Greenhouse Gas Emissions in Malawi

Malawi Numbers at a Glance (2011)

10.85 $MtCO_2e$*
Total GHG emissions (0.02% of world total)
World: 46,906 $MtCO_2e$

15,457,531
Population
World: 6,964,618,177

0.70
tCO_2e per capita
World: 6.73 tCO_2e

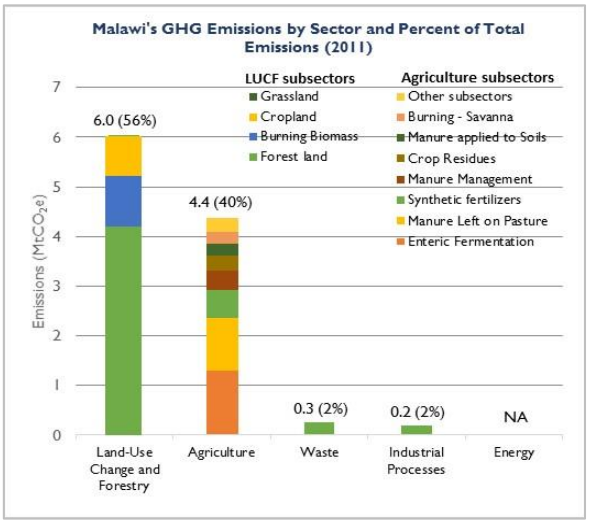
US$4,043 Million
GDP**
World: US$54,034 Billion

2,684
tCO_2e/million US$ GDP
World: 868 tCO_2e/million US$ GDP

+1 $MtCO_2e$ (+14%)
Change in GHG emissions (1990–2011)
World: +12,969 $MtCO_2e$ (+38%)

Sources: WRI CAIT 2.0, 2016. Emissions including Land-Use Change and Forestry; energy sector emissions are not available and are excluded.
*Million metric tons of carbon dioxide equivalent
**Gross Domestic Product (GDP) in constant 2005 US$

Greenhouse Gas (GHG) Emissions by Sector



Sources: WRI CAIT 2.0, 2016, FAOSTAT, 2016

According to the World Resources Institute Climate Analysis Indicators Tool (WRI CAIT), Malawi's 2011 GHG profile was dominated by emissions from the land-use change and forestry (LUCF) sector, which accounted for 56% of the country's total emissions.[1] Within the LUCF sector, emissions from forest land contributed 70% of the sector emissions.[2]

Agriculture was the second most significant emitting sector (40%) for which data are available, with enteric fermentation and manure left on pasture contributing 50% of agriculture emissions.[3] Waste and industrial processes (IP) each contributed 2%. WRI CAIT has almost no energy data for Malawi since its main data source, the International Energy Agency, does not provide energy data for Malawi. Hence, energy emissions data have been excluded from the estimates used in this fact sheet. Malawi's Second National Communication to the UNFCCC (SNC), which includes a GHG inventory for 1995-2000, indicates that energy emissions during that time accounted for 3% of national emissions, well behind LUCF and agriculture but still higher than waste and IP.[4]

Change in GHG Emissions in Malawi (1990-2011)

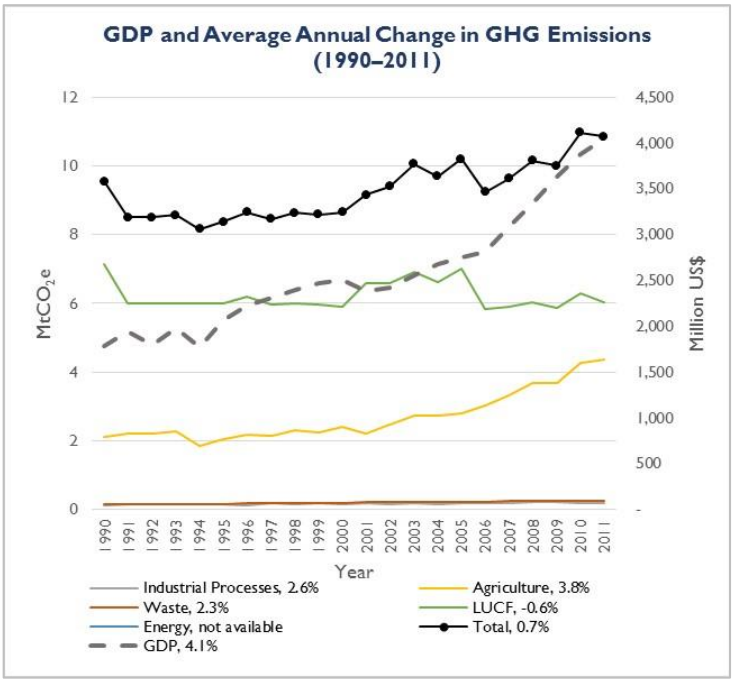
According to WRI CAIT, Malawi's GHG emissions increased by 1 $MtCO_2e$ from 1990 to 2011. The average annual change in total emissions during this period was 0.7%, with sector-specific average annual changes as follows: LUCF (-0.6%), agriculture (3.8%), waste (2.3%), and IP (2.6%). The change in emissions in selected sectors is discussed below.

LUCF: According to WRI CAIT, LUCF emissions decreased 15% between 1990 and 2011, driven primarily by changes in forest land.[5] However, forest goods and services are the second largest contributor to rural livelihoods in Malawi and forest resources face pressure from deforestation and forest degradation. Malawi's SNC attributes the major causes of deforestation and environmental degradation to agricultural expansion, increased wood fuel demands, forest fires, high population growth, and infrastructure development. With nearly all rural households having only one hectare (ha) of land for farming, smallholder farmers migrate

[1] World Resources Institute Climate Analysis Indicators Tool (WRI CAIT 2.0, 2016). Global Warming Potentials (GWPs) are from the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report (SAR). Total GHG emissions in the bar and line charts are the sum of data available in WRI CAIT for LUCF, agriculture, waste, and IP in 2011, which total 10.8 $MtCO_2e$.
[2] Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT). Emissions – Land use total, viewed on November 22, 2016.
[3] WRI CAIT 2.0, 2016 and FAOSTAT, Emissions – Agriculture total, viewed on November 22, 2016.
[4] Republic of Malawi, Malawi's Second National Communication (SNC) to the UNFCCC, 2011. The GHG inventory uses different GWPs. Developing countries are not required to combine emissions in units of carbon dioxide equivalents, however, if doing so, it is good practice to consistently use the same GWPs. For national communications, developing countries can use GWPs from the IPCC Second or Fourth Assessment Reports.
[5] FAOSTAT, Emissions – Land use total, 2016.

and encroach on steep slopes or in forest reserves in search of new farmland.[6] The population's heavy reliance on biomass energy for cooking has also led to unsustainable use of forest resources.[7] The deforestation rate has been dropping and was 2.8 % per year as of 2011, resulting in an estimated loss of 50,000 ha of forests every year.[8] In 2001, the government launched the National Forestry Program which complements the 1996 National Forest Policy. The program's overarching goal is to sustainably manage forest goods and services for improved and equitable livelihoods. Malawi also participates in the UN-REDD Programme and the Forest Carbon Partnership Facility, both of which support national level planning and implementation for Reducing Emissions from Deforestation and Forest Degradation and the conservation and sustainable management of forests and enhancement of forest carbon stocks (REDD+). Malawi is currently preparing its National REDD+ Strategy roadmap.[9]

Agriculture: Agriculture emissions more than doubled from 1990 to 2011,[10] driven by enteric fermentation from livestock (27%) and manure left on pasture (23%).[11] Between 1990 and 2007, the livestock population grew 40%.[12] Many livestock are traditional breeds raised by smallholder farmers under traditional management systems.[13] Agriculture is a source of livelihood for over 90% of the population and a main driver of economic growth, contributing approximately 30% of Gross Domestic Product (GDP).[14] The government aims to diversify income generation and has identified the service and industry sectors to reduce reliance on agriculture.[15]



Source: WRI CAIT 2.0, 2016

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

According to WRI CAIT data, Malawi's GHG emissions (excluding energy sector emissions) fluctuated but increased 14% from 1990 to 2011, averaging 0.7% annually, while GDP increased 126% in the same period, averaging 4.1% annually. Although GDP grew faster than GHG, as of 2011, Malawi's economy emitted approximately 3 times more GHGs relative to GDP than the world average, indicating potential for improvement.

Climate Change Mitigation Targets and Plans

Being classified as one of the least developed countries in Africa, Malawi is not obliged to reduce its GHG emissions. In 2013, Malawi prepared a Draft National Climate Change Policy to guide actions to reduce human and ecosystem vulnerability to climate change through adaptation and mitigation, technology transfer, and capacity building. Under the policy mitigation objectives, Malawi aims to improve land use and deploy climate-smart agriculture, renewable energy, the Clean Development Mechanism and voluntary carbon markets, and REDD+. In its Intended Nationally Determined Contribution (INDC), Malawi commits to unconditional mitigation measures in energy, industry, agriculture, forestry and other land use, and waste, which could be expanded contingent on receipt of international support. In the LUCF sector, Malawi plans to enhance protection and conservation of its protected areas. In the agricultural sector, Malawi will promote improved livestock feeding, breeding and veterinary services, and manure management; promote agroforestry systems in targeted locations as source of biomass and soil carbon sequestration and optimize fertilizer application. The INDC notes that the largest sectoral increase in GHG emissions by 2040 will likely take place in the energy sector as new coal-based electricity generation capacity will come online to meet deficits. However, with external support, Malawi will be able to make significant investments in clean energy.

[6] Republic of Malawi, SNC, 2011.
[7] Republic of Malawi. Malawi's Intended Nationally Determined Contribution (INDC) to the UNFCCC, 2015.
[8] Republic of Malawi, SNC, 2011.
[9] UN-REDD Programme. Regions and Countries, Malawi, Viewed on November 22, 2016.
[10] WRI CAIT 2.0, 2016.
[11] FAOSTAT, 2016.
[12] FAO, Malawi Livestock Sector Brief, 2005 and Malawi National Statistical Office, Statistical Yearbook 2012.
[13] Republic of Malawi, SNC, 2011.
[14] Food and Agriculture Organization. Review of food and agricultural policies in Malawi, Country Report – 2014, 2015.
[15] Ibid.