Greenhouse Gas Emissions in Guinea

Guinea Numbers at a Glance (2014)

30.18 $MtCO_2e$*
Total GHG emissions (0.06% of world total)
World: 48,892 $MtCO_2e$

11,805,509
Population
World: 7,268,986,176

2.56
tCO_2e per capita
World: 6.73 tCO_2e

US $5,254 Million
GDP**
World: US$73,479 Billion

5,744
tCO_2e/million US$ GDP
World: 665 tCO_2e/million US$ GDP

+8.60 $MtCO_2e$ (+40%)
Change in GHG emissions (1990–2014)
World: +15,069 $MtCO_2e$ (+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.

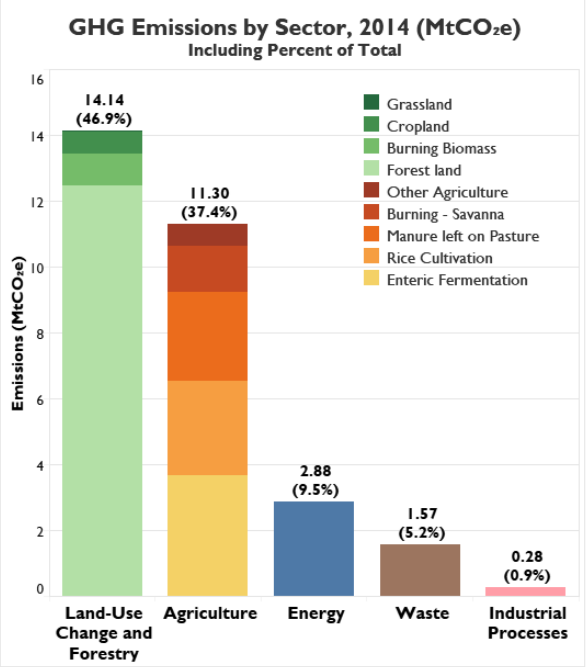
*Million metric tons of carbon dioxide equivalent.

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

Greenhouse Gas (GHG) Emissions by Sector

According to the World Resources Institute Climate Analysis Indicators Tool (WRI CAIT), Guinea's GHG emissions in 2014 were primarily from land-use change and forestry (LUCF) activities, which accounted for 46.9% of the country's total emissions.[1] Within LUCF, 88% of emissions were from forest land.[2] Agriculture was the second highest source of emissions (37.4%), of which 32% were due to enteric fermentation from livestock followed by rice cultivation (25%) and manure left on pasture (24%). Energy, waste, and industrial processes (IP) contributed 9.5%, 5.2%, and 0.9% of total emissions, respectively.

Guinea's Second National Communication (SNC) to the UNFCCC, submitted in 2018, includes a GHG inventory for 2000 which shows that the agriculture sector accounted for almost half (48%) of Guinea's GHG emissions that year, followed by LUCF (39%), and energy (13%).[3]



Sources: WRI CAIT 4.0, 2018, FAOSTAT, 2018
Note: Totals and percentages may not sum due to rounding

Change in GHG Emissions in Guinea (1990–2014)

According to WRI CAIT, Guinea's GHG emissions increased 40% (8.6 $MtCO_2e$) between 1990 and 2014. The average annual change in total emissions was 1.4% (see the line graph below).[4] The change in emissions from Guinea's most significant GHG sources is discussed below.

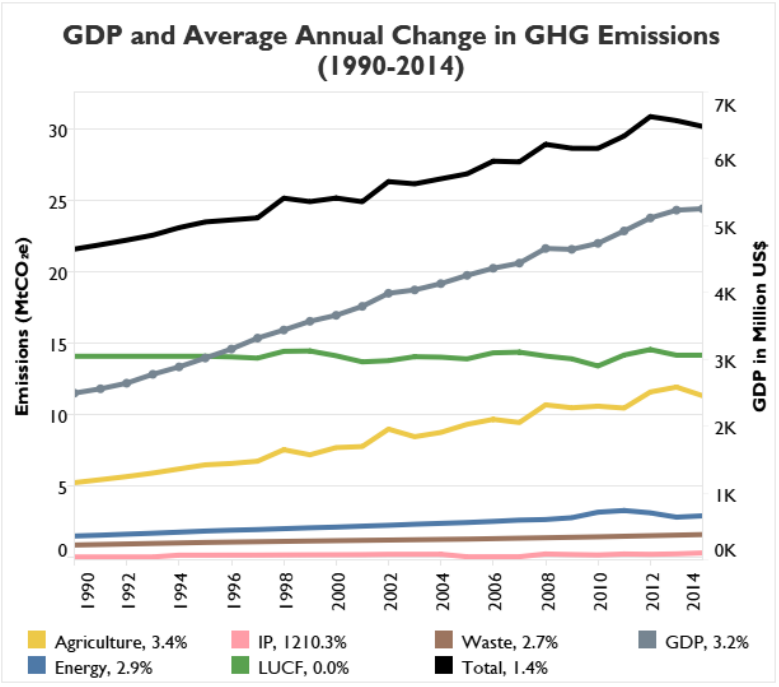
LUCF: LUCF emissions increased by 1% from 1990 to 2014. Emissions from forest land, cropland, and grassland remained steady during this period, while emissions from burning biomass fluctuated. In 2014, forest land contributed 88% of LUCF emissions, followed by burning biomass (7%), and cropland (5%). From 1990 to 2010, Food and Agriculture Organization (FAO) data show a 10% decline in total forest area from approximately 7.3 million hectares (ha) in 1990 to 6.5 million ha in 2010, leaving 27% of the total land area as forest land in 2010. Guinea's annual deforestation rate is estimated at 0.54% for the period 2005 to 2010, higher than the Western and Central Africa average of 0.46%.[5] Deforestation in Guinea is driven by agricultural expansion, population growth, fuel wood harvesting, slash-and burn agricultural practices, uncontrolled logging, mining, and other human activities. Significant population growth from heavy migration from the north and an influx of refugees from Sierra Leone, Liberia, and Côte d'Ivoire is a major cause of forest area reduction.[6] Harvesting wood for fuel and charcoal production are also important drivers of national deforestation, as 77% and 3% of domestic energy consumption relies on these energy sources, respectively.[7] Changes in mangrove cover, which increased from 2000 to 2013 following a decline since 1975, also affect potential to sequester GHGs.[8]

Agriculture: GHG emissions from agriculture increased by 117% from 1990 to 2014. Much of the increase was due to enteric fermentation, followed by rice cultivation, and manure left on pasture. During the same period, the number of cattle nearly tripled (297%).[9]

Agricultural production consists mainly of cereals (rice, maize, fonio, millet, and sorghum), tubers, legumes, and vegetable crops. Rice represents the largest share of agricultural production and accounted for 36.1% of national consumption in 2010.[10]

According to the FAO's Country Programming Framework for Guinea, agriculture is the main sector of activity for nearly 80% of the Guinean population. Crop production is the main source of income for 57% of rural people, while 30% of rural people derive their income from livestock. The agricultural sector contributes less than 20% of GDP and has declined steadily in recent years but accounts for 11% of exports and 17% of the country's imports.[11]

Energy: Guinea's energy emissions nearly doubled (96%), increasing by 1.41 $MtCO_2e$ from 1990 to 2014. The SNC notes that 77% of energy consumption is from wood, 18% from petroleum products, 3% from charcoal, and 2% from hydroelectric power generation. The rate of access to channeled energy is only 7%, one of the lowest in the sub-region, and nearly 70% of the population lacks access to electricity.[12] Guinea envisages increasing access to electricity to 100% by 2030, as well as increasing the share of renewables, access to clean cooking technologies and fuels, and improved energy efficiency.[13]



Source: WRI CAIT 4.0, 2018

Carbon Intensity: GHG Emissions Relative to Gross Domestic Product

According to WRI CAIT, Guinea's GHG emissions increased 40% between 1990 and 2014, averaging 1.4% annually, while GDP grew 111%, averaging 3.2% annually. Although GDP grew faster than GHG emissions, in 2014, Guinea's emissions relative to GDP were almost nine times the world average. Per capita emissions were less than half the world average.

Climate Change Mitigation Targets and Plans

In its Intended Nationally Determined Contribution (INDC), Guinea pledged to undertake GHG mitigation actions, conditional upon receipt of international support. The mitigation actions are to: produce 30% of its energy (excluding wood-energy) from renewable energy sources; support the dissemination of technologies and practices that are energy-efficient, or use alternatives to wood-energy and charcoal; improve the energy performance of the Guinean economy; make the exploration of mineral resources climate-compatible; and manage forests sustainably. Implementation of these actions would result in reducing GHG emissions by approximately 13% compared to the 'business as usual' scenario by 2030, not counting its storage capacity through LUCF.[14] Upon ratification of the Paris agreement in September 2016, the INDC became Guinea's first NDC.

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[1] World Resources Institute Climate Analysis Indicators Tool (WRI CAIT 4.0, 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).
[2] Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT). Guinea, Emissions – Land use total and Emissions – Agriculture total, viewed on August 19, 2018.
[3] Republic of Guinea. Second National Communication to the United Nations Convention on Climate Change (SNC), 2018 (available in French).
[4] The average annual change in emissions from IP is high (1210%) due to very high percentage increases that result from slight variations in small quantities that happen twice during the 1990-2014 time frame.
[5] FAO. Global Forest Resources Assessment, Global Tables, 2010.
[6] United States Geological Survey (USGS). Land Use, Land Cover, and Trends in Guinea, viewed on November 1, 2018.
[7] Republic of Guinea. SNC, 2018.
[8] USGS. Mangrove Changes. Deforestation of mangroves is concerning also because of the vital role they play in stabilizing the shoreline and providing a nursery area for wildlife.
[9] FAOSTAT, 2018.
[10] Republic of Guinea. SNC, 2018.
[11] FAO. Country Programming Framework: Guinea. 2013-2017
[12] Republic of Guinea. SNC, 2018. The SNC does not explain what is meant by channeled energy (l'énergie canalisée) or the geographical areas that comprise the sub-region.
[13] Sustainable Energy for All (SE4ALL). Evaluation and Analysis of Gaps in Relation to the Objectives of SE4ALL: Guinea, 2014 (available in French).
[14] Republic of Guinea. Intended Nationally Determined Contributions, 2015. There is potential for confusion about the emission levels against which the 13% reduction would be measured. The INDC summary describes the estimated level of mitigation as -13% greenhouse gas (GHG) emissions in 2030 as compared to 1994 levels from the Initial National Communication, excluding LUCF. However, under the Equity and Ambition section, the INDC says that implementing the mitigation measures would mean a deviation of around -13% from the 'business as usual' scenario by 2030, not counting its storage capacity from LUCF. From the overall context, it appears that the intended reduction would be against 2030 emission levels.