



Greenhouse Gas Emissions in Belarus

Belarus Numbers at a Glance (2014)

89.25 MtCO₂e*

Total GHG emissions
(0.18% of world total)
World: 48,892 MtCO₂e

9,474,511

Population
World: 7,268,986,176

9.42

tCO₂e per capita
World: 6.73 tCO₂e

US\$ 63,149 Million
GDP**

World: US\$73,479 Billion

1,413

tCO₂e/million US\$ GDP
World: 665 tCO₂e/million US\$ GDP

-37.54 MtCO₂e (-30%)

Change in GHG emissions
(1990-2014)

World: +15,069 MtCO₂e
(+45%)

Sources: WRI CAIT 4.0, 2017.
Emissions including Land-Use Change and Forestry. Global Warming Potentials are from the Intergovernmental Panel on Climate Change Second Assessment Report.

*Million metric tons of carbon dioxide equivalent.

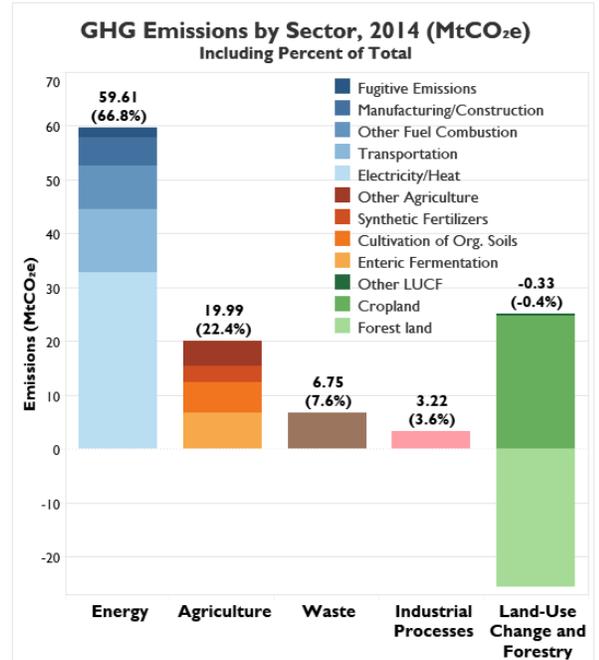
**Gross Domestic Product (GDP) in constant 2010 US\$

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Greenhouse Gas (GHG) Emissions by Sector

According to the World Resources Institute Climate Analysis Indicators Tool (WRI CAIT), the 2014 GHG profile of Belarus was dominated by emissions from the energy sector, which accounted for 66.8% of the country's total emissions.¹ Within the energy sector, 55% of emissions were from electricity and heat production. Agriculture was the second highest GHG source (22.4%), followed by waste and industrial processes (IP), which contributed 7.6%, and 3.6% of total emissions, respectively. Land-use change and forestry (LUCF) was a net carbon sink, with LUCF activities absorbing 0.33 MtCO₂e more than they emitted.

Belarus's [Second Biennial Update Report \(BR2\)](#) to the UNFCCC, submitted in 2015, includes a GHG inventory for the years 1990 to 2012 and shows energy activities to have been the greatest source of emissions in 2012 (61.9%), followed by agriculture (26.2%), waste (7.0%) industrial processes (4.8%), and solvents (0.1%).² The BR2 shows land use, land use-change and forestry (LULUCF) as a carbon sink, with net removals of 25 MtCO₂e in 2012.



Sources: WRI CAIT 4.0, 2017, FAOSTAT, 2018
Note: Emission totals have been rounded

Change in GHG Emissions in Belarus (1990-2014)³

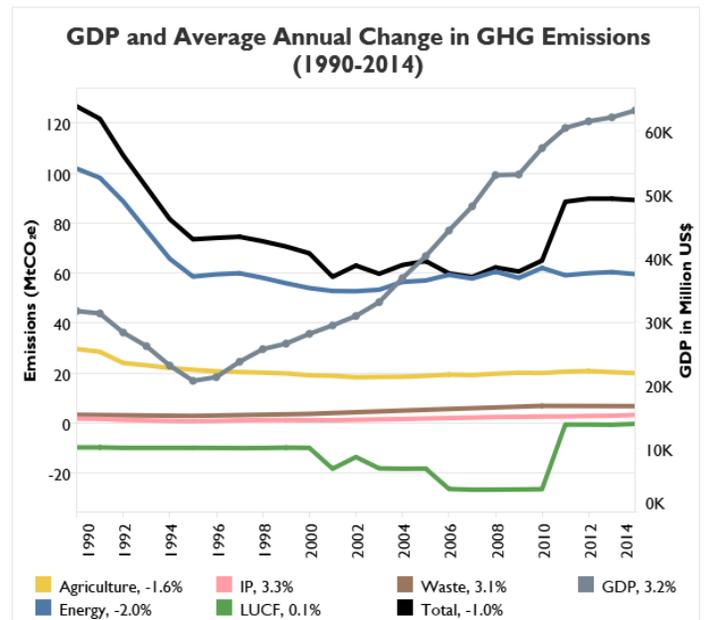
According to WRI CAIT, Belarus' GHG emissions decreased by 30% (37.54 MtCO₂e) from 1990 to 2014, with an average annual change of -1.0%. The change in emissions from Belarus' most significant sources is discussed.

Energy: Energy emissions fluctuated but overall decreased by 41% (42.23 MtCO₂e) from 1990 to 2014. The BR2 attributes this reduction to a decline in production, improved energy conservation, and changes in fuel consumption. From 1990 to 2013, natural gas displaced fuel oil to become the dominant source of energy, while the share of coal to produce heat decreased.⁴ Following the dissolution of the Soviet Union, Belarus was unable to support its highly energy intensive economy and its dependence on imported energy.⁵ Total primary energy consumption decreased 1.54 times from 1990 to 2011,⁶ and over 90% is still met by imported oil and gas. Domestic resources (primarily peat, wood and wood waste) supply only about 8%.⁷ The main goal of Belarus' energy policy is to modernize the economy with energy efficient technologies and provide national security in the energy sector. Belarus has also passed laws on energy savings and on renewable energy to encourage electricity and heat production from renewables (wood, biomass, wind and others), production of biogas, and new energy generation capacity from renewable sources.⁸ The share of renewable energy sources is only approximately 5.6% but has been increasing.⁹ From 1995 to 2005, 1.6% of GDP was spent on energy efficiency improvements, energy conservation, and deployment of renewable energy sources. This investment was as high as 3.4% by 2010 and 5% by 2015.¹⁰

WRI CAIT data show that GHG emissions from transportation are also significant as they were slightly higher than 1990 levels by 2014, having grown steadily since dropping to their lowest point in the early 2000's. The main forms of transport in Belarus are road and rail. From 1995 to 2014, passenger turnover in all types of transport fluctuated but decreased overall by 3.5%, however freight traffic increased by 273%.¹¹ Economic globalization has led to rapid growth of

trade flows between Europe and Asia and Belarus's location has allowed it to become a vital connecting link, helping to drive increased transportation GHG emissions.¹²

Agriculture: Emissions from agriculture decreased by 33% (9.65 MtCO₂e) from 1990 to 2014. Reductions are due to decreases in agricultural production.¹³ As part of the former Soviet Union, Belarus was a major food producer, particularly of meat and dairy products. Following independence, importing livestock feed became expensive and much of the livestock was slaughtered.¹⁴ From 1992 to 2014, FAO data show a decrease in the number of cattle by around 34%, and an 80% decrease in sheep; other livestock populations (pigs and chicken) have also decreased.¹⁵ Among other significant sources of GHGs, emissions from the cultivation of organic soils has remained steady since 1992, whereas emissions from synthetic fertilizer use has increased, fluctuating in recent years but roughly doubling since 1992 levels.¹⁶ Since 1990, the agriculture sector's contribution to GDP has decreased from 23% to only 7%¹⁷ and as of 2014 employs about 9.4% of the total labor force.¹⁸



Source: WRI CAIT 4.0, 2017

LUCF: According to WRI CAIT, LUCF removals decreased by 97% (9.43 MtCO₂e) from 1990 to 2014, meaning that LUCF became a smaller sink. These changes in GHG removals took place while FAO data show forest area to have increased, with 40% of total land area being forest land in 1995, 42% in 2005 and 43% in 2016.¹⁹ However, the rate of forest expansion has fluctuated during this time, increasing from 3.8 thousand ha per year in 1990 to 24.7 thousand ha in 2005, but then decreasing to only 5.61 thousand ha in 2010.²⁰ Since forest land emissions consist of net carbon stock change, it would be the reduced rate of forest expansion that has led to decreased LUCF removals. Belarus's annual reforestation rate is estimated at 0.46% for the period 2005 to 2010, higher than the European average of 0.08%.²¹ Emissions from cropland were the largest source of emissions but WRI CAIT shows they remained unchanged during the entire time-period. Because total emissions from LUCF activities are less than removals, LUCF is a net carbon sink over the entire 1990 to 2014 time frame.

Carbon Intensity: GHG Emissions Relative to Gross Domestic Product

According to WRI CAIT, Belarus's GDP doubled (increased 100%) from 1990 to 2014, while GHG emissions decreased 30%. GDP and GHG emissions initially decreased 35% and 42% respectively from 1990 to 1995 due to economic recession and the subsequent decrease in fuel production and consumption.²² Since 1996, GDP growth has resumed, increasing 206%, while GHG emissions have grown by only 21%. As of 2014, Belarus emits twice as many GHGs relative to GDP than the world average and emissions per capita are also higher than the world average.

Climate Change Mitigation Targets and Plans

In its [Intended Nationally Determined Contribution \(INDC\)](#), Belarus pledged unconditionally to reduce GHG emissions by at least 28% from 1990 levels, excluding emissions and removals from LULUCF. Belarus will reconsider including the potential of LULUCF in its commitments by 2020, after clarification of methodological questions regarding the estimation of emissions and removals of GHGs in this sector. The INDC also identifies actions to increase carbon removals that are in line with existing national policies and Belarus' other international commitments, which include increasing forest area from 39.4% in 2013 to 41% in 2030; ensure the rehabilitation of at least 10,000 ha of damaged bogs, increasing the area of restored peatlands to at least 60,000 ha by 2030; and ensure ecological balance and sustainable use of protected areas covering at least 8.8% of the territory.²³ Upon acceptance of the [Paris agreement](#) in September 2016, the INDC became Belarus's first NDC.

¹ World Resources Institute Climate Analysis Indicators Tool (WRI CAIT 4.0, 2017). Global Warming Potentials (GWPs) are the 100-year GWPs from the Intergovernmental Panel on Climate Change (IPCC) [Second Assessment Report \(SAR\)](#).

² Republic of Belarus. [The Second Biennial Report of the Republic of Belarus \(BR2\)](#). The BR2 uses GWPs from the Second IPCC Assessment Report (SAR) for the calculation of GHGs in CO₂e. The BR2 inventory shows total GHG and sector emissions in GgCO₂e for 1990-2012.

³ Belarus gained independence from the Soviet Union in 1991. Its emissions for 1990-1991 are approximated according to the methodology WRI uses to calculate emissions for newly formed countries (WRI. [CAIT Country Greenhouse Gas Emissions: Sources & Methods](#), 2015).

⁴ Republic of Belarus. [Sixth National Communication \(NC6\)](#) to the UNFCCC, 2015 (available in Russian). The [International Energy Agency World Energy Balances](#) also shows the share of coal and oil products to have decreased from 1990 to 2014, and the share of natural gas, biofuels and waste, electricity, to have increased.

⁵ World Bank. [Belarus – Energy Sector Review](#), 1995

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- ⁶ Energy Research to Innovation. [Belarus Energy Sector: Analytical Review](#), 2014. Primary energy demand is the consumption of energy before it has been transformed to other forms of energy. For example, coal is primary energy whereas electricity generated from coal is not. See [Energy Information Administration](#).
- ⁷ Ibid.
- ⁸ Republic of Belarus, BR2, 2015.
- ⁹ Republic of Belarus, NC6, 2015.
- ¹⁰ Republic of Belarus. [Intended Nationally Determined Contribution \(INDC\)](#), 2016. The share of domestic funds in these investments was at least 30%.
- ¹¹ National Statistical Committee of the Republic of Belarus. [Passenger and freight turnover by types of transport](#), viewed on January 8, 2019. Turnover is calculated by multiplying the quantity (passengers or load) by the distance travelled.
- ¹² United Nations Economic Commission for Europe, 2013. [Review of the Transport and Logistics System of the Republic of Belarus](#).
- ¹³ Republic of Belarus, INDC, 2016.
- ¹⁴ Republic of Belarus, NC6, 2015.
- ¹⁵ Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT). Belarus, [Emissions – Land use total](#) and [Emissions – Agriculture total](#), viewed on November 19, 2018. No data are available for Belarus for 1990-1991.
- ¹⁶ WRI CAIT 4.0, 2017.
- ¹⁷ The World Bank DataBank. [Agriculture, forestry, and fishing, value added \(% of GDP\) in Belarus](#), viewed on November 19, 2018.
- ¹⁸ National Statistical Committee of the Republic of Belarus. [Employment by kind of economic activity in 2010-2017](#), viewed on January 8, 2019.
- ¹⁹ FAOSTAT. [Statistical Yearbook – Belarus](#), viewed January 8, 2019. The decrease in removals can be difficult to understand, given that an increase in forest land area seems to suggest that removals would increase. Since forest land emissions consist of net carbon stock change, it is the reduced rate of forest expansion that has led to decreased removals. Forest expansion increased from 3.8 thousand hectares per year in 1990 to 24.7 thousand ha in 2005 but then decreased significantly to 5.61 thousand ha in 2010.
- ²⁰ FAO. [Global Forest Resources Assessment 2015: Belarus Country Report](#). Table 1b, 2014.
- ²¹ FAO. [Global Forest Resources Assessment](#), Global Tables, 2010.
- ²² Republic of Belarus, INDC, 2016.
- ²³ Ibid.