



Greenhouse Gas Emissions in Angola

Angola Numbers at a Glance (2014)

252.09 MtCO₂e*

Total GHG emissions
(0.52% of world total)

World: 48,892 MtCO₂e

26,920,466

Population

World: 7,268,986,176

9.36

tCO₂e per capita

World: 6.73 tCO₂e

US \$100,886 Million

GDP**

World: US\$73,479 Billion

2,499

tCO₂e/million US\$ GDP

World: 665 tCO₂e/million US\$ GDP

91.78 MtCO₂e (+57%)

Change in GHG emissions
(1990–2014)

World: +15,069 MtCO₂e
(+45%)

Sources: WRI CAIT 2.0, 2018.

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.

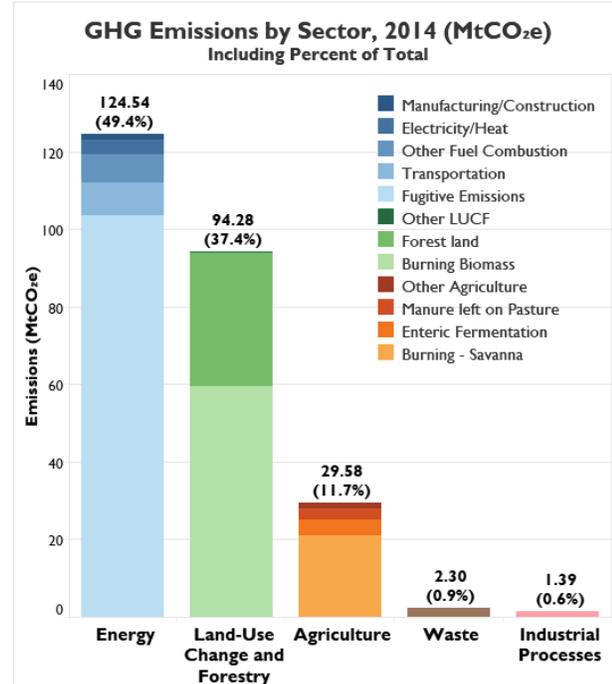
**Gross Domestic Product (GDP) in constant 2010 US\$

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Greenhouse Gas (GHG) Emissions by Sector

According to the World Resources Institute Climate Analysis Indicators Tool (WRI CAIT), Angola's greenhouse gas (GHG) emissions in 2014 were primarily from the energy sector (49.4%), land-use change and forestry (LUCF) (37.4%), and agriculture (11.7%). Waste and industrial processes (IP) contributed 0.9% and 0.6% of total emissions, respectively. Within the energy sector, fugitive emissions¹ contributed over 80% of the sector's emissions.²

Angola's [Initial National Communication](#) (INC), submitted to the UNFCCC in 2012, includes a GHG inventory that also shows energy to have been the largest source of GHG emissions in 2005 (61%), followed by agriculture (37%), waste and industrial processes (each 1%). LUCF emissions were not reported due to difficulties obtaining accurate information.³



Source: WRI CAIT 4.0, 2017, FAOSTAT, 2018

Change in GHG Emissions in Angola (1990–2014)

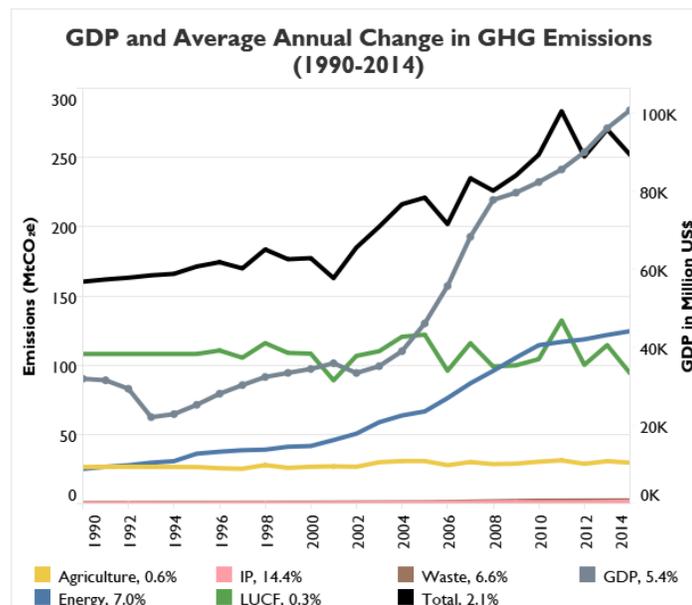
According to WRI CAIT, Angola's GHG emissions increased by 91.78 MtCO₂e (57%) between 1990 and 2014. The average annual change in total emissions was 2.1% (See the line graph below). The change in emissions in selected sectors is discussed below.

Energy: Angola's energy emissions nearly quadrupled, increasing 99.45 MtCO₂e (396%) from 1990 to 2014, with fugitive emissions driving most of this increase (84%). Emissions from transportation, other fuel combustion, and generation of electricity and heat all grew substantially, but from a low 1990 baseline.⁴ As an oil-rich country and the second largest producer in Africa, much of Angola's economy depends on the production and export of oil resources.⁵ In 2014, oil exports accounted for 23.8% of gross domestic product (GDP).⁶ The United Nations Environment Programme (UNEP) has identified opportunities to reduce inefficiencies in oil processing that result in GHG emissions, such as reductions in oil and gas processing flaring due to leaks in pressurized equipment. Efforts to capture and use natural gas, including the world's largest Clean Development Mechanism project, are underway.⁷

As of 2012, national access to electricity was 37%. Outside of the national grid, which is divided into three separate systems, localities are electrified using isolated systems or do not have access to electricity. With 73% of Angola's electricity in 2015 from hydropower, an installed hydropower capacity of 790 MW and a much higher assessed potential, hydro is the most viable renewable energy option.⁸ To meet forecasted energy demand of 7.2 GW in 2025, Angola plans to increase its electrification rate to 60% through grid improvement and expansion, large hydropower installations, use of natural gas, and other renewable energy projects.⁹

LUCF: According to WRI CAIT, LUCF emissions decreased by 13.8 MtCO₂e from 1990 to 2014, due to lower emissions from burning biomass in 2014. Emissions from burning biomass have fluctuated over time and do not show a sustained decreasing trend.¹⁰ About 80% of Angola's population utilizes forest biomass as firewood or charcoal to meet daily needs, such as heating water, cooking, and home lighting.¹¹ UN Food and Agriculture Organization (FAO) data show that the volume of woodfuel removals has increased every year from 1990 to 2011, from 2.34 million cubic meters (m³) in 1990 to 4.10 million m³ in 2011.¹² The INC notes that consumption of biomass is considered an important factor in deforestation, and identifies more efficient domestic technologies for cooking as having potential to mitigate GHG emissions and avoid deforestation. The INC cites an annual deforestation rate of 0.2% for natural forests, and 0.25% for forested plantations.¹³ In 2011, the forestry sector comprised 0.1% of GDP.¹⁴

Agriculture: WRI CAIT data show that agricultural emissions increased 3.1 MtCO₂e (12%) from 1990 to 2014. Most of the increase can be attributed to enteric fermentation by livestock and manure left on pasture.¹⁵ Changes in emissions from burning crop residues, use of synthetic fertilizers, and rice cultivation grew dramatically, but from very low levels in 1990 and together represent a relatively small share of emissions as of 2014.¹⁶ About two-thirds of the population relies on subsistence farming. As of 2015, agriculture accounted for 12% of Angola's GDP.¹⁷



Source: WRI CAIT 4.0, 2017

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

According to WRI CAIT, Angola's GHG emissions increased 57% from 1990 to 2014, averaging 2.1% annually, while GDP grew 215%, averaging 5.4% annually. Although GDP grew faster than GHG emissions, in 2014, Angola's emissions relative to GDP were over three times the world average, and per capita emissions exceeded the world average.

Climate Change Mitigation Targets and Plans

In its [Intended Nationally Determined Contribution \(INDC\)](#), Angola commits to unconditionally reduce its GHG emissions by up to 35% relative to its 2030 business-as-usual scenario, primarily by implementing mitigation action plans in four key sectors: 1) promote renewable energy, 2) stabilize emissions in agricultural production, 3) reduce emissions from industrial processes, and 4) increase carbon sequestration in the forestry sector to 5 million tons of CO₂e annually by 2030. The INDC also notes that the 2030 target could be strengthened to reduce emissions by an additional 15% through a conditional mitigation scenario.¹⁸ Angola has signed but not ratified the Paris agreement.¹⁹

¹ Fugitive emissions are the intentional or unintentional release of GHGs that may occur during the extraction, processing and delivery of fossil fuels to the point of final use. See [2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2, Chapter 4](#).

² World Resources Institute Climate Analysis Indicators Tool (WRI CAIT 2.0, 2017). GHG emissions are expressed in units of carbon dioxide equivalent. Global Warming Potentials (GWPs) are the 100-year GWPs from the Intergovernmental Panel on Climate Change (IPCC) [Second Assessment Report \(SAR\)](#).

³ United Nations Framework Convention on Climate Change (UNFCCC). Angola National Communication 1, 2012. For LUCF, the INC reported "no change" and states, "Due to difficulties to obtain concrete information, emissions derived from deforestation, soil and abandonment of deforested areas were not calculated."

⁴ WRI CAIT 2.0, 2017. Transportation, other fuel combustion, and generation of electricity and heat were responsible for 17% of the increase in energy emissions. To estimate other fuel combustion, CAIT sums methane and nitrous oxide emissions from Biomass Combustion and Stationary and Mobile Sources, and carbon dioxide from Other Sectors, into a single yearly estimate. See CAIT Country Greenhouse Gas Emissions: Sources & Methods (June 2015).

⁵ United Nations Environment Programme Risoe Centre (UNEP-Risoe). [Emissions Reduction Profile: Angola](#), 2013.

⁶ The World Bank. [Angola Overview](#), viewed on September 14, 2018. Oil revenues plummeted to 8.2% of GDP in 2016 but have rebounded slightly.

⁷ UNEP-Risoe, 2013.

⁸ United Nations Environment Programme. [Energy Profile: Angola](#), 2017.

⁹ Angola Energy 2025 – [Angola Power Sector Long Term Vision](#).

¹⁰ Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT). Angola, [Emissions – Land use total](#), viewed on August 19, 2018.

¹¹ UNEP-Risoe, 2013.

¹² FAO. Global Forest Resources Assessment 2015 – Desk reference, 2015. Table 25. Woodfuel Removals.

¹³ FAO, [Global Forest Resources Assessment 2010](#), Global Tables also show Angola's forested area decreased by 0.21% annually from 1990 to 2010. See Table 3.

¹⁴ FAO. [Contribution of the Forestry Sector to National Economies, 1990-2011](#), 2014.

¹⁵ FAOSTAT. Angola, [Emissions – Agriculture total](#), viewed on August 19, 2018.

¹⁶ Ibid.

¹⁷ United States Department of Agriculture Foreign Agricultural Service. [Angola Agricultural Economic Fact Sheet](#), 2016.

¹⁸ Republic of Angola. [Intended Nationally Determined Contribution](#), 2015.

¹⁹ Climate Analytics. Paris Agreement Ratification Tracker, viewed on September 21, 2018.