



Greenhouse Gas Emissions in Bosnia & Herzegovina

Numbers at a Glance (2011)

30 MtCO₂e*

Total GHG emissions
(0.06% of world total)
World: 46,906 MtCO₂e

3,839,322

Population
World: 6,964,618,177

7.78

tCO₂e per capita
World: 6.73 tCO₂e

US\$12,873 Million
GDP**

World: US\$54,034 Billion

2,319

tCO₂e/million US\$
GDP

World: 868 tCO₂e/million
US\$ GDP

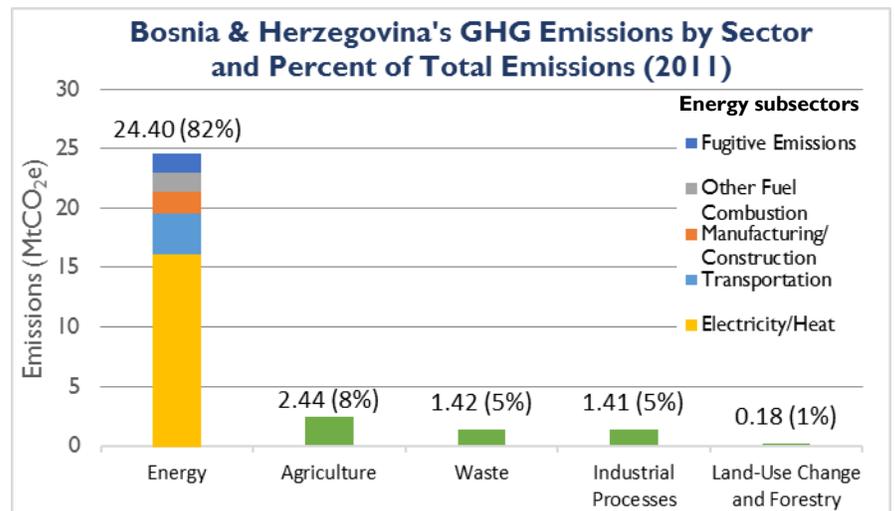
+10 MtCO₂e (+51%)

Change in GHG
emissions (1992–2011)
World: +13,610 MtCO₂e
(+41%)

Source for all Numbers at a Glance values: WRI CAIT 2.0, 2015 Emissions including Land-Use Change and Forestry
*Million metric tons of carbon dioxide equivalent
**Gross Domestic Product (GDP) in constant 2005 US\$

Greenhouse Gas (GHG) Emissions by Sector

Bosnia and Herzegovina's GHG profile is dominated by emissions from energy, which make up 82% of emissions. Energy subsectors consist of production of electricity and heat (54% of total emissions), transportation (11%), manufacturing and construction (5%), and other fuel combustion (5%). Agriculture, land-use change and forestry, and fugitive emissions each account for 6%, and fugitive emissions 5%.¹



Source: WRI CAIT 2.0, 2015
Note: Percentages do not add up to 100% due to rounding

Change in GHG Emissions in Bosnia and Herzegovina (1990-2011)

Emissions have been steadily rising since 2000, as shown in the line graph below. The [Biennial Update Report \(BUR\)](#) to the UNFCCC states that total GHG emissions in 2010 and 2011 were still below 1990 levels at 82% and 91% respectively.² GHG emissions decreased during the 1992-1996 war, with the drivers of decline exacerbated by wartime destruction of infrastructure and industrial damage.³ Emissions from agriculture, land-use change and forestry, and total emissions are not available until 1992, and emissions from other sectors are approximated according to a methodology used to calculate emissions for newly formed countries.⁴ Because of the difficulty in obtaining past emissions data for newly formed countries, there is some discrepancy between data sources.

Primary energy supply in 2012 consisted of coal (66%), oil (23%), hydro (5%), natural gas (3%), and biofuels/waste (3%).⁵ The majority of power generation is from coal, with a substantial amount from hydro, and small contributions from gas and oil. According to the BUR, the share of power generation can vary each year depending on the hydrological circumstances. In 2012, generation was 30% hydro, 68% from fossil fuel-based power plants, and 3% from industrial power plants. In

¹ World Resources Institute Climate Analysis Indicators Tool (WRI CAIT) 2.0, 2015

² First Biennial Update Report of Bosnia and Herzegovina under the United Nations Framework Convention on Climate Change, March 2015. See <http://unfccc.int/resource/docs/natc/bihbur1.pdf>

³ Second National Communication of Bosnia and Herzegovina under the UNFCCC, 2013. See <http://unfccc.int/resource/docs/natc/bihnc2.pdf>. Although the country declared independence from the former Yugoslavia in March 1992, the country's communications to the UNFCCC follow the convention in referencing 1990 emissions as a base year.

⁴ WRI CAIT calculates the share of carbon emissions for the years prior to country formation based on each country's carbon emissions in the five years immediately following its formation (or for the first five years which data are available). See http://cait.wri.org/docs/CAIT2.0_CountryGHG_Methods.pdf

⁵ International Energy Agency, 2015. Energy Balances, viewed October 16, 2015:

<http://www.iea.org/statistics/statisticssearch/report/?year=2012&country=WORLD&product=Balances>

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2013, hydro accounted for 44% and fossil fuel-based generation 56% due to favorable hydrological conditions that helped increase the share of hydro power.

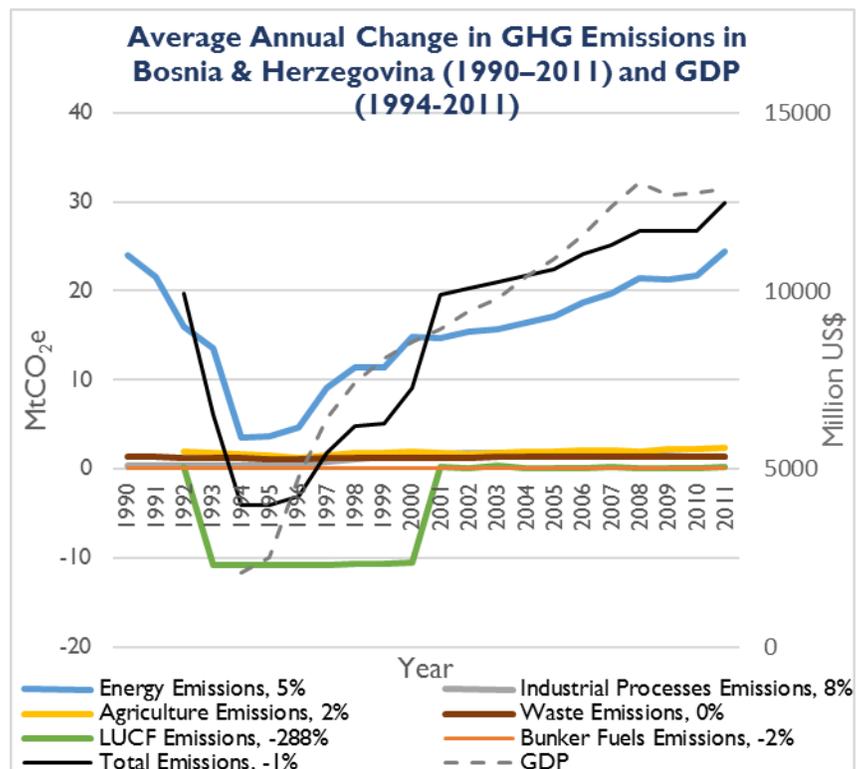
The BUR identifies energy conversion (thermal power plants, heating plants) and industrial fuel combustion as two of the most carbon-intensive energy subsectors. In 2010 and 2011, these subsectors contributed more than 80% of total carbon dioxide emissions from the energy production sector. Non-ferrous metals production consumed 48% of industrial sector power consumption, followed by the production of iron and steel (17%). Emissions from the transport subsector (road transport) rose from 9% of energy emissions in 1990 to 15% in 2001. In 2010, the transport subsector's share remained at 15%, dropping slightly in 2011 to 14% due to increased production in the energy sector that year.

The industrial processes known as significant sources of carbon dioxide are cement, lime, ammonia, iron and steel, ferroalloys, and aluminum, as well as the use of lime and dehydrated soda lime in various industrial processes.

Agriculture emissions during 1990-2012 consisted of enteric fermentation (51%), manure management (16%), manure applied to soils (10%), and other activities.⁶ According to the Second National Communication (SNC), agriculture represents a strategic sector for economic development and is related to a large share of economic activities, especially in rural regions. The share of agriculture, hunting, and related services comprised 6.25% of GDP in 2010 and employed 19% of the population.

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

GDP grew from US\$2.1 billion in 1994 to US\$12.9 billion in 2011. The line graph shows total GHG emissions alongside GDP to show changes over time. However, the lack of a clear trend in the relationship precludes the ability to confidently assess whether the country is becoming more or less carbon intensive. According to the BUR, post-war economic recovery has been much slower than anticipated, with the 2012 share of GDP by sector as follows: 6% agriculture, forestry, and fishery; 22% industry and construction; and 56% services.



Source: WRI CAIT 2.0, 2015

Climate Change Mitigation Targets and Plans

In its Intended Nationally Determined Contribution (INDC), Bosnia and Herzegovina pledges to reduce its projected growth in emissions by 2%, i.e., reduce the projected GHG increase from 20% to 18% relative to 1990 emissions by 2030. With international support, the country will reduce its projected emissions by 3% compared to 1990 levels, by implementing a range of activities:

- Enact legislation to align with the EU Acquis, including strategies, action plan, etc. for all sectors
- Construct co-generation plants fueled by wood chips and wood waste, to reach 70MW of capacity by 2030
- Replace existing thermal power plants with more efficient new plants with higher average efficiency
- Install equipment for power generation using methane from two underground coal mines
- Install mini hydro power plants with capacity of up to 10 MW and total generation capacity of 120 MW by 2030
- Install wind farms to generate 175 MW
- Install photovoltaic modules to generate 4 MW

⁶ Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT), viewed October 26, 2015: <http://faostat3.fao.org/browse/area/80/E>

- Introduce renewable energy sources in existing district heating systems and construct new district heating systems fueled by renewable energy sources
- Reconstruct and modernize district heating grids, boilers and district heating substations
- Systemic energy rehabilitation of existing buildings, focusing on the public sector

The Climate Change Adaptation and Low Emissions Development Strategy for Bosnia and Herzegovina also presents potential objectives to reduce emissions through 2025⁷:

- Improve the efficiency of energy generation in all coal-fired power plants to at least 40% by 2025. Reduce average heating demand of housing from over 200 kWh/m²/annum to 100 kWh/m²/annum by 2025
- Phase out fuel oil and coal for home and district heating and replace with energy efficiency gains, biomass, thermo solar, and geothermal
- Introduce building and individual metering for heat consumption in all district heating systems
- Reduce transport emissions

The National Renewable Energy Action Plan of Bosnia and Herzegovina lists the planned trajectory for installing renewable energy in the country for the year 2020, including 16.2 MW of solar, 694 MW of hydropower, 330 MW of wind power, and 35.7 MW of biomass.⁸ As of 2012, the country had 60 MW of installed renewable electricity capacity out of total installed capacity of 3,964 MW, with 600 MW of technical potential from renewable sources.⁹

⁷ Climate Change Adaptation and Low-Emission Development Strategy for Bosnia and Herzegovina. June 2013.

http://www.ba.undp.org/content/dam/bosnia_and_herzegovina/docs/Research&Publications/Energy%20and%20Environment/CC%20Adoption%20and%20Low-Emission%20Strategy%20BiH/CC%20ENG%20published%20on%20WEB.pdf?download

⁸ National Renewable Energy Action Plan of Bosnia and Herzegovina. March 2016. https://www.energy-community.org/portal/page/portal/ENC_HOME/DOCS/4102377/304770E2BD97398FE053C92FA8C06461.pdf

⁹ United Nations Development Programme. Renewable Energy Snapshot: Bosnia & Herzegovina: <http://www.undp.org/content/dam/rbec/docs/Bosnia%20&%20Herzegovina.pdf>