c1d3dc8">http://indikator.sepa.gov.rs/pretraga/indikatori/allfind/14e3c0ae18d44660982472556c1d3dc8</a>	<a href="http://indikator.sepa.gov.rs/pretrazivanje-indikatora/indikatorilat/allfind/73898ebbd52b436cbd06517c7892990a">http://indikator.sepa.gov.rs/pretrazivanje-indikatora/indikatorilat/allfind/73898ebbd52b436cbd06517c7892990a</a>		
	Statistical Office of the Republic of Serbia (SORS)								<a href="http://webrzs.stat.gov.rs/WebSite/repository/documents/00/00/61/97/Statistika_otpada.pdf">http://webrzs.stat.gov.rs/WebSite/repository/documents/00/00/61/97/Statistika_otpada.pdf</a>
	Serbian Biodiversity Portal (established by the Convention on Biodiversity)							<a href="http://biodiverzitet.chm.rs/informacioni-indikator-biodiverziteta">http://biodiverzitet.chm.rs/informacioni-indikator-biodiverziteta</a>	
<b>Tajikistan</b>	<i>No links provided</i>								
<b>The former Yugoslav Republic of Macedonia</b>	Ministry of Environment and Physical Planning (MoEPP)	<a href="http://www.moep.gov.mk/PDF/indikatoriEN/CSI%20v%20ozduh%20EN%20-%202012%20.pdf">http://www.moep.gov.mk/PDF/indikatoriEN/CSI%20v%20ozduh%20EN%20-%202012%20.pdf</a>		<a href="http://www.moep.gov.mk/PDF/indikatoriEN/CSI%20klimatski%20-%202012.pdf">http://www.moep.gov.mk/PDF/indikatoriEN/CSI%20klimatski%20-%202012.pdf</a>	<a href="http://www.moep.gov.mk/PDF/indikatoriEN/CSI%20voda%20EN%20-%202012.pdf">http://www.moep.gov.mk/PDF/indikatoriEN/CSI%20voda%20EN%20-%202012.pdf</a>		<a href="http://www.moep.gov.mk/PDF/indikatoriEN/CSI%20biodiverzitet%20EN%20-">http://www.moep.gov.mk/PDF/indikatoriEN/CSI%20biodiverzitet%20EN%20-</a>	<a href="http://www.moep.gov.mk/PDF/indikatoriEN/CSI%20otpad%20EN%20-">http://www.moep.gov.mk/PDF/indikatoriEN/CSI%20otpad%20EN%20-</a>	

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								<a href="#">%202012.pdf</a>	<a href="#">%202012.pdf</a>
<b>Turkmenistan</b>	<i>No links provided</i>								
<b>Ukraine</b>	State Statistic Service of Ukraine (SSC of Ukraine)	<a href="http://www.ukrstat.gov.ua">www.ukrstat.gov.ua</a>			<a href="http://www.ukrstat.gov.ua">www.ukrstat.gov.ua</a>				<a href="http://www.ukrstat.gov.ua">www.ukrstat.gov.ua</a>
	State Environmental Investment Agency of Ukraine				<a href="http://www.seia.gov.ua/seia/doccatalog/document?id=138881">http://www.seia.gov.ua/seia/doccatalog/document?id=138881</a>				<a href="http://www.seia.gov.ua">www.seia.gov.ua</a>
	The Ministry of regional development, building and housing and communal services of Ukraine								<a href="http://minregion.gov.ua/zhkh/Blahoustri-terytoriy/stansferi-povodzhennja-z-pobutovimi-vidhodami-v-ukraini-za-2012-rik/">http://minregion.gov.ua/zhkh/Blahoustri-terytoriy/stansferi-povodzhennja-z-pobutovimi-vidhodami-v-ukraini-za-2012-rik/</a>
<b>Uzbekistan</b>	<i>No links provided</i>								