Greenhouse Gas Emissions in Guatemala

Guatemala Numbers at a Glance (2011)

40 MtCO₂e*
Total GHG emissions
(0.08% of world total)
World: 46,906 MtCO₂e

14,706,578
Population
World: 6,964,618,177

2.71
tCO₂e per capita
World: 6.73 tCO₂e

US$33,912 Million
GDP**
World: US$54,034 Billion

1,174
tCO₂e/million US$ GDP
World: 868 tCO₂e/million US$ GDP

+11 MtCO₂e (+38%)
Change in GHG emissions (1990–2011)
World: +12,969 MtCO₂e (+38%)

*Source: 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$*

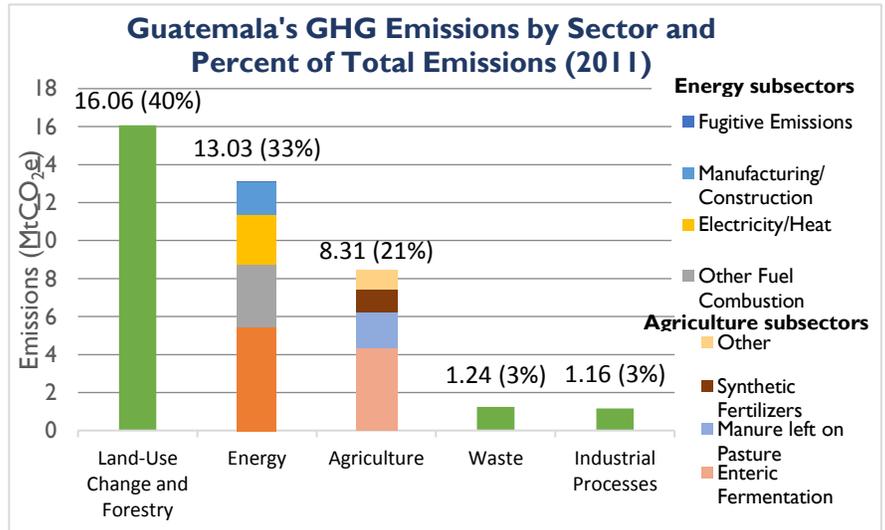## Greenhouse Gas (GHG) Emissions by Sector

Guatemala's GHG profile is shown for the most recent year available. The land-use change and forestry (LUCF) sector is the leading source of emissions, followed by the energy and agriculture sectors, respectively.

Guatemala's GHG Emissions by Sector and Percent of Total Emissions (2011)

Sources: WRI CAIT 2.0, 2015; FAOSTAT, 2015

Change in GHG Emissions in Guatemala (1990-2011)

Guatemala's emissions grew 38% from 1990-2011.[1] As illustrated on the graph on the next page, the average annual change of total emissions during this time was 2%, with sector-specific average annual change as follows: LUCF (0%), energy (5%), agriculture (3%), waste (2%), and industrial processes (2%).

LUCF: Guatemala faces high rates of deforestation. Its forests declined from 4,748,000 hectares in 1990 to 3,657,000 hectares in 2010,[2] and the country had 34% forest cover as of 2011.[3] Slash and burn agriculture accounts for 79% of deforestation, livestock 10%, and commercial agriculture 0.5%.[4] According to the World Bank, farm activities and cattle ranching account for 89% of land-use change in Guatemala. In the northern Petén region whose subtropical moist forest constitutes over half of Guatemala's forest and where nearly two-thirds of deforestation occurs,[5] the principal drivers are conversion to cattle ranching, large-scale agriculture to produce oil palm, human settlement, and forest fires. Large-scale open cast mining also contributes to deforestation. Over half of the region is now protected as the Maya Biosphere Reserve, the largest protected area in Mesoamerica. In the central region of Guatemala, deforestation of coniferous forests occurs for subsistence agriculture and harvesting of firewood.[6]

[1] World Resources Institute Climate Analysis Indicators Tool (WRI CAIT) 2.0, 2015
[2] Food and Agriculture Organization, 2010. Global Forest Resources Assessment 2010, Table 3: Trends in extent of forest 1990-2010
[3] Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT), viewed October 28, 2015: http://faostat3.fao.org/browse/area/89/E
[4] Ministry of Environment and Natural Resources, 2001. Initial National Communication of Guatemala to the United Nations Framework Convention on Climate Change
[5] World Bank, December 2009. Guatemala Country Note on Climate Change Aspects in Agriculture
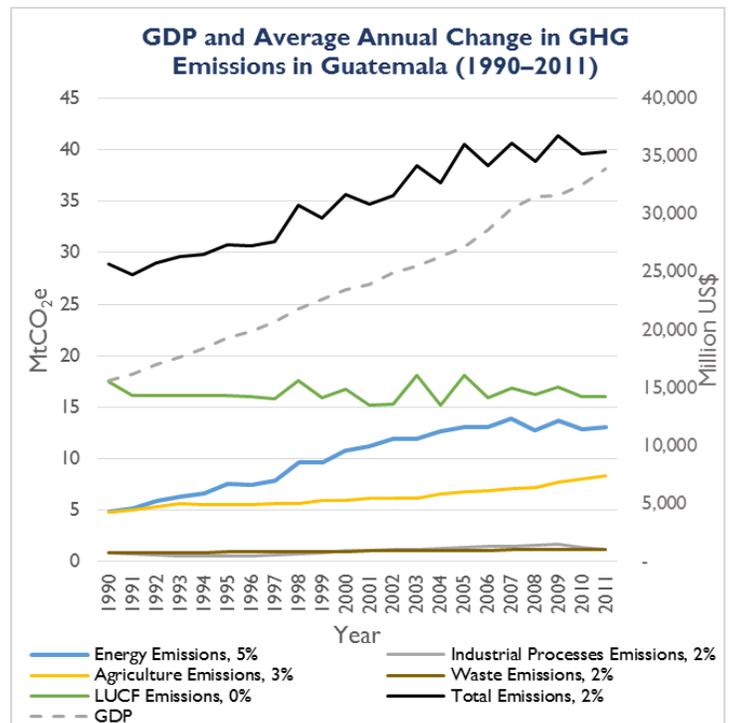[6] The REDD Desk, viewed October 27, 2015: http://theredddesk.org/countries/guatemala

Energy: National energy consumption in 2012 consisted of wood (57%), petroleum products (34%), and electricity (10%).[7] Wood is mainly used for cooking by poor households in rural, non-electrified areas. Petroleum products are mainly used by the industrial and transportation sectors for heat generation. According to Guatemala's Energy Policy, nearly two-thirds of electricity is generated by renewable resources, with half of all electricity produced by hydropower. Bunker fuels[8] and coal are the two largest sources of fossil-fuel based power generation, responsible for 24% and 10% of total power generation respectively in 2012.[9] According to WRI CAIT data, emissions from bunker fuels are less than emissions from other sectors but grew at an average annual rate of 3% from 1990-2011. The country's Energy Policy sets a number of targets, such as achieving a secure supply of electricity and fuels at competitive prices, including by: diversifying the energy mix to include 80% share of renewables by 2027 and exploring and utilizing Guatemala's underperforming oil reserves; expanding electrification to 95% of the country; and evaluating natural gas reserves. It also aims to achieve 25% energy savings in industry and commercial sectors, reducing industry's use of firewood by 15%, increasing the surface of "energy forest plantations" by 10%, and reducing use of firewood through efficient stoves and substituting wood with other energy sources in 25% of households.

Agriculture: According to the World Bank, around 43% of Guatemala's land was used for agriculture in 2005, with 30% for pasture and 13% for cultivation. Livestock is responsible for the great majority of agriculture sector GHG emissions. Land degradation stands at 33%, very close to the Latin American average of 35%. Feed the Future recognizes Guatemala as a leader in non-traditional agriculture exports in Central America. Production of snow peas, green beans, baby/mini-vegetables, and fruits have grown exponentially over the past decade, benefitting smallholder farmers.[10]

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

Guatemala's GDP grew from US$15.7 billion in 1990 to US$33.9 billion in 2011 according to WRI CAIT. GDP over this period increased more quickly than GHG emissions, suggesting that carbon intensity of the economy in 2011 had decreased relative to 1990.

GDP and Average Annual Change in GHG Emissions in Guatemala (1990–2011)

Energy Emissions, 5%
Agriculture Emissions, 3%
LUCF Emissions, 0%
GDP
Industrial Processes Emissions, 2%
Waste Emissions, 2%
Total Emissions, 2%

Sources: WRI CAIT 2.0, 2015

Intended Nationally Determined Contribution (INDC)

In its INDC, Guatemala pledges to achieve an unconditional reduction in total GHG emissions of 11.2% by 2030, such that its emissions in 2030 will be 47.81 MtCO$_2$e instead of the projected 53.58 MtCO$_2$e. With new and additional technical and financial support, Guatemala will achieve up to 22.6% reductions, capping its 2030 emissions at 41.66 MtCO$_2$e. The INDC identifies the following sectors of the economy that are most in need of support: forestry, agriculture, and transportation, in particular improvement of urban mobility using efficient mass transportation.

In specifying how it will undertake mitigation measures, the INDC references relevant laws and programs, including the National Development Plan 2032, National Policy on Climate Change, and Framework Law on Climate Change as well as energy, forestry, agriculture, and waste sector policies and programs.

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[7] Republic of Guatemala, 2013. Energy Policy 2013-2027.
[8] The term "bunker fuels" refer to fuels used for international aviation and maritime transport. In Guatemala, it is a distillate or residual fuel that is used to generate electricity.
[9] Republic of Guatemala, 2013. Energy Policy 2013-2027.
[10] USAID Feed the Future. Guatemala Country Profile. See http://www.feedthefuture.gov/country/guatemala.

November 2015