



# Greenhouse Gas Emissions in Uzbekistan

## Uzbekistan Numbers at a Glance (2014)

**214.70 MtCO<sub>2</sub>e\***

Total GHG emissions  
(0.44% of world total)  
World: 48,892 MtCO<sub>2</sub>e

**30,757,700**

Population  
World: 7,268,986,176

**6.98**

tCO<sub>2</sub>e per capita  
World: 6.73 tCO<sub>2</sub>e

**US\$ 53,657 Million**  
GDP\*\*

World: US\$73,479 Billion

**4,001**

tCO<sub>2</sub>e/million US\$ GDP  
World: 665 tCO<sub>2</sub>e/million US\$ GDP

**+25.02 MtCO<sub>2</sub>e (+13%)**  
Change in GHG emissions  
(1990-2014)

World: +15,069 MtCO<sub>2</sub>e  
(+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.

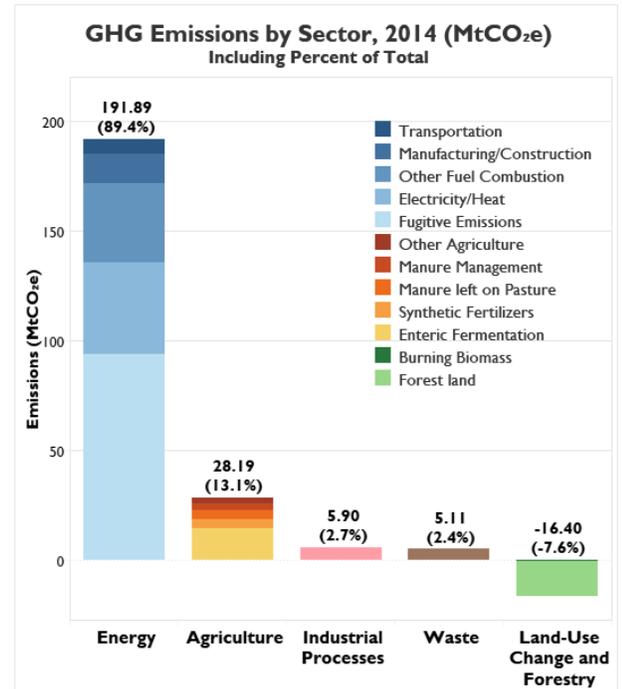
\*\*Gross Domestic Product (GDP) in constant 2010 US\$

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## Greenhouse Gas (GHG) Emissions by Sector

According to the World Resources Institute Climate Analysis Indicators Tool (WRI CAIT), Uzbekistan's 2014 GHG profile was dominated by emissions from the energy sector, which accounted for 89.4% of total GHG emissions. Nearly half (49%) of GHGs from energy were due to fugitive emissions, which occur from leaks or other unintended or irregular releases of gases. Agriculture was a distant second GHG source contributing 13.1% of total emissions, followed by industrial processes (IP) and waste, which contributed 2.7%, and 2.4% respectively. Uzbekistan's land-use change and forestry (LUCF) sector was a net carbon sink, absorbing 16.40 MtCO<sub>2</sub>e more than was emitted from that sector in 2014.<sup>1</sup>

Uzbekistan's [Third National Communication \(TNC\)](#) to the UNFCCC, submitted in 2017, includes a [GHG inventory](#) for the years 1990-2012 and shows energy activities to have been the greatest source of emissions in 2012 (81.9%), followed by agriculture (10.5%), industrial processes (3.8%), and waste (3.8%).<sup>2</sup> The TNC found LUCF to have been a carbon sink in 2012, removing 2.9 MtCO<sub>2</sub>e more than were emitted.



Note: Emission totals have been rounded

## Change in GHG Emissions in Uzbekistan (1990-2014)<sup>3</sup>

According to WRI CAIT, Uzbekistan's GHG emissions increased by 13% (25.05 MtCO<sub>2</sub>e) from 1990 to 2014, with an average annual change of 0.6%. The change in GHG emissions from Uzbekistan's most significant sources is discussed below.

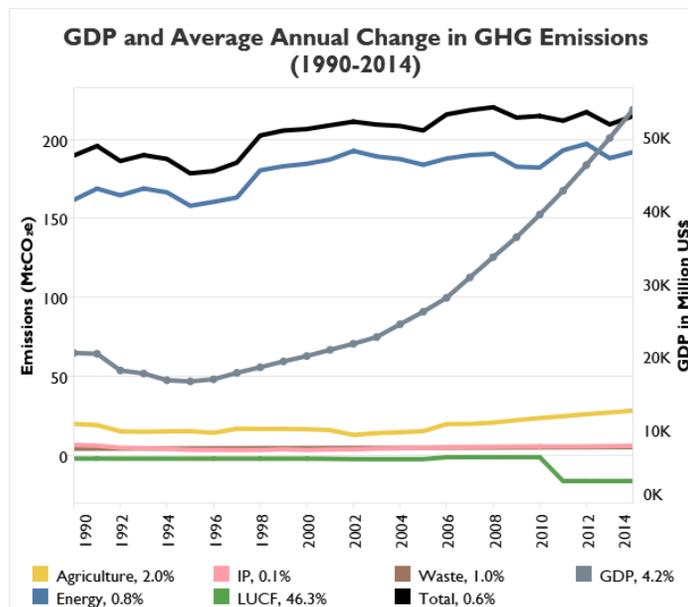
**Energy:** The heart of the Uzbek economy is its fuel and energy complex, consisting of electricity generation (including hydropower), thermal power, oil and gas, and coal production.<sup>4</sup> Since independence, the sector has grown quickly due to foreign and domestic investment. Uzbekistan is now the world's eighth-largest producer of natural gas.<sup>5</sup> Since 1990-1991, the annual hydrocarbon materials extraction volume has increased by more than 60%, while the length of the main gas pipelines has increased by 1.4 times, and the length of gas distribution grids has tripled.<sup>6</sup>

WRI CAIT data show energy emissions increased by 19% (30.31 MtCO<sub>2</sub>e) from 1990 to 2014, due to growth in fugitive emissions. Uzbekistan's TNC identifies fugitives from oil and gas and fuel combustion as the most significant sources of GHGs from energy activities. From 1990 to 2014, fugitive emissions more than doubled, increasing by 103% (47.58 MtCO<sub>2</sub>e). Growing residential and commercial demand for natural gas and an increase in exports has led to increased transportation of natural gas, and emissions have increased in spite of significant investment in the sector. Meanwhile, emissions from other significant sources – other fuel combustion and production of electricity and heat – decreased by 42% (25.99 MtCO<sub>2</sub>e) and 12% (5.65 MtCO<sub>2</sub>e) respectively.<sup>7</sup> This reduction may be explained by Uzbekistan's transition to cleaner fuels. The shares of oil and coal in total primary energy supply decreased by 15% and 4% respectively, while the share of natural gas increased by 18%.<sup>8</sup> Approximately 90% of

electricity is generated by 10 large thermal electric power stations, using mainly natural gas (93%), with a small share of electric energy from hydropower.<sup>9</sup>

Uzbekistan's energy policy and powerful energy sector enabled it to achieve energy independence and 100% electrification by the mid-1990s.<sup>10</sup> As of 2003, Uzbekistan has been pursuing a new goal to improve energy efficiency and introduce renewables into the energy mix. This goal includes modernizing systems to transport and process natural gas, and associated petroleum gas flaring.<sup>11</sup> The TNC notes that transmission and distribution efficiency is one of the government's main priorities to reduce fugitive emissions. Uzbekistan is also hosting a [Clean Development Mechanism \(CDM\)](#) project to reduce gas leakage at compressor stations.

**Agriculture:** GHG emissions from agriculture increased by 42% (8.41 MtCO<sub>2e</sub>) from 1990 to 2014, mainly due to growth in emissions from enteric fermentation from livestock. From 1992 to 2014, FAO data show an increase in the number of cattle, goats, and sheep by around 107%, 245%, and 58%, respectively.<sup>12</sup> From 2000 to 2014, agricultural production doubled, yet the sector's contribution to GDP decreased from 30% to 17%. Agriculture nonetheless remains a leading sector of the economy, employing 27.2% of the total workforce.<sup>13</sup>



Source: WRI CAIT 4.0, 2017

## Carbon Intensity: GHG Emissions Relative to Gross Domestic Product

Uzbekistan's GDP increased 162% from 1990 to 2014, while GHG emissions increased only 13%. Although GDP decreased 19% from 1990 to 1995 due to the transition to independence in 1991, by 1996 the country was able to achieve moderate economic growth.<sup>14</sup> Since 1996, GDP growth has resumed, increasing 218%, while GHG emissions increased 19%. Although GDP grew faster than GHG emissions, in 2014, Uzbekistan emitted six times more GHGs relative to GDP than the world average, indicating room for improvement.

## Climate Change Mitigation Targets and Plans

In its [Intended Nationally Determined Contribution \(INDC\)](#), Uzbekistan established a carbon intensity target, pledging to decrease emissions of GHGs per unit of GDP by 10% by 2030 from the 2010 levels. Achieving this target ensures development of the economy along with curbing GHG emissions growth. The planning process for strengthening measures and actions to achieve this target include: political measures; implementation of measures aimed at improvement of energy efficiency; development of scientific research, education and training; and development of system for inventory, reporting and control over GHG emissions.<sup>15</sup> Upon ratification of the [Paris agreement](#) in November 2018, the INDC became Uzbekistan's first NDC.

<sup>1</sup> 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 \(SAR\)](#).

<sup>2</sup> Republic of Uzbekistan. Uzbekistan's [Third National Communication \(TNC\)](#) to the UNFCCC, 2016. The TNC uses GWPs consistent with Revised IPCC 1996 Guidelines for the calculation of GHGs in CO<sub>2e</sub>. The TNC inventory shows total GHG and sector emissions in MtCO<sub>2e</sub> for 1990-2012.

<sup>3</sup> Uzbekistan gained independence in 1991 and became a [UN member state](#) in 1992. National total emissions are approximated for 1990-1991 according to the methodology WRI uses to calculate emissions for newly formed countries (WRI. [CAIT Country Greenhouse Gas Emissions: Sources & Methods](#), 2015).

<sup>4</sup> Republic of Uzbekistan, TNC, 2016.

<sup>5</sup> Global Legal Insights. [Energy 2018: Uzbekistan](#), viewed on October 22, 2018.

<sup>6</sup> Republic of Uzbekistan, TNC, 2016.

<sup>7</sup> Emissions from other fuel combustion include emissions from stationary and mobile sources other than from energy industries, manufacturing and construction, and transport (i.e., commercial/institutional, residential, or agricultural/forestry/fishing/fish farm sources. It also includes biomass combustion.

<sup>8</sup> International Energy Agency (IEA), 2018. World Energy Balances. [Total Primary Energy Supply \(TPES\) by source](#). TPES is the total amount of energy harvested directly from natural resources at a country's disposal.

<sup>9</sup> Republic of Uzbekistan's TNC, 2016.

<sup>10</sup> United Nations Development Program (UNDP), 2007. [The Outlook for the Development of Renewable Energy in Uzbekistan](#).

<sup>11</sup> Republic of Uzbekistan's TNC, 2016.

<sup>12</sup> Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT). Uzbekistan, [Emissions – Land use total](#) and [Emissions – Agriculture total](#), viewed on August 19, 2018. There are no data for Uzbekistan for 1990-1991.

<sup>13</sup> Republic of Uzbekistan's TNC, 2016.

<sup>14</sup> Asian Development Bank (ADB), 2017. Uzbekistan: Central Asian Crossroads. From: [Together We Deliver: 50 Stories of ADB's Partnership in Asia and the Pacific](#).

<sup>15</sup> Republic of Uzbekistan, 2017. [Intended Nationally Determined Contribution \(INDC\)](#).