9. Session of the Joint Task Force on Environmental Indicators
- State and Progress -

Milijana Ćeranić (SORS), Tihomir Popović (SEPA)
A-1
Emissions of pollutants into the atmospheric air
Marija Denić, Nebojša Redžić (SEPA)
Milijana Ćeranić, Ana Vignjević (SORS)
## Production of the eight core indicators

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1 Emissions of pollutants into the atmospheric air</td>
<td>Emissions of sulphur dioxide per GDP, Emissions of sulphur dioxide per capita, Emissions of nitrogen oxides per capita, Emissions of nitrogen oxides per square kilometer</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>A-2 Ambient AQ in urban areas</td>
<td>Annual mean concentration of NO2 in the capital city</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>A-3 Consumption of ODS substances</td>
<td>Aggregated consumption of ODS</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>C-10 BOD 5 and concentration of ammonium in rivers</td>
<td>BOD 5 concentration in the major rivers (3 sampling points – upstream, downstream, intermediate)</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>C-11 Nutrients in freshwater</td>
<td>Nitrates concentration in major water bodies and Total phosphorus concentration in major water bodies (lakes, reservoirs)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>D-1 Protected areas</td>
<td>Share of total protected areas in the country area</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>I-1 Waste generation</td>
<td>Annual generation of municipal waste per capita</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>
A-1

Emissions of pollutants into the atmospheric air

Marija Denić, Nebojša Redžić (SEPA)
Milijana Ćeranić, Ana Vignjević (SORS)
Emissions of pollutants into the atmospheric air

Indicator is available in National report of State of Environment for the period 1990 – 2012.

Indicator is not available on Internet site due to changes of methodology from EMEP 2009 to EMEP 2013 and changes of Tier level for Energy and Agriculture Sectors.

After submission of CLRTAP report for 2015 indicator will be publicly available.
# Table 2a: Parameters for A1- Emissions of pollutants into the atmospheric air

<table>
<thead>
<tr>
<th>Pollutant Type</th>
<th>NMVOCs (Non-methane volatile organic compounds)</th>
<th>NH3 (Ammonia)</th>
<th>CO (Carbon monoxide)</th>
<th>CH (Hydrocarbons)</th>
<th>PM$_{10}$ (Particulate matter)</th>
<th>PM$_{2.5}$ (Particulate matter)</th>
<th>TSP (Total suspended particulates)</th>
<th>POPs (Persistent organic pollutants)</th>
<th>PCBs (Polychlorinated biphenyls)</th>
<th>PCDD/F (polychlorinated dibenzodioxins/dibenzofurans)</th>
<th>PAHs (Polycyclic aromatic hydrocarbons)</th>
<th>Pb (Lead)</th>
<th>Cd (Cadmium)</th>
<th>Hg (Mercury)</th>
<th>Ni (Nickel)</th>
<th>As (Arsenic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status (✓)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
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Emissions of pollutants into the atmospheric air – activity data

• Activity data that are needed for calculation emission of pollutants are collected and prepared by Statistical Office of the Republic of Serbia (SORS)

• Activity data are prepared in accordance with the methodology of EMEP / EEA 2009 UNECE Convention on Transboundary Air Pollution (CLRTAP) for sections Energy, Agriculture, Industrial processes, Waste and Land use change and Forestry

• Activity data for Agriculture are available from statistical data base which is available on SORS web site: http://www.webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=139 and publications: http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=140

• Activity data for Forestry is available from statistical database http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=175, and publication http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=176
Emissions of pollutants into the atmospheric air – activity data

• Activitiy data for module Energy are available from:
  – Publication Energy balances of the Republic of Serbia, which is available on SORS web page: 
  – Bulletin Fuels and raw materials consumption in driving and technological purposes, prepared by Environmental Unit, 
    (http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/23/93/SB-573_Potrosnja_goriva_u_pogonske_i_tehnoloske_svrhe_2012.pdf)
  – Data for indicator Industrial waste is used from regular statistical survey on Waste, which data are available only through publication: Statistical Release 
    (http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/05/89/ZS60_167_eng.pdf ), Ecobulletin 
    http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/23/67/SB_571_EKOBILTEN.pdf  and Statistical Yearbook 
    http://webrzs.stat.gov.rs/WebSite/Public/PublicationView.aspx?pKey=41&pubType=1
Emissions of pollutants into the atmospheric air – activity data

- Activity data for calculation of emission from module Waste (wastewater, industrial waste) are collected from regular statistical surveys of Environment. Due to the reconstruction of statistical database activity data, for now, data are only available from publications:

  - Ecobulletin (http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/23/67/SB_571_EKOBILTEN.pdf);
  - Statistical Releases:
    - a) Industrial water in the Republic of Serbia
      http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/41/85/ZS50_150_eng_16.06.2014.pdf
    - b) Urban wastewater treatment in the Republic of Serbia
      http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/41/61/ZS40_106_eng_lek.pdf
    - c) Industrial waste in the Republic of Serbia
      http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/05/89/ZS60_167_eng.pdf
  - Statistical Yearbook (http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/54/12/11-ENVIRONMENT.pdf)
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Emissions of pollutants into the atmospheric air – activity data

• Activity data for calculation of emission for module Industrial processes are collected from regular statistical surveys from Industry. These data are not published and are not available on SORS web page due to the protection of individual data.

• Activity data for this module is used from complex statistical survey on hazardous chemicals. Through this survey data are collected on consumption of hazardous chemicals, export and import, which data are available on SORS web site: Statistical release [http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/42/51/ZS71_159_eng.pdf], Ecobulletin [http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/23/67/SB571_EKOBILTEN.pdf] and Statistical Yearbook [http://webrzs.stat.gov.rs/WebSite/Public/PublicationView.aspx?pKey=41&pubType=1]

• Data base from Construction is also used and data are available on SORS web site: [http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=121] and in publication: [http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=122]
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Emissions of pollutants into the atmospheric air – activity data

- Data on mobile transportation are taken from Ministry of Interior for road traffic, and other data on mobile and stationary transportation are collected by Transportation, which data are available on website [http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=151](http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=151) and publications [http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=152](http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=152).
B-3 Greenhouse gas (GHG) emissions

Ivana Dukić (SEPA)
Milijana Ćeranić, Ana Vignjević
(SORS)
B-3 Greenhouse gas (GHG) emissions
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Category: Pressures – P
Theme: Air and Climate change
RS ID Code: NLI 1.8
EU code: EEA CSI 010/CLIM 050
Last update: september 2014
Language use: Serbian

**SHORT DESCRIPTION**

The indicator shows the total emissions, the trend and the abyss of direct and indirect emissions of greenhouse gases. Direct emissions of greenhouse gases (CO2, N2O, CH4, SF6, HFC, PFC) are gaseous components of the atmosphere that absorb and retransmit infrared radiation in the atmosphere mature naturally or as a result of human activities. Indirect emissions of greenhouse gases (CO, SO2, NOx and NMVOC) are gaseous constituents of the atmosphere, which are precursors of ozone and sulfate aerosols, and the impact on climate change. Global warming potential is expressed as the impact of each of the gases on global warming.
## B-3 Greenhouse gas (GHG) emissions

### Table with time series

<table>
<thead>
<tr>
<th></th>
<th>unit</th>
<th>1990</th>
<th>1998</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregated emissions</td>
<td>t/year</td>
<td>74138000</td>
<td>56809000</td>
</tr>
<tr>
<td>(CO2 equivalents)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country population</td>
<td>number</td>
<td>7827000</td>
<td>7807000</td>
</tr>
<tr>
<td>GDP in constant prices 2011</td>
<td>$</td>
<td>106,553,706,056</td>
<td>63,245,912,387</td>
</tr>
<tr>
<td>Int.dollars (PPP); source</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worldbank</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggregated GHG emissions per capita</td>
<td>t CO2 eq / capita</td>
<td>9.47</td>
<td>7.28</td>
</tr>
<tr>
<td>Aggregated GHG emissions per unit of GDP</td>
<td>t CO2 eq /1000 Int.dollars</td>
<td>0.70</td>
<td>0.90</td>
</tr>
</tbody>
</table>
B-3 Greenhouse gas (GHG) emissions – activity data

- Activity data that are needed for calculation GHG emission are collected and prepared by Statistical Office of the Republic of Serbia (SORS).
- Activity data for Agriculture are available from statistical data base which is available on SORS web site: http://www.webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=139 and publications: http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=140
B-3 Greenhouse gas (GHG) emissions – activity data

- Activity data for module Energy are available from:
  - Publication Energy balances of the Republic of Serbia, which is available on SORS web page: [http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/22/56/SB-568-Energetski_bilansi,_2012.pdf](http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/22/56/SB-568-Energetski_bilansi,_2012.pdf)
  - Data for indicator Industrial waste is used from regular statistical survey on Waste, which data are available only through publication: Statistical Release ([http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/05/89/ZS60_167_eng.pdf](http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/05/89/ZS60_167_eng.pdf)), Ecobulletin [http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/23/67/SB_571_EKOBILTEN.pdf](http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/23/67/SB_571_EKOBILTEN.pdf) and Statistical Yearbook [http://webrzs.stat.gov.rs/WebSite/Public/PublicationView.aspx?pKey=41&pubType=1](http://webrzs.stat.gov.rs/WebSite/Public/PublicationView.aspx?pKey=41&pubType=1)
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- Activity data for calculation of emission from module Waste (wastewater, industrial waste) are collected from regular statistical surveys of Environment. Due to the reconstruction of statistical database activity data, for now, data are only available from publications:
  - Ecobulletin ([http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/23/67/SB_571_EKOBILTEN.pdf](http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/23/67/SB_571_EKOBILTEN.pdf));
  - Statistical Releases:
    a) Water use and protection against pollution in the Republic of Serbia
       [http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/41/85/ZS50_150_eng_16.06.2014.pdf](http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/41/85/ZS50_150_eng_16.06.2014.pdf)
    b) Urban wastewater treatment in the Republic of Serbia
       [http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/41/61/ZS40_106_eng_lek.pdf](http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/41/61/ZS40_106_eng_lek.pdf)
    c) Industrial waste in the Republic of Serbia
       [http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/05/89/ZS60_167_eng.pdf](http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/05/89/ZS60_167_eng.pdf)
  - Statistical Yearbook ([http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/54/12/11-ENVIRONMENT.pdf](http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/54/12/11-ENVIRONMENT.pdf))
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Waste generation

Nebojša Redžić (SEPA)
Milijana Ćeranić, Dušanka Dostanić, Marko Topuzović (SORS)
Waste generation, Annual generation of municipal waste per capita

Indicator is available in National report of State of Environment for the period 2006 – 2013.

Indicator is not available on Internet site due to changes which are expected during the implementation of the project "Waste flow monitoring in Serbia" performed in SEPA, funded by the Norwegian government.

After completion of the project, this indicator will be publicly available.
### I-1

**Waste generation, Annual generation of municipal waste per capita**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total communal waste generation (mil. t)</td>
<td>1.73</td>
<td>2.07</td>
<td>2.55</td>
<td>2.63</td>
<td>2.65</td>
<td>2.71</td>
<td>2.62</td>
<td>2.41</td>
</tr>
<tr>
<td>Total collected and landfilled waste (mil. t)</td>
<td>1.04</td>
<td>1.24</td>
<td>1.52</td>
<td>1.58</td>
<td>1.89</td>
<td>2.09</td>
<td>1.83</td>
<td>1.92</td>
</tr>
<tr>
<td>Daily generation of municipal waste per capita (kg)</td>
<td>0.62</td>
<td>0.77</td>
<td>0.95</td>
<td>0.98</td>
<td>0.99</td>
<td>1.01</td>
<td>0.99</td>
<td>0.92</td>
</tr>
<tr>
<td>Annual generation of municipal waste per capita (t)</td>
<td>0.23</td>
<td>0.28</td>
<td>0.35</td>
<td>0.36</td>
<td>0.36</td>
<td>0.37</td>
<td>0.36</td>
<td>0.34</td>
</tr>
</tbody>
</table>
I-1 Waste generation
Generation of waste by Source

Indicator prepared by Statistical Office of the Republic of Serbia is available in Statistical Yearbook of the Republic of Serbia:
(http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/54/12/11-ENVIRONMENT.pdf), in Eco-bulletin:
(http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/23/67/SB_571_EKOBILTEN.pdf) and in Statistical release:

Indicator and related sub-indicators for period 2008-2013 will be available on web page www.stat.gov.rs by the end of year.
## I-1 Waste generation

**Generation of Waste by Source**

<table>
<thead>
<tr>
<th>Line</th>
<th>Category</th>
<th>Unit</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agriculture, forestry and fishing (ISIC 01-03)</td>
<td>1000 t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Mining and quarrying (ISIC 05-09)</td>
<td>1000 t</td>
<td>15010</td>
<td>21109</td>
<td>26458</td>
<td>41518</td>
<td>47896</td>
<td>50810</td>
</tr>
<tr>
<td>3</td>
<td>Manufacturing (ISIC 10-33)</td>
<td>1000 t</td>
<td>1683</td>
<td>1332</td>
<td>1135</td>
<td>1127</td>
<td>791</td>
<td>821</td>
</tr>
<tr>
<td>4</td>
<td>Electricity, gas, steam and air conditioning supply (ISIC 35)</td>
<td>1000 t</td>
<td>5700</td>
<td>6209</td>
<td>6019</td>
<td>6356</td>
<td>5744</td>
<td>6199</td>
</tr>
<tr>
<td>5</td>
<td>Construction (ISIC 41-43)</td>
<td>1000 t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>364</td>
<td>328</td>
</tr>
<tr>
<td>6</td>
<td>Other economic activities excluding ISIC 38</td>
<td>1000 t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>238</td>
<td>204</td>
</tr>
<tr>
<td>7</td>
<td>Households</td>
<td>1000 t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Total waste generation</td>
<td>1000 t</td>
<td>22393</td>
<td>28650</td>
<td>33612</td>
<td>49001</td>
<td>55033</td>
<td>B</td>
</tr>
</tbody>
</table>

Partial total only. Figure excludes waste from Agriculture, forestry and fishing (ISIC 01-03), Construction (ISIC 41-43), Other economic activities excluding ISIC 38, and Households.

1 Data are collected from annual survey on waste which is conducted by international standards and recommendations - Regulation 2150/2002/EC.
Thank you for attention!