



# Greenhouse Gas Emissions in Zimbabwe

## Zimbabwe Numbers at a Glance (2011)

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

Total GHG emissions  
(0.14% of world total)  
World: 46,906 MtCO<sub>2</sub>e

**13,358,738**

Population  
World: 6,964,618,177

**4.77**

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

**US\$5,822 Million**  
GDP\*\*

World: US\$54,034 Billion

**10,938**

tCO<sub>2</sub>e/million US\$ GDP  
World: 868 tCO<sub>2</sub>e/million US\$ GDP

**-7 MtCO<sub>2</sub>e (-10%)**

Change in annual GHG emissions (1990–2011)  
World: +12,969 MtCO<sub>2</sub>e (+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\$

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## Greenhouse Gas (GHG) Emissions by Sector

Zimbabwe's GHG emissions for 2011 are shown in the bar chart. Emissions from the land use change and forestry (LUCF) sector are the leading source of emissions, followed by the energy and agriculture sectors.<sup>1</sup>

However, Zimbabwe's [Second National Communication \(SNC\)](#) to the UNFCCC, published in 2013 for the emissions inventory year 2000, contradicts this by reporting net removals instead of net

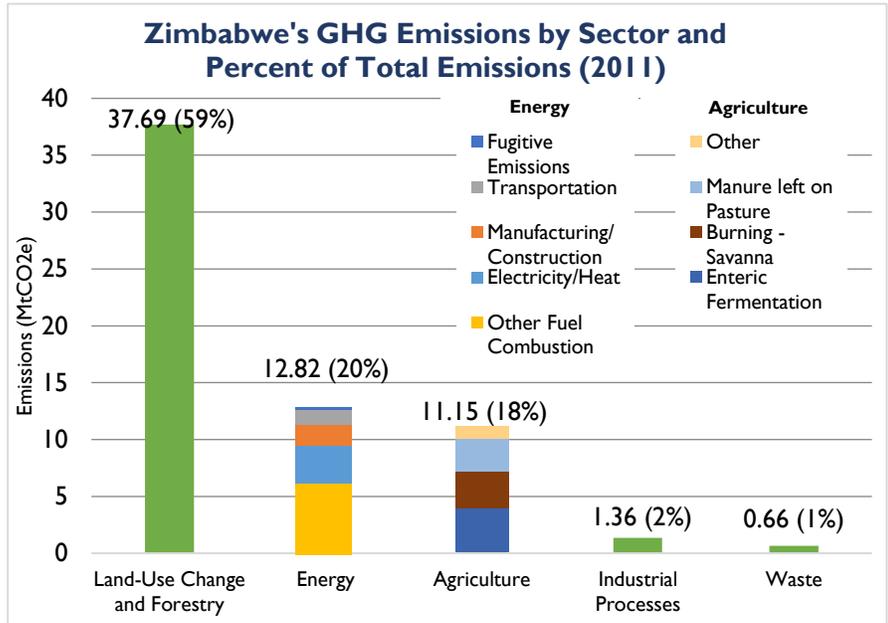
emissions from LUCF sector activities.<sup>2</sup> The removals are due to changes in forest and other woody biomass stocks, based on information derived from the Zimbabwe Forestry Commission.

The reason for this discrepancy is unclear but may be due to incomplete accounting of net emissions due to insufficient and unreliable data. The SNC attributes the net removals to increases in areas planted with commercial forests. CAIT notes that the data, provided by FAOSTAT and described below, is useful as a reference and may not coincide with LUCF emissions reported by countries. It further cautions that errors and uncertainties associated with LUCF estimates may be significant.

## Change in GHG Emissions in Zimbabwe (1990-2011)

Zimbabwe's emissions decreased by 10% from 1990-2011.<sup>3</sup> As illustrated on the next page, the average annual change was -1%, with sector-specific annual change as follows: LUCF (0%), energy (-2%), agriculture (0%), industrial processes (3%), and waste (1%).

Zimbabwe's LUCF emissions originate from two sub-sectors during 1990-2011, forest land (carbon dioxide associated with forest and net forest conversion) and the burning of biomass.<sup>4</sup> Harvesting of biomass fuel and land clearing for agriculture were also identified as the main drivers of deforestation in Zimbabwe.<sup>5</sup> The SNC cites pressure on forest resources due to 70% of its population depending directly on forests for firewood, construction timber, food and



Sources: WRI CAIT 2.0, 2015; FAOSTAT, 2015

<sup>1</sup> World Resources Institute Climate Analysis Indicators Tool (WRI CAIT) 2.0, 2015.

<sup>2</sup> Zimbabwe Ministry of Environment and Natural Resources Management, 2013. Second National Communication to UNFCCC.

<sup>3</sup> WRI CAIT, 2015.

<sup>4</sup> Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT), viewed October 16, 2015:

[http://faostat3.fao.org/browse/area/\\*E](http://faostat3.fao.org/browse/area/*E)

<sup>5</sup> Zimbabwe Ministry of Environment and Natural Resources Management, 2013. Zimbabwe Second National Communication to UNFCCC.

fodder, and woodland degradation due to over-exploitation of open access common property, fires, disease, and browsing by wildlife.

Emissions from energy sector activities display the highest degree of fluctuation during 1990-2011, especially from three sub-sectors: electricity and heat production, transport, and other fuel combustion. Emissions from manufacturing and construction and fugitive emissions steadily decline during this time.

Biofuels and waste are the primary energy sources for the country and increased during this time period.<sup>6</sup> Energy as of 2012 is primarily supplied by biofuels and waste (66%), followed by coal, oil, and hydropower.<sup>7</sup> Electricity is produced by hydropower and coal.

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

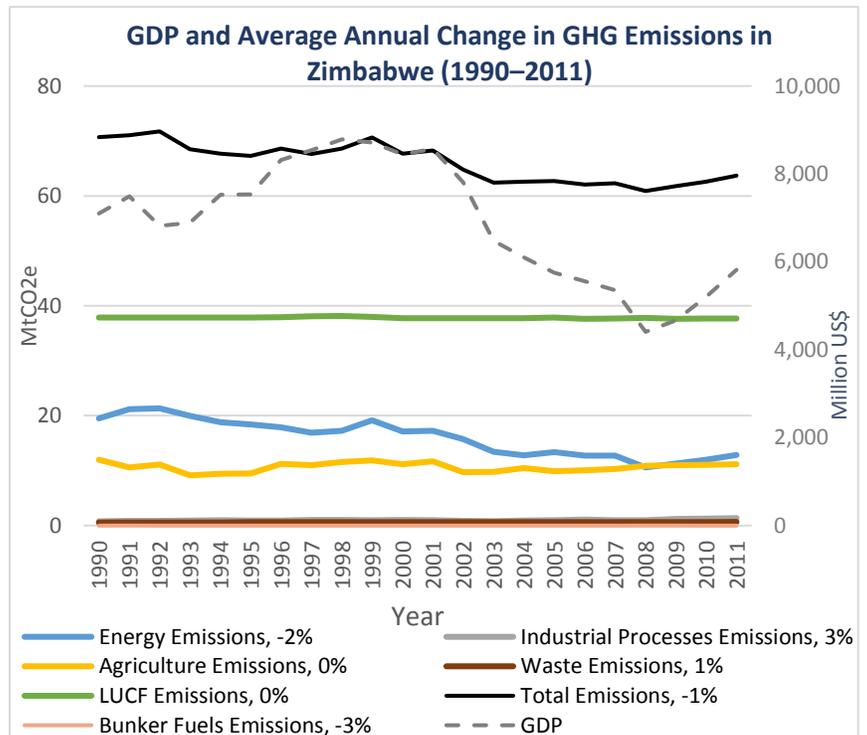
Zimbabwe's GDP fluctuated during 1990-2011 due to political and economic challenges. Data on carbon emissions indicate that carbon intensity of the total primary energy supply has declined during the same period.<sup>8</sup>

Zimbabwe's economic base consists of agriculture, forestry, energy, tourism, and industry.<sup>9</sup> Approximately 10-15% of GDP comes from the primarily rain-fed agricultural sector, upon which 80% of the rural population's livelihoods depend. The [Intended Nationally Determined Contribution \(INDC\)](#) recognizes opportunities for climate change mitigation through climate smart agriculture and sustainable agro-forest-based adaptation and management.

The forestry sector contributed to 3.4% of GDP in 2011.<sup>10</sup>

## Climate Change Mitigation Targets and Plans

The mitigation component of the INDC focuses on the energy sector. Zimbabwe pledges to achieve energy emissions per capita by 2030 that are 33% below the projected business as usual level and identifies the following actions:



Source: WRI CAIT 2.0, 2015

### Projects to achieve the INDC mitigation goal:

*In order of estimated GHG mitigation potential:*

- Increasing hydropower in the energy mix
- Energy efficiency improvement
- Refurbishment and electrification of the rail system
- Ethanol blending
- Solar water heaters

### Other key actions to achieve the mitigation goal:

- Coal-bed methane power generation
- Off-grid solar power
- Integrated waste management
- Changing thermal power station technologies
- Reviewing the transport system
- REDD+ implementation

Additional policies and strategies include the Environmental Management Act, Energy Regulatory Authority Act (2011), National Energy Policy (2012), and the Draft National Climate Change Response Strategy that recognizes mitigation and low carbon development strategies.

<sup>6</sup> International Energy Agency, 2015. Energy Balance Flows, viewed October 16, 2015: <http://www.iea.org/Sankey/>.

<sup>7</sup> Grantham Research Institute on Climate Change and the Environment, 2015. The 2015 Global Climate Legislation Study – Zimbabwe.

<sup>8</sup> International Energy Agency, 2014. CO<sub>2</sub> Emissions from Fuel Combustion: 2014.

<sup>9</sup> Government of Zimbabwe, 2015. Zimbabwe's Intended Nationally Determined Contribution (INDC) Submitted to the UNFCCC.

<sup>10</sup> Global Forest Watch, viewed on October 7, 2015: <http://www.globalforestwatch.org/country/ZWE>.