



Greenhouse Gas Emissions in Serbia

Serbia Numbers at a Glance (2013)

59.02 MtCO₂e*

Total GHG emissions
(0.13% of world total)

World: 45,261 MtCO₂e

7,164,132

Population

World: 7,176,092,192

8.24

tCO₂e per capita

World: 6.31 tCO₂e

US\$ 40,626 Million

GDP**

World: US\$71,059 Billion

1,453

tCO₂e/million US\$ GDP

World: 637 tCO₂e/million US\$ GDP

-7.68 MtCO₂e (-12%)

Change in GHG emissions
(2006 - 2013)

World: +5,874 MtCO₂e
(+15%)

Sources: WRI CAIT 2.0, 2017.

Emissions excluding Land-Use Change and Forestry

*Million metric tons of carbon dioxide equivalent. Global Warming Potentials are from the Intergovernmental Panel on Climate Change Second Assessment Report

**Gross Domestic Product (GDP) in constant 2010 US\$

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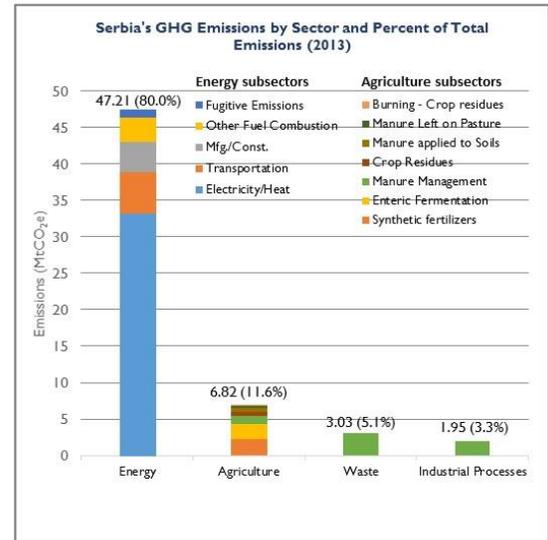
Greenhouse Gas (GHG) Emissions by Sector

According to the World Resources Institute Climate Analysis Indicators Tool (WRI CAIT), Serbia's¹ GHG profile in 2013 was dominated by emissions from energy, which accounted for 80.0% of the country's total emissions,² excluding the land-use change and forestry (LUCF) sector.³ Within the energy sector, electricity and heat generation were responsible for 70% of emissions. Agriculture was the second highest source of emissions (11.6%), with synthetic fertilizer and enteric fermentation from livestock contributing 62% of agriculture emissions.⁴ Waste and industrial processes (IP) contributed 5.1% and 3.3%, respectively.⁵ WRI CAIT shows activities in the LUCF sector to have removed 1.32 MtCO₂e in 2013.⁶

Serbia's First [Biennial Update Report \(BUR\)](#) to the UNFCCC, submitted in 2016, includes a GHG inventory for 1990 and for the 2010-2013 period. Like WRI CAIT, the BUR shows energy as the greatest source of emissions in 2013, followed by agriculture and other land use.⁷ It shows forestry as a large carbon sink absorbing 15.74 MtCO₂e in 2013.

Change in GHG Emissions in Serbia (2006-2013)⁸

According to WRI CAIT, Serbia's GHG emissions, excluding LUCF, decreased by 7.68 MtCO₂e from 2006 to 2013 following the trajectory of energy emissions. The average annual change in total emissions during this period was -1.6%, with average annual change by sector as follows: energy (-1.8%), agriculture (0.2%), waste (-0.4%), and IP (-2.5%). The change in emissions in the two highest emitting sectors is discussed below.



Sources: WRI CAIT 2.0, 2017, FAOSTAT, 2017.
Note: Percent of total emissions exclude LUCF – see Footnote 3.

¹ The Federal Republic of Yugoslavia became a [UN Member State](#) in 2000. In 2003, following the adoption and promulgation of the Constitutional Charter of Serbia and Montenegro, the official name of "Federal Republic of Yugoslavia" was changed to Serbia and Montenegro. As of 2006, the UN membership of Serbia and Montenegro became the Republic of Serbia, following Montenegro's declaration of independence.

² World Resources Institute Climate Analysis Indicators Tool (WRI CAIT 2.0, 2017). Global Warming Potentials (GWPs) are from the Intergovernmental Panel on Climate Change (IPCC) [Second Assessment Report \(SAR\)](#). WRI CAIT draws on data from the International Energy Agency (IEA), primarily, for energy emissions, the US Environmental Protection Agency for IP and waste emissions, and the Food and Agriculture Organization (FAO) for LUCF and agriculture emissions.

³ WRI CAIT data show that the LUCF sector was a substantial carbon sink between 2006 and 2010, absorbing on average 64.82 MtCO₂e during this period. Between 2011 and 2013, WRI CAIT data show that LUCF removals dropped dramatically to an average of 1.29 MtCO₂e during this period. As this sharp reduction in the size of the sink from 2010 to 2011 caused us to question the reliability of the LUCF data, LUCF sector emissions are excluded from the total GHG emission estimates in this factsheet and are not shown in the graphs.

⁴ Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT). Serbia, [Emissions – Agriculture total](#), viewed on April 21, 2017.

⁵ WRI CAIT 2.0, 2017.

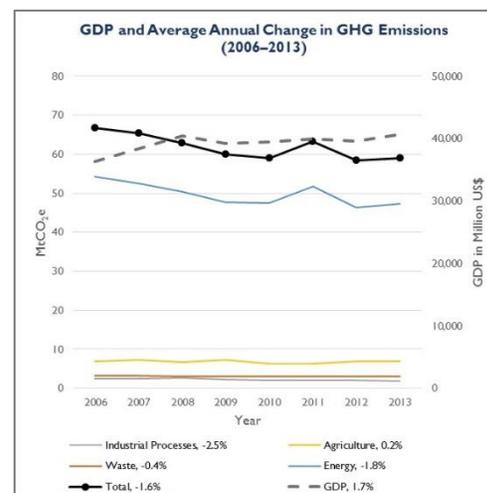
⁶ WRI CAIT 2.0, 2017. WRI notes that its data is useful as reference only and may not coincide with LUCF emissions reported by countries to the UNFCCC (WRI, [CAIT Country Greenhouse Gas Emissions: Sources & Methods](#), 2015).

⁷ Republic of Serbia. Serbia's First [Biennial Update Report \(BUR\)](#) to the UNFCCC, 2016. The BUR uses GWPs from the [IPCC Fourth Assessment Report](#).

⁸ The "Change in GHG Emissions" is for the period 2006-2013 due to Montenegro's declaration of independence from Serbia in 2006, and the lack of WRI CAIT agriculture, LUCF and total GHG emissions data prior to 2006.

Energy: According to WRI CAIT, Serbia's energy sector emissions decreased by 7.14 MtCO₂e from 2006 to 2013 due to decreased emissions from manufacturing and construction, and electricity and heat generation. The BUR notes that since 2010, emissions from the energy sector have decreased due to lower consumption of fuel in manufacturing industries as a result of a fall in production activities and a decline in diesel and gasoline consumption in road transport. International Energy Agency (IEA) data from 2006 to 2013 show that industry fuel consumption decreased 45%, and heat generation decreased 23%.⁹ There are decentralized district heating systems in 57 municipalities with a total nominal installed capacity of 6,700 MW and an average age of over 25 years.¹⁰ In 2001, the Ministry of Mining and Energy initiated the Rehabilitation of District Heating Systems in Serbia project to increase energy efficiency and reduce fuel consumption and GHG emissions.¹¹ In electricity, IEA data from 2006 to 2013 show a 9% increase in generation, with 72% of electricity generated by domestic lignite coal, followed by hydro (27%), and natural gas (1%) in 2013.¹² Serbia prepared its [National Renewable Energy Action Plan](#) in 2013, in line with the European Union Renewable Energy Directive ([EU 2009/28/EC](#)), and set a target of 27% renewable energy (RE) in gross final energy consumption, and a 30% RE share in the electricity mix by 2020. In 2016, Serbia developed its [Energy Sector Development Strategy by 2025 with Projections by 2030](#) with three key priorities for energy sector development: (1) energy security through the provision of reliable, safe, efficient and quality supply of energy and energy products, (2) development of energy market through competitiveness and connection with the EU and neighboring countries, and (3) the transition towards a sustainable energy sector through the establishment of needed financial, technical and institutional conditions.

Agriculture: WRI CAIT data show that agriculture emissions decreased 1% from 2006 to 2013, due to decreased emissions from enteric fermentation and manure management.¹³ The BUR notes that since 2010, emissions from livestock decreased, as a result of the decrease in the population of dairy cows. Food and Agriculture Organization (FAO) data from 2006 to 2013 show a 17% decrease in the number of cattle.¹⁴ In 2014, Serbia developed its (Draft) [Strategy of Agriculture and Rural Development \(2014–2024\)](#), which outlines five strategic development goals including goals for production and producers' income stability, competitiveness and technological improvement with adjustments to products to reflect domestic and international market demand, sustainable resources management and environment protection including GHG mitigation, improvement of the quality of life in rural areas and poverty reduction, and policy and institutional framework improvement for agriculture and the development of rural areas.



Source: WRI CAIT 2.0, 2017

Carbon Intensity: GHG Emissions Relative to Gross Domestic Product (GDP)

According to WRI CAIT, Serbia's GHG emissions, excluding LUCF, decreased 12% from 2006 to 2013, averaging -1.6% annually, while GDP grew 12%, averaging 1.7% annually. As of 2013, Serbia's economy emitted more than twice the amount of GHGs relative to GDP than the world average, indicating potential for improvement.

Climate Change Mitigation Targets and Plans

In its [Intended Nationally Determined Contribution \(INDC\)](#), Serbia pledged to reduce its GHG emissions by 9.8% by 2030 compared to 1990 base year emissions. The INDC notes that the [Serbia Climate Change Strategy and Action Plan](#) to be finalized in 2017 will further define the activities, methods and implementation deadlines. Serbia is seeking support for implementation of several [Nationally Appropriate Mitigation Actions \(NAMAs\)](#) in the energy sector including the "Introduction of 1000 MW of small biomass boilers in Serbia ([NS-35](#))" NAMA, which will reduce an estimated 10.30 MtCO₂e over 25 years; the "Thermal Power Project with Capacity and Efficiency Increase I - TTP Nikola Tesla – Unit B2 ([NS-39](#))" NAMA, which will reduce an estimated 5.3 MtCO₂e over 15 years; and the "Construction of a Super-critical Lignite Power Plant TTP Kostolac B ([NS-40](#))" NAMA, which will reduce an estimated 56 MtCO₂e over 40 years. Serbia signed but has not ratified the Paris Agreement.¹⁵

⁹ IEA. Statistics: Serbia Balances [2006](#) and [2013](#).

¹⁰ Republic of Serbia – Ministry of Mining and Energy. [Energy Sector Development Strategy of the Republic of Serbia for the period by 2025 with projections by 2030](#), 2016.

¹¹ Development Cooperation Germany – Serbia. [Rehabilitation of District Heating Systems in Serbia \(Phases I – IV\)](#), viewed on April 26, 2017.

¹² IEA. Statistics: Serbia Electricity and Heat [2006](#) and [2013](#).

¹³ FAOSTAT, 2017.

¹⁴ FAOSTAT. [Serbia – Live Animals](#), viewed on April 25, 2017.

¹⁵ UNFCCC, [Paris Agreement – Status of Ratification](#), viewed on April 26, 2017.